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July-Dec.  
1911













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# OVERSEAS NEWS AND VIEWS.

1D

# THE MOTOR CYCLE

Largest Net Sale.

Founded 1903.

COVERS EVERY PHASE OF THE MOVEMENT AND CIRCULATES THROUGHOUT THE WORLD

No. 693. Vol. 17.

Thursday, July 6th, 1916.

Price 1d.

COPYRIGHT—REGISTERED AS A NEWSPAPER FOR TRANSMISSION IN THE U.K.

Published Weekly.

FOR MOTOR CYCLES OF CLASS AND QUALITY at Keenest Bargain Prices, see the Big Show at

THE HOUSE WITH THE GREAT REPUTATION FOR VALUE & SQUARE DEALS.

We offer genuine

## 1916 MODELS

that are the last word in perfection and improvement, ready for instant delivery, at lowest prices for cash or easy terms, or most liberal exchange allowance in part payment of new machine. Also 200

CLEARANCE BARGAINS of surprising values.

**WAUCHOPE'S**

9, SHOE LANE, FLEET ST., LONDON.

Phone: 6777 Holborn. Wires: "Opifcet London."

**WAUCHOPE'S**

h.p. Get To-day's Full List. It includes these:

4-5	twin	CALTHORPE-J.A.P. Combin'n	£70 7
4	QUADRANT	all-chain drive, 3-speed	£62 0
4	QUADRANT	chain-cum-belt, 3-speed	£60 0
4	ROYAL ENFIELD	Combination	£91 7
2	2-stroke	1916 ALLON, 2-speed	£42 0
2	NEW IMPERIAL-J.A.P.	2-speed	£36 0
6	1916 ENFIELD	Combination	£85 gns.
2	CALTHORPE-J.A.P.	2-speed, 1916	£37 16
6	countershaft	ZENITH, 1916	£84 6 3
2	LEVIS	1916 Popular	£32 0
2	CALTHORPE	2-stroke, 1916	£23 17 8
2	1916 CALTHORPE-J.A.P.	single-sp.	£32 0
3	1916 twin	JAMES	£68 3
4	JAMES and S'car	Lucas lighting set	£93 16
7-9	HARLEY-DAVIDSON	and Sidecar	£105 19
4	B.S.A.	chain-cum-belt, 3-speed	£62 0
6	ZENITH	countershaft and F.E., and Enpress Sidecar	£103 13 9
2	model E	LEVIS, 2-stroke, 2-speed	£47 10
2	N. IMPERIAL-J.A.P.	2-sp., kick start	£44 6
	G.W.K.	Light Car, with extras	£199 10

DON'T LISTEN TO INTERESTED PARTIES, YOUR OWN HEALTH AND COMFORT DEMAND AN

## XL ALL

If it is not 50% more comfortable than any other Saddle, you can have your money back in full.



Test one for yourself FREE, and you will ride in ease long distances without backache or fatigue. JUNIOR, 21/- ORDINARY, 28/6. XL-ALL WORKS, Hall Green.

## HERCULES

Strength — beauty — comfort — security — finish — ease — protection — in fact, every desirable and necessary feature is embodied. Catalogue from HERCULES CYCLE & MOTOR Co., Ltd., Conybere St., B'HAM.



## SIDECARS

## MONTGOMERY SIDECARS

BRISTLE WITH GOOD POINTS.

W. MONTGOMERY & CO., COVENTRY. Sole London Agents—W. H. Elce & Co., 15, Bishopsgate Avenue, E.C.4.

A perfect piece of Foundry Work.



Cylinder making is an art almost foreign to the English industry. Always the exception.

## Douglas

cylinders are created in my own factory, where the Engineer Pattern-maker, and Foundry-man co-operate to produce that part upon which all engine efficiency depends in such a manner as to reflect credit on all concerned. Their production stands alone as a specimen of Foundry art.

S.L.B.

## PRAISE FOR THE BAT

**BAT MOTOR MANUFACTURING Co. PENGES, LONDON, S.E.**

"I have nothing but praise for the machine; have been running without spares, but not needed them."

—J.W.W



## WOLF MOTORS

## TESTIMONY TO THE WONDERFUL "WOLF."

The Wulfruna Engineering Co., Ltd., Wolverhampton.

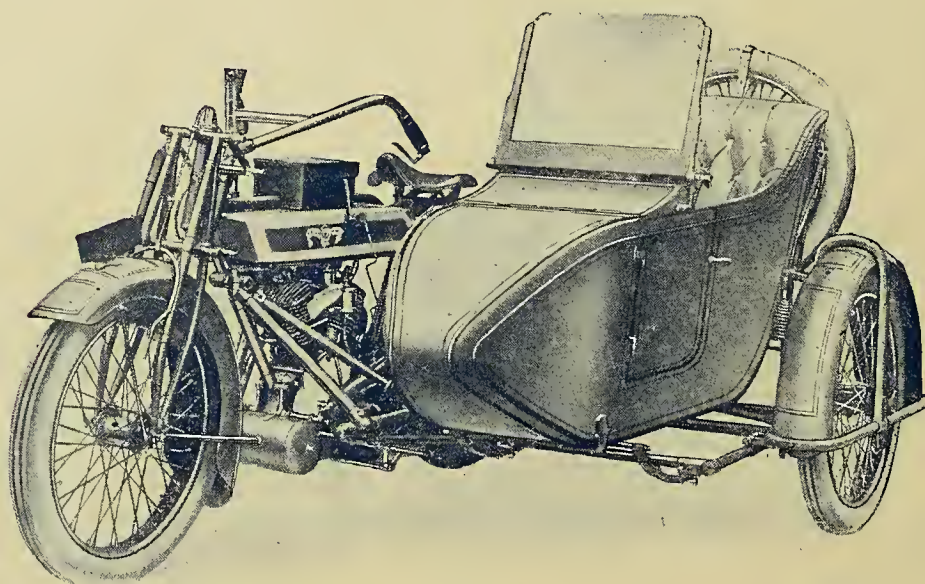
Dear Sirs,—Just a word to let you know that I am very pleased with my machine. I have done on an average 250 miles per week. It is the best machine I have had in seven years' riding. Yours truly, F. DEWHURST.

The WULFRUNA ENGINEERING COMPANY, LIMITED, WOLVERHAMPTON.

53, Tulketh Crescent, Ashton-on-Ribble, Preston.



# Matchless



MATCHLESS 8 B/2 COMBINATION.

Powerful, Reliable, Silent, and Distinctive.

The Combination you will  
Select After the War.

Sole Manufacturers :

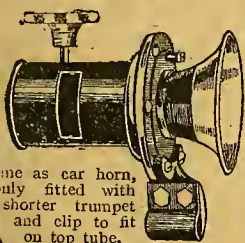
**CH. COLLIER & SONS, LTD. PLUMSTEAD S.E.**

G.A.M.

*In answering this advertisement it is desirable to mention "The Motor Cycle."*



# "SAMSON TIGER" MECHANICAL MOTOR CYCLE HORN.



Same as car horn,  
only fitted with  
shorter trumpet  
and clip to fit  
on top tube.

Price 22/6.



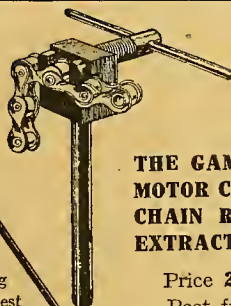
## AUXILIARY SAFETY ARM

for SIDECAR. 6/3



## THE 'GAMAGE' PLUG.

Extra strong  
Electrodes and best  
Porcelain. British make.  
Suits any engine.  
Every Plug Guaranteed.  
Price 1/9, post free.



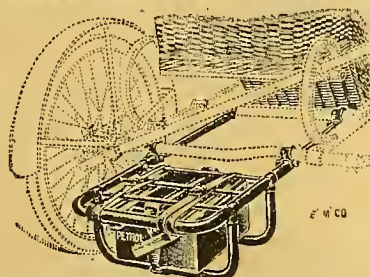
## THE GAMAGE MOTOR CYCLE CHAIN RIVET EXTRACTOR.

Price 2/6.  
Post free.

Very powerful.  
Simple to use.

# GAMAGES

## SIDECAR COMBINED LUGGAGE CARRIER & PETROL TIN CARRIER.



Very strong and light. Can be fitted  
to any make of Sidecar. Price, com-  
plete with two long straps, 30/-.

## "GAMAGE" MOTOR CYCLE TYRE GAITER.



This Gaiter clips into the bead of the rim,  
and makes an excellent temporary repair.  
No kit is complete without one.  
To fit 2, 2 1/2, and 2 3/4 in. tyres - Price 1/5  
For 3 in. tyres, 1/9



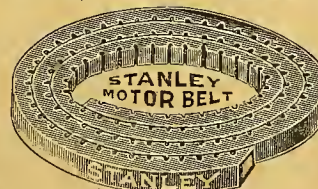
## TERRY'S MOTOR CYCLE VALVE SPRING LIFTER.

Fits any Engine  
Holds spring up  
and valve down  
automatically.  
1/8 each.

## MOTOR CYCLES IN STOCK FOR IMMEDIATE DELIVERY:

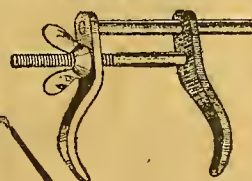
- 4 1/4 h.p. B.S.A., Model K, 3 speeds, kick starter,  
free engine, chain-cum-belt transmission .... £62 0 0
- 4 1/4 h.p. JAMES Combination Set, 3-speed  
gear, kick starter, complete with apron, etc... £73 0 0
- 2 1/2 h.p. Alldays ALLON, 2-stroke, 2-speed,  
very low riding position..... £44 0 0
- 2 1/2 h.p. Alldays ALLON, 2-stroke, single-speed £36 0 0
- 2 1/2 h.p. NEW IMPERIAL - J.A.P., 2 speeds,  
wonderful climber, low petrol consumption .. £38 0 0
- 2 1/2 h.p. RADCO, 2-stroke, 2 speeds, chain-cum-  
belt transmission, Petrol lubrication ..... £33 10 0
- WATSONIAN Featherweight Cane Side-  
car, suitable for lightweight machines, 49 lbs... £8 15 0
- WATSONIAN Featherweight Wicker Ditto. £7 16 6

## The Stanley Dermatine Belt.



1/2 1/5 1/7 1/10 2/4 per ft.  
Carriage paid. Fastener with each belt.

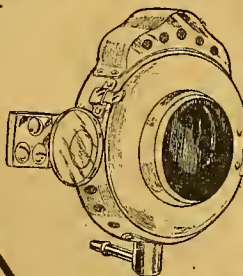
## MOTOR CYCLE CHAIN PULLER WITH FLY NUT.



By the use of this  
small tool it is an  
easy matter to  
replace a chain  
bolt.  
Price 1/9,  
post free.

## THE "MONTI" REAR LAMP.

To work in co-  
junction with head  
lamp generator.  
Price 3/3,  
post free.



## COLLAPSABLE GOGGLES.



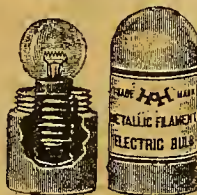
Dustproof, comfortable, light, ideal for  
motor cyclists. Price, per pair  
1/6. Sold elsewhere at 4/9.

## THE "V.M." PILLION SEAT.

With Footrest and Dressguard.  
Dressguard cut for tool bag or  
not, as desired.

Price, with backrest, 40/-  
Seat only - 20/-  
Seat with backrest - 26/-

## BULBS AND BULB CASES.



Metallic Filament  
Bulbs 4-volt for use  
with tail lamps, 1/-  
Polished Boxwood Case  
for spare bulb, 2d. The  
bulb is screwed into the  
base of the box and the  
cover is then screwed on, and  
enables the bulb to be safely  
carried in tool bag or pocket.

Description.—13" wide, 12" back to front,  
3 1/2" high. Upholstered dark green, suitable  
for practically all motor cycle carriers.  
Can be used on most carriers without removing  
tool bag by reversing stays that attach seat  
to carrier.

**A. W. GAMAGE, LTD., HOLBORN, LONDON, E.C.**



## WHY BUY FOREIGN DRY CELLS

When our British Made "Volex" are superior and at favourable prices?



### THE "VOLEX" EMERALD BATTERY. British Made.

Of particularly heavy capacity, recommended for Motor Car, Boat, or Engine Ignition; for lighting, actuating horn, etc. Recommended for export, and in conjunction with our "Volex" Special Metal Filament Bulbs about 150 to 200 hours' light is obtainable. Holds up in stock for years.

4 volts, size  $6\frac{1}{2} \times 7\frac{1}{2} \times 2\frac{1}{2}$  in.  
6 volts, size  $6\frac{1}{2} \times 5 \times 5$  in.

Price .. 10/6.  
Price .. 14/6.

### The "VOLEX" AERO DRY BATTERY. British Made.

A very convenient size for many purposes, such as Motor Cycles, Cycle Cars, etc. Suitable for ignition, lighting, electric horn operating. Holds up in stock for years.

4 volts, size  $6\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$  in. Price .. 8/-  
6 volts, size  $6\frac{1}{2} \times 6 \times 2\frac{1}{2}$  in. Price .. 11/-

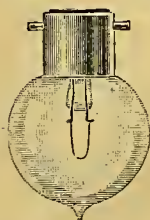


### The "Volex" Giant Dry Batteries.

For Motor Cycle & Sidecar Lighting and Ignition Starting they are excellent, and have no superior.

4 volts, size  $6\frac{1}{2} \times 3$  in. square, 6/6 each.  
6 volts, size  $6\frac{1}{2} \times 4 \times 3$  in. 8/6 each.

### THE "VOLEX" SPECIAL METAL FILAMENT BULB.



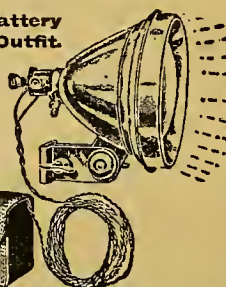
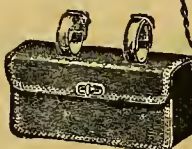
For use with our "Volex" Dry Batteries, ensuring maximum burning hours.

4 and 6 volts, min screw cap, 9d. each.  
4 and 6 volts, small B cap, 1/6 each.

### The "VOLEX" Dry Battery Motor Cycle Lighting Outfit.

Includes "Volex" Giant Dry Battery, Conducting Cord, Switch, and Penetra Motor Cycle Head Lamp or Sidecar Lamp with Bulbs.

Price  
32/6  
complete outfit.



Spare "Volex" Giant Battery, 6/6.  
Or complete with Rear Light, 42/6.  
Fitted with Sidecar Lamp in place of Head Lamp, 7/6 extra. Spare Battery for Combination Set, 8/6.

Bromley Cross, Bolton,  
15th February, 1916.

J. G. H.

Please send me one of your "Volex" Emerald Dry Batteries. The above is to replace one of the same bought May, 1914 (about 21 months ago), which has served ever since for working the Bosch Dual Ignition Coil of one of my cars, for starting. I am more than satisfied with the result, the cost being less than that of the mere charging of the pair of Accumulators.

**WARD & GOLDSTONE,**  
Sampson Works, SALFORD, MANCHESTER.  
\*Phone—7083-4-5-6 Central. \*Grams—"Multum, Manchester."

Abingdon  
**'KINGDICK'**  
MOTOR  
CYCLES  
AND  
ENGINES

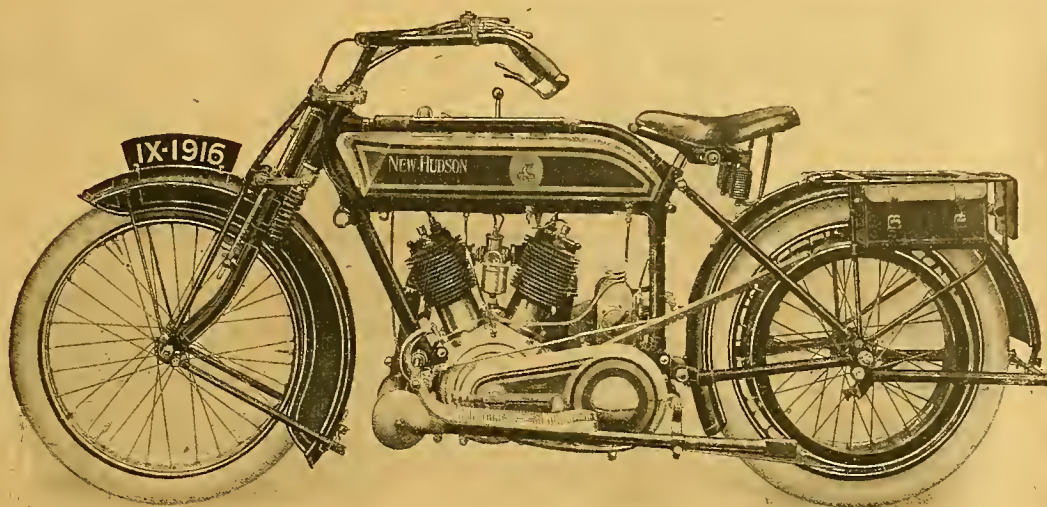


ORDERS executed  
as Government re-  
quirements permit.

**ABINGDON ECCO LTD.**  
MAKERS OF THE FAMOUS **'KINGDICK'** SPANNERS  
**TYSELEY, BIRMINGHAM.**

London Representative: G. H. Smith, 12, Mortimer Street, W.





# NEW HUDSON

## THE MASTER MODEL.

*"The Choice of the discriminating rider."*

The acknowledged superiority of the New Hudson Master Model (The Big Six) among discriminating riders created an insistent demand which compelled us in 1914 to erect additional large factories for the manufacture of Motor Engines, countershaft gears, and components.

To ensure the maintenance of the standard of high quality and superiority for which New Hudsons are justly famous, these factories were equipped with the most modern and accurate machine tools.

This plant has been very largely engaged on Government Contracts during the period of the war, but supplies now going forward will enable us to fill some of our earlier contracts. It may be that we can put you in touch with one of our agents who will secure early deliveries. Write us.

**THE NEW HUDSON CYCLE CO., LIMITED,**  
**PARADE MILLS, BIRMINGHAM, ENGLAND.**

LONDON: 44, Gray's Inn Road.

AUSTRALIA:

SYDNEY—Bennett & Barkell,  
 132, Castlereagh Street.

ADELAIDE—J. N. Taylor & Co.,  
 121, Grenfell Street.

MELBOURNE—Acme Cycle & Motor Co.,  
 355, Longdale Street.

SOUTH AFRICA:

CAPETOWN—Corner of Strand Street  
 and Long Street.

TRANSVAAL—Fisher & Simmons,  
 P.O. Box 4391, Johannesburg.

NATAL—Warden & Hotchkiss,  
 P.O. Box 399, Durban.

PARIS: 5, Rue de Sablonville, Neuilly.

NEW ZEALAND:

WELLINGTON—Magnus Sanderson  
 & Co., Ltd., Wakefield Buildings,  
 Victoria Street.

DUNEDIN—W. A. Scott & Sons,  
 183, George Street

*In answering this advertisement it is desirable to mention "The Motor Cycle."*



# MIDLAND

## MOTOR CYCLE TYRES.

### WHY IS IT



that you should insist on buying MIDLANDS when buying Motor Cycle Tyres?

Because "Midlands" are the last word in Motor Cycle Tyres. They are the result of years of investigation and practical experience. The product of manufacturers whose experts are not merely rubber and tyre experts but practical motor cyclists and that says a lot. Nevertheless the price is no more than you would pay for tyres of other makers.

#### THE MIDLAND RUBBER COMPANY, LTD.

HEAD OFFICE and WKS.: RYLAND ST., BIRMINGHAM.  
LONDON DEPOT: 31-34, Eagle Street, Southampton Row, W.C.  
Coventry Depot: Priory Works, New Buildings.  
Glasgow Depot: 451, Eglinton Street.  
Dublin Depot: 12, Gt. Brunswick Street.  
Cardiff Depot: Plymouth Street.  
Milan Depot: Via Sirtori 6.  
Amsterdam Depot: 50, Lange Leidsche Dwaars Straat



is the outcome of the fulness of expert engineering knowledge, technical capacity, and mechanical ability of its designer.

#### THE ENGINE.

The engine, for example, is best balanced, the lightest, the most powerful and reliable  $3\frac{1}{2}$  h.p. yet constructed. Engine features include positive oil pump, roller bearings, overhead exhaust valve, steel cylinders, Claudel-Hobson Automatic carburetter, etc.

#### THE SPECIFICATION.

The specification indicates the fine constructional excellence of the A.B.C. Motor Cycle. Leaf springing front and rear. Four-speed car type gear box with gate-change. Enclosed chain-drive. Two cush drives. Two waterproof internal expanding brakes. Easily removable rear wheel. Mechanical lubrication. Enclosed kick-starter. A.B.C. patent rigid handle-bars, and other exclusive constructional details.

#### A.B.C. MOTORS, LTD., Walton-on-Thames.

'Phone—Walton-on-Thames, 220. 'Grams—"Revs, Walton-on-Thames."  
H.A.C.

THE BELT FOR RUDGE, ZENITH, PHILIPSON, GRADO, BRAMPTON, or ANY GRADUAL GEAR.



#### SPECIAL OFFER.

$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	USUAL PRICE for 8ft.
28/-	30/-	34/-	36/-	
22/-	24/-	26/-	28/-	SPECIAL PRICE for any length up to 8ft. Plus 8d. Postage.

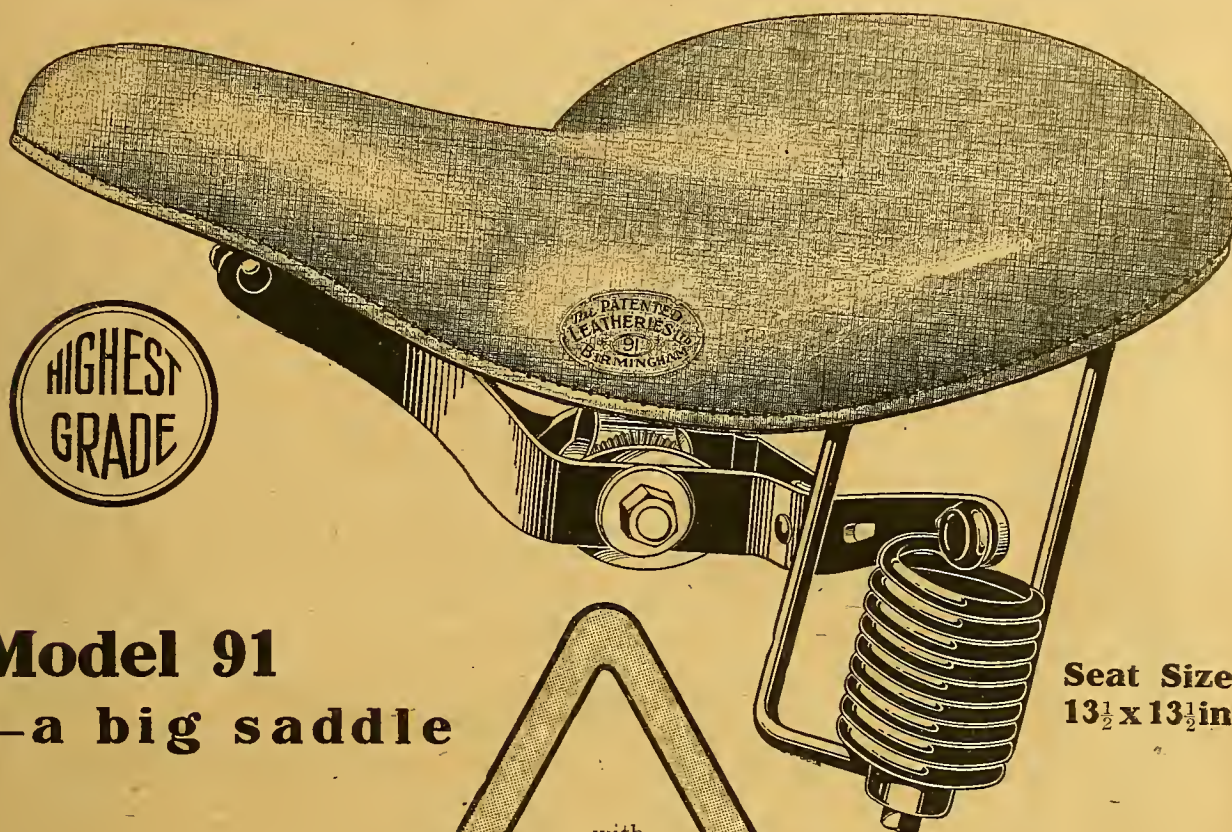
#### UNDER OUR GUARANTEE.

Owing to a delivery of faulty material by our Steel Manufacturers, a number of belts have been despatched to customers which are likely to be causing trouble through the links pulling out. We hereby undertake to replace any belt with this defect on the nominal payment of 2/6 to cover postage and incidentals.

Address all communications to—  
The ZILLA PATENT BELT COMPANY, Ltd.,  
101, Great Western Street, MANCHESTER.

In answering these advertisements it is desirable to mention "The Motor Cycle."





## Model 91 —a big saddle

Seat Size,  
13½ x 13½ in.

—with  
a big repu-  
tation for  
comfort and ser-  
vice. It is specially  
designed and built  
for long distance riding  
and is the ideal saddle  
for heavyweight machines—  
either Solo or Sidecar.

This saddle incorporates the Empire-de-Luxe  
patent Double Hangers with Extension Springs,  
patent Shock Absorbing Link and Pressed Steel  
Anatomical Base—features which combine to eliminate  
all vibration and bouncing, even on the roughest roads.

The seat is well padded, the top being covered with highest  
quality leather—and the specially cranked steel girder frame  
gives ample clearance for exceptionally low and comfortable  
riding position.

Ask your Agent to show you this saddle—and write us for Catalogue.

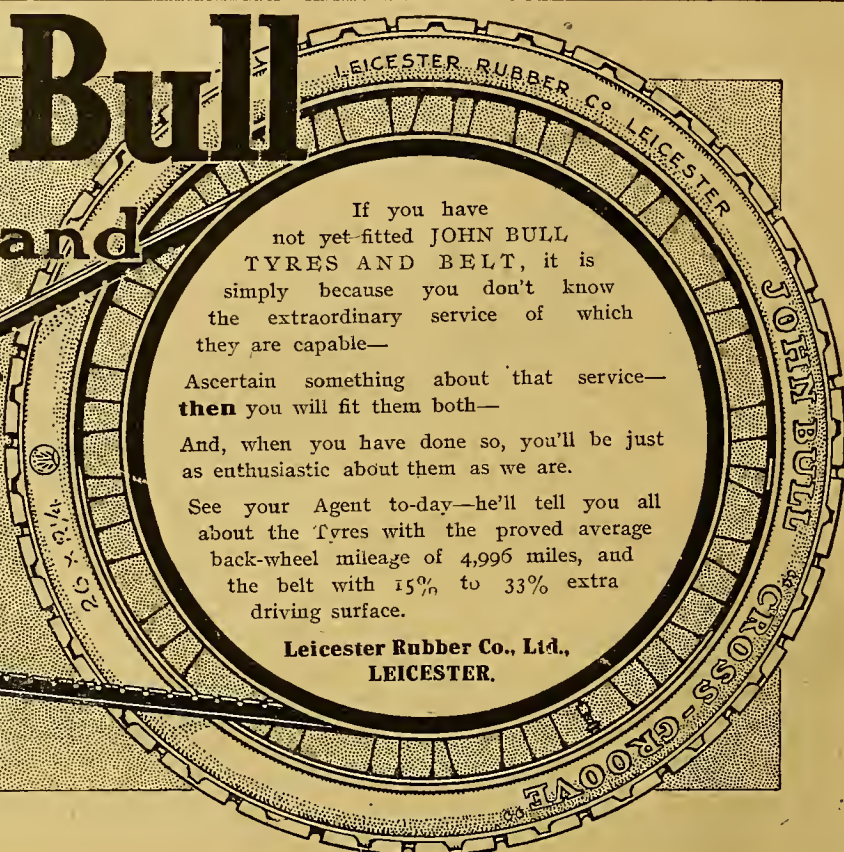
**The LEATHERIES Ltd., Sampson Road North, Birmingham.**

# EMPIRE·DE·LUXE

*In answering this advertisement it is desirable to mention "The Motor Cycle."*



# John Bull Tyres and Belts



If you have  
not yet fitted JOHN BULL  
TYRES AND BELT, it is  
simply because you don't know  
the extraordinary service of which  
they are capable—

Ascertain something about that service—  
**then** you will fit them both—

And, when you have done so, you'll be just  
as enthusiastic about them as we are.

See your Agent to-day—he'll tell you all  
about the Tyres with the proved average  
back-wheel mileage of 4,996 miles, and  
the belt with 15% to 33% extra  
driving surface.

**Leicester Rubber Co., Ltd.,  
LEICESTER.**

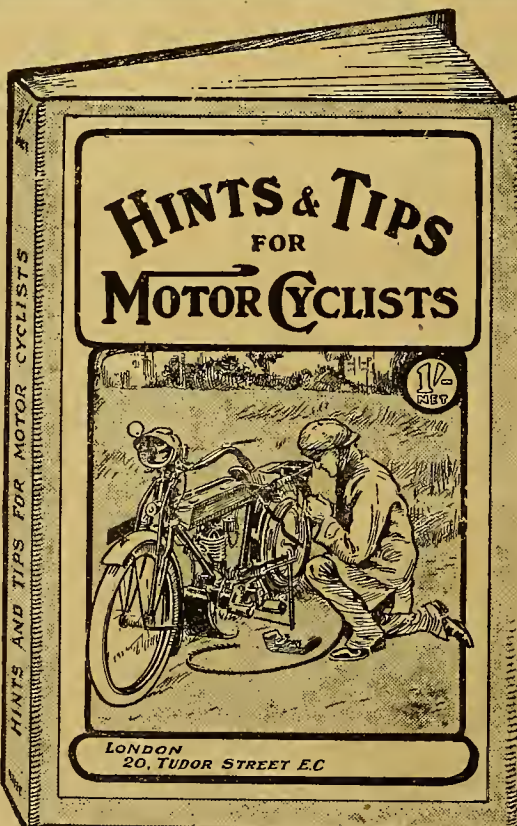
**Every  
Motor Cyclist**  
should draw upon  
this Storehouse  
of Motor Cycle  
Knowledge.

“Hints and Tips for Motor Cyclists” contains what may be termed the cream of all motor cycling knowledge up to date.

The book gives hundreds of useful “wrinkles” and little items of information concerning the running, management, and repairs of motor cycles, culled from the experience of many years of riding, and covering every detail of the machine.

The arrangement is simple and straightforward and reference is simplified by an extensive index and marginal subtitles on every page.

*Invaluable to  
the new rider*



The  
**Fifth  
Edition**

Revised, Enlarged, and  
brought up to date.

Contains over  
400 separate  
paragraphs.

No matter what type of  
machine is used, this little  
book will be found of the  
greatest service to every rider.

**Price:**  
**One Shilling net,**  
By post, 1/2.

From **ILIFFE & SONS,**  
Ltd., 20, Tudor Street,  
London, E.C., and all  
Booksellers and Railway  
Bookstalls.





The  
**ROYAL ENFIELD**  
**Way Pays Best.**

Royal Enfields are doing good service in the business world to-day. Under ordinary conditions, with loads averaging from 2 cwt. to 3 cwt., there is no more advantageous way of delivering goods than by means of a Royal Enfield Sidecar Combination.

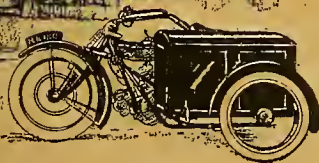
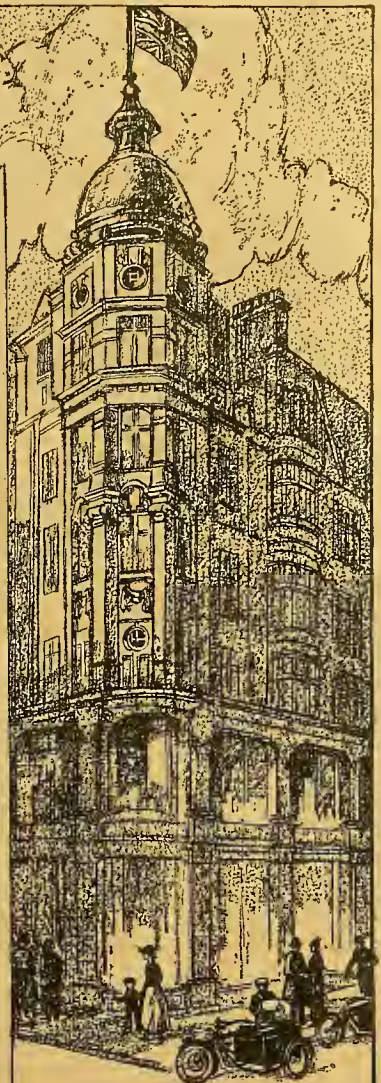
The all-chain driven Royal Enfield is specially suitable for this class of work. It is reliable to the highest degree, and its economy in petrol consumption and running costs is remarkable. Recent tests carried out with a Royal Enfield at Brooklands by "The Motor Cycle" gave an average of 76 miles to the gallon.

We can quote actual instances of where Royal Enfield Models are carrying goods of all descriptions—differing as widely as butcher's meat and builder's materials—and doing it day after day without trouble. We shall be pleased to send our catalogue, with full particulars of this model, on request. Mention "The Motor Cycle" when writing.

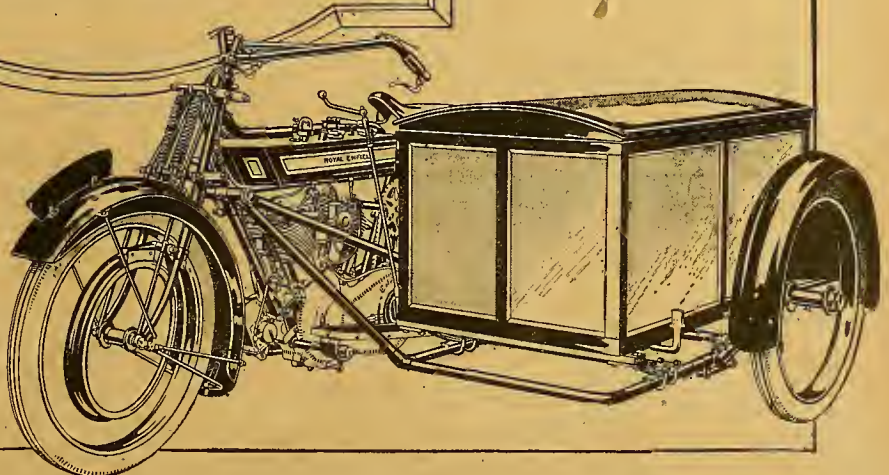
**The ENFIELD CYCLE CO., LTD., REDDITCH.**

London Office and Showrooms:

**48, Holborn Viaduct, E.C.**



*"Made like a Gun"*



*In answering this advertisement it is desirable to mention "The Motor Cycle."*



## THEY STAND FOR SAFETY AND SUPERIORITY.



Section of  
3 inch Non-  
Skid.

There is more than the advantage of security in Firestone Non-skid Tyres, in which superiority reaches the highest point of efficiency.

The present exacting conditions—the severe service of sidecars and the frequent over-loading—demand something more than an ordinary tyre.

Discriminating motor cyclists are turning to Firestone equipment, because it answers their demands for greater safety, more mileage, and more comfort.

## Firestone Non-skid Tyres

are built with Firestone accuracy for speed and endurance, and to meet every tyre requirement of the motor cycle.

Stocked in all Standard British Sizes and to fit Harley-Davidson, Indian, Excelsior, Thor, and all American standard machines.

Write for the Firestone Motor Cycle Tyre Book—post free from

**FIRESTONE TYRE & RUBBER CO., LTD., 216, Tottenham Court Road, LONDON.**

Agents everywhere.

## The INSURANCE POLICY

*that Covers*

**Pillion Riding (with Sidecar attached) and the use of the machine for occasional personal business journeys.**

***Without Extra Premium.***

**Risks Covered:** Unlimited Third Party Claims and all Law Costs — Accidents to the Machine — Fire — Theft — and Transit Risks.

**Premiums:** 3 h.p., £3 - 7 - 6, 4 h.p., £3 - 12 - 6, 5 h.p., £3 - 17 - 6  
6 h.p., £4 - 0 - 0, 8 h.p., £4 - 5 - 0.

**Including a Free Subscription to "The Motor Cycle" for Twelve Months**

### ENQUIRY FORM

(To be sent to address below).

Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Will machine be driven solely by owner? .....

Will passenger be carried on luggage carrier or pillion of motor cycle? .....

If so, will sidecar attachment be used? .....

Name.....

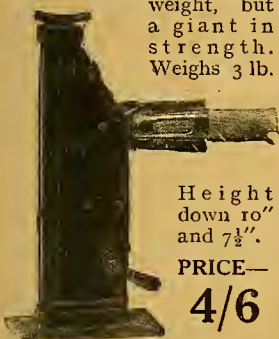
Address .....

Fill in this form and send to "THE MOTOR CYCLE" INSURANCE DEPT., HERTFORD STREET, COVENTRY.

Highest Award and Gold Medal R.A.C. only official Speed Trials. Gold Medal Turin Exhibition.

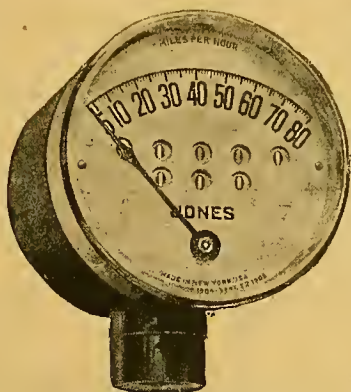
### THE LITTLE GIANT LIGHT JACK.

Specially suitable for Motor Cycles and Side-cars. All pressed steel. No castings. Light in weight, but a giant in strength. Weighs 3 lb.



Height down to 7½".

PRICE—  
**4/6**



## The JONES SPEEDOMETER

NEWTON discovered the infallible laws of gravity. The centrifugal gyroscopic principle on which the Jones Speedometer is constructed is quite as infallible. That is why the Jones has a world-known record as being the one dependable Speedometer.

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Speed to 80 m.p.h. Total and Trip Mileage.

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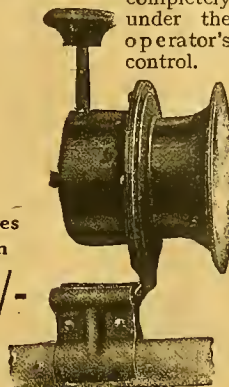
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MARKT & CO. (London), Ltd.  
98-100, CLERKENWELL ROAD, E.C.

Each Instrument individually calibrated by Experts. Unaffected by weather changes.

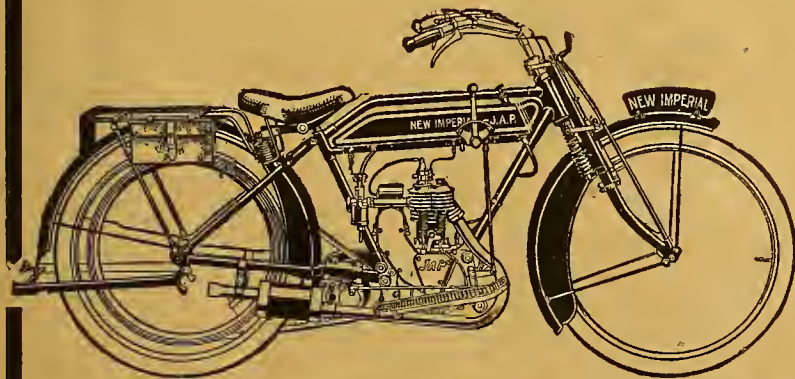
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A hand-operated purely mechanical horn. The most reliable and best horn that you can fit. Its response to a touch is instantaneous—completely under the operator's control.



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**NEW IMPERIAL CYCLES, LIMITED,  
BIRMINGHAM. (Est. 1887.)**

—does not to any appreciable extent affect the Rider of a 'New Imperial Light Tourist,' as its extreme economy of running is so marked—averaging almost twice the mileage of other types of the same power. Therefore, the rider of a "Light Tourist" saves his own pocket, and is studying the National interest.

This applies **equally** to First Cost as follows—

Two-speed .. .. .	<b>£38 0</b>
Two-speed, Clutch and Kick-starter .. .. .	<b>£44 8</b>
Lady's Two-speed, Clutch and Kick-starter .. .. .	<b>£46 8</b>

Send for latest Illustrated Catalogue and Booklet, "Don't Take Risks, and Why!"

In answering these advertisements it is desirable to mention "The Motor Cycle."





Can you tell the difference  
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1912 and 1913 P. & M. ?

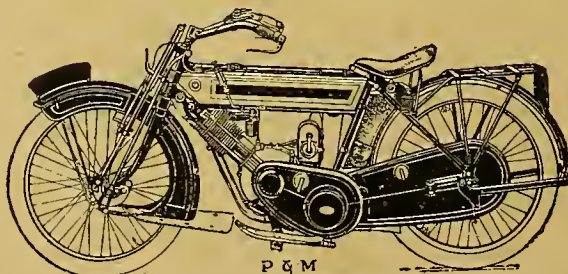
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The first P. & M., built in 1900, embodied certain new principles. The P. & M. of to-day embodies precisely the same cardinal features. The design was right from the start, and it is only in details that improvements have been possible.

You may have noticed on other machines that gears in a certain position, a particular type of transmission, or a particular form of starter, is boomed to such an extent that the unhappy purchaser is persuaded that that special feature will supersede all others. The following season the manufacturer will have discarded the design altogether, and the buyer realises the effect of this when he wants to sell his machine.

It is, therefore, easy to understand the high prices which obtain for second-hand P. & M. machines.

**PHELON & MOORE, LTD.,**  
CLECKHEATON ..... YORKS.  
4, PERCY STREET, W.



P & M  
3 1/2 H.P. MODEL

H.A.C.





## MOTOR CYCLES FOR SALE.

## Velocette.

VELOCETTE, 1915, 2½ h.p., 2-stroke, T.T. bars, Palmer tyres, plating excellent; £23.—Traamore, Whitby Bridge, S.O. [7717]

## Villiers.

1915 Villiers 2-stroke, in splendid condition, very fast; exchange for 1913 2-speed Douglas, or with cash for 1914—S., 22, Hatfield Rd., Stratford. [7374]

VILLIERS.—Burford latest model lightweight, Villiers patent engine, Druid forks, large saddle, footboards, lamps, horn, etc., smart sturdy little mount, done 300 only, as new, suitable lady or gent; £22/10.—136, Dalnally Rd., E. Croydon. [7563]

## Win-Precision.

33 h.p. Win-Precision, 1912, new ball bearings, thoroughly good condition, tools, accessories, 90-95 m.p.g.; £19.—Bowden, R.F.C., Oxford. [7581]

## White and Poppe.

31 h.p. White and Poppe (m.o.v.), Bosch mag., Lyceet saddle, B. and B. carburetter, low, smart, reliable machine, Dunlop belt, Hutchinson 26×2½ tyres, lamp, tools; bargain, £8/10.—Watson, 45, Charles St., Commercial Rd., E. [X5194]

## Williamson.

WILLIAMSON, 1914½ model, and special sidecar, many spares, extras; must sell, bargain.—Kitsou, 309, Albert Crescent, Langeside, Glasgow. [7675]

1914 Williamson, 8 h.p., w.c., 2 speeds, clutch, hood, screen; £52/10; would exchange lower power and cash.—Lacour, 201, Graham Rd., Hackney. [7722]

8 h.p. Williamson, water-cooled engine, 2-speed gear and clutch, fitted with a 2-seated side-by-side sidecar, complete, including hood and screen; £55.—Vauchope's, 9, Shoe Lane, London. [7766]

## Wolf.

WOLF, 4 h.p., 1916, 3-speed countershaft gear, kick starter, chain drive, hand-controlled clutch; £55/10/6; exchanges entertained.—Eagles and Co., High St., Acton. [X3219]

WOLF, 1915, 4½ h.p., 3-speed, K.S. coach combination, with accessories; £52/10; deferred payment terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Ave., Wood Green. [7657]

## Zenith.

1912 3½ h.p. Zenith and Sidecar, in splendid order and condition; £27/10.—Jones, Garage, Broadway, Muswell Hill. [7892]

1914 Zenith-Gradua, 8 h.p., clutch, kick starter, Cannell, wind screen; exchange good solo and cash.—1, Candy St., Old Ford. [7835]

1912-13 Zenith 6-8 h.p. Combination, J.A.P. engine, Gradua gear, Lucas lamp, speedometer; photo; £35, nearest; separate. 80, Bismham Rd., Southport. [X3181]

ZENITH-GRADUA 3½ h.p. Combination, in splendid running order, most powerful; an utter bargain, £25, complete.—Granden, 86, Gray's Inn Rd., W.C. [7898]

ZENITH, 1918, 4 h.p. twin, Gradua gear, lamp set, speedometer, lovely machine, practically new; £45.—Ray, Earlsbury House, Prideaux Rd., Eastbourne. [7865]

LATE 1915 8 h.p. Zenith-Gradua, clutch model, splendid condition, accessories; £65; tandem-seater C.B. sidecar, £14; after 5 p.m.—Driscoll, 58, Woodfield Rd., Ealing. [7794]

## Ladies' Machines.

DOUGLAS, lady's 1914, 2½ h.p., perfect condition; £39/10, near offer.—McClelland, Chalet, Cissbury Rd., Worthing. [7812]

1916 O.K., lady's open frame, Mark 3, 2-speed, clutch, not ridden 20 miles; £37/10.—Robinson's Garage, Green St., Cambridge. [7702]

1915 Lady's Connaught, 3 h.p., 3-speed, kick starter, and clutch; cost over £50, accept £25/10.—Lowe, 80, Sycamore Rd., Handsworth. [X3250]

LADY'S Humber, 2½ h.p., free engine, 3-speed gear, condition perfect, £25; late 1912 model.—Apply after 7, Perry, 35, Highbury Place, N. [7725]

3 h.p. Lady's Model Rex, free engine, spring forks, 4 mag., excellent running order; £14.—L. Barton, Shirley, Queen's Drive, Mossley Hill, Liverpool. [7726]

LADY'S 1916 New Scarlet-Metro, 2½ h.p., 2-stroke, 2-speed countershaft gear; retail price £38/10, accept £34; motor business discontinued, owner cashed.—Uttings, Burnham Market, Norfolk. [7813]

## Miscellaneous.

SEVERAL Good Combinations, including Rover, Singer, Harley-Davidson, from £30.—Bunting, Harrow. [7842]

2 h.p. Motor Cycle, 1915, brand new, British make, 24 Druid forks, Hutchinson tyres, mudguards, brakes, toolbag, complete; £30.—View 131, Wadour St., London, W. [7613]

MACHINES and Sidecar Combinations for immediate disposal: 7 h.p. clutch model Indian, 1915, £40; 1915 Harley-Davidson, £65; 1913 Rex and sidecar, £30; 6 h.p. Enfield combination, £50; Matchless and sidecar, £38; Harley-Davidson and sidecar, £65; exchanges made.—Colmore Depot, 31, Colmore Row, Birmingham. [X3061]

## MOTOR CYCLES FOR SALE.

## Miscellaneous

1913 3-speed Triumph, tyres as new; £34.

1913 3-speed Triumph and Cowey speedometer, and lamps, and wicker sidecar; £38/10.

1915 Sun 2-stroke, 2-speed, as new; £27.—Bull, St. Giles' Sq., Northampton. [X2775]

HERDEN'S have actually in stock for immediate delivery:

NEW 1916 Roynl Enfields, 2½, 3, 6, and 8 h.p. models

HARLEY-DAVIDSON Combination, 7.9 h.p., brand new; list price £95, to clear £85.

1916 2½ h.p. Jap-New Imperial, 2-speed, clutch, and kick starter; £44/8.

1916 2½ h.p. Jap-New Imperial, 2-speed; £38.

1916 2½ h.p. Jap-New Imperial Lady's 2-speed, clutch, and kick-starter; £46/8.

1915 5 h.p. Indian, 3-speed, kick-starter, in grand order, and fit up complete; £50.

TRIUMPH Junior, 2-stroke, in splendid order, just like new, original tyres on; only £32.

1915 2½-3 h.p. Wolf, 2-stroke, 2-speed; £33/10; accept £28; a gift, brand new.

1915 2½ h.p. Wolf, Pecc engine, 2-speed; £35/10; accept £30 or clear; brand new.

1914 Clyno, 2½ h.p., 2-speed, guaranteed just like new; £28.

1914 3 h.p. Enfield, grand condition; £30.

1915 2½ h.p. Calthorpe-Jap, 2-speed, splendid order; only £26.

2 h.p. Premier, 3-speed, clutch, perfect condition, a beauty; £21.

NEW Williamson Cycle Car, 8 h.p. Douglas engine, and 3-speed gear; £126 list, no reasonable offer refused.

HERDEN'S Motor Mart, St. James' St., Burdley. Tel.: 488. [6491]

COLLIER'S Motories for cash bargains or exchanges.—Address, Deal St., Halifax.

COLLIER'S.—Triumph, 3 h.p., mag., new tyres, £15/10; 1909 3½ h.p. Triumph, £19/10.

COLLIER'S.—1912 3½ h.p. 2-speed Humber, £26/10; 1912 3½ h.p. 2-speed chain-drive Bradbury, £22/10.

COLLIER'S.—Royal Ruby, 2½ h.p., 2-speed, 2-stroke, slightly shop-soiled; £31/10.

COLLIER'S.—1915 2-speed Ivy 2-stroke, wants tuning up, £21/10; Douglas, 2½ h.p., single-speed, £12/10.

COLLIER'S.—New electrically-equipped American Excelsior; pre-tax price, £71/10, cannot repeat.

COLLIER'S.—Humber, 3 h.p., wants attention, £37/6; 1912 3½ h.p. 2-speed Premier, £22/10; sidecar, £3/10 extra.

COLLIER'S.—1913 3½ h.p. 2-speed Torpedo and sidecar, £29/10; 2-speed twin Minerva and sidecar, £19/10.

COLLIER'S.—1912 3½ h.p. Zenith-Gradua, £24/10; 1915 2½ h.p. 2-speed Wizard, 2-stroke, wants repairs, £19/10.

COLLIER'S.—Rex brand new 6 h.p. sidecar combination, £71, offers wanted; new Rex sidecar, £12/10.

COLLIER'S.—Twin Minerva, 2-speed, coach sidecar, £17/10; 1913 3½ h.p. Rover, Grado gear, £25/10.

COLLIER'S.—Motococche mag. lightweight, excellent machine, £9/15; 1913 2½ h.p. mag. Precision, £15/10.

COLLIER'S.—1913 Rex twin sidecar combination, £45/10; 1914 combination, almost as new, £49/10.

COLLIER'S.—1908 5½ h.p. free engine twin Rex, £13/10; Royal Ruby, 6 h.p., 3-speed, merely soiled, £67, makers' price £87.

COLLIER'S.—N.S.U., 3½ h.p., 2-speed, £19/10; 6 h.p. 2-speed twin Rex and sidecar, £22/10; 3½ h.p. mag. Humber, vertical m.o.v. engine, £12/10.

COLLIER'S.—3½ h.p. free engine Rudge, £19/10; 3½ h.p. free engine Triumph, £19/10.

COLLIER'S quote the keenest exchanges. Send for full list.—Address, Deal St., Halifax. [0826]

MOTOR Cycles, 3½ to 4 h.p., for immediate delivery: Trump-Jap, 3-speed, £36; Triumph, 1912, £34; Motococche 2-speed twin, £30; Scott, shop-soiled, £60; New Hudson and sidecar, £65; Triumph, 3-speed, £45.—At Colmore Depot, 31, Colmore Row, Birmingham. [X3062]

ACTUALLY Ready for Sale: Lightweight motor cycles—Connaught, 3-speed, £26; Regal 2-stroke, £26; Douglas, £10; another, £15; Velocette, £21; Lewis, £20; Simplex 2-stroke, £20; Enfield, £20; Sun (lady's), £36; Radco, £15; A.J.S., 2-speed, clutch, £28; New Rder, £18; Connaught, £20; New Hudson, 2-stroke, £22.—Colmore Depot, 31, Colmore Row, Birmingham. [X3063]



**FORWARD FASTENERS**  
Price 1/6 All Sizes  
LEATHER LINKS  
1/-



**KING HOOK FASTENERS**  
Detachable 1/- Adjustable 1/3  
LEATHER LINK  
10P



**CHAMPION FASTENERS**  
Detachable 9P Adjustable 1/-  
Roller bearings fitted

A more efficient fastener at either price cannot be bought. When ordering state size required.

**FORWARD MOTOR CO.,  
SUMMER ROW, BIRMINGHAM.**



## MOTOR CYCLES FOR SALE.

## Miscellaneous.

**EAGLES.**—Douglas, 2½ h.p., 1914, 2 speeds, free engine, kick-starter, new condition; £38.

**EAGLES.**—Triumph; 1913, 3½ h.p., T.T. model, hand controlled, Philipson pulley, fine condition; complete, £29.

**EAGLES.**—Wolf, 2½ h.p., 1914, overhead inlet valve, variable mag, fine condition; £17/10.

**EAGLES.**—Triumph, 3½ h.p., 1911-12, clutch model, N.S.U. 2-speed gear, with Montgomery £14/14 sidecar; £32.

**EAGLES.**—Trump-Jap, 4 h.p., 1913, 3-speed gear, foot clutch, kick starter, latest pattern coachbuilt sidecar; complete, £38.

**EAGLES.**—Imperial-Jap, 2½ h.p., 1915, 2 speeds, as new; £27.

**EAGLES.**—Levis, 2½ h.p., 1915, Popular 2-stroke, perfect condition, fully equipped; £21.

**EAGLES.**—Wolf, 2½ h.p., 1916, 2-stroke, as new, £23/10.

**EAGLES.**—Sun-Villiers, 2½ h.p., 2-stroke, T.T. handlebars, fine condition; £18/10.

**EAGLES.**—N.S.U. 3½ h.p. Model de Luxe, 1913, spring frame, 2 speeds, coachbuilt sidecar; £29/10.

**EAGLES.**—Any of the above can be had on approval "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton, W. [X3217]

**WALBRO.** Saffron Walden.—The following motor cycles must be sold; all are in very good order, some quite new; close offers considered:

**WALBRO.**—1915 2½ h.p. Coventry Eagle, 2 speeds, fine little machine; £28.

**WALBRO.**—1912 4 h.p. Bradbury, very powerful; £22.

**WALBRO.**—1915 2½ h.p. Coventry Eagle, single speed, little used; £24.

**WALBRO.**—1915 2½ h.p. Alldays Allon, 2 speeds, perfect; £28.

**WALBRO.**—1911 6 h.p. twin Rex, free engine model, in perfect order, good tyres; £14.

**WALBRO.**—1915 2½ h.p. Sun V.T.S., used twice only, perfect as new; £24.

**WALBRO.**—1914 6 h.p. T.T. Bat-Jap, overhead valves, 3-speed gear, in nice order, little used; £38.

**WALBRO.**—1911 2½ h.p. Douglas, in very good order, very fast, nearly new tyres; £15.

**WALBRO.**—1914 4 h.p. Bradbury, 3-speeds, and free engine, coachbuilt sidecar, a nice lot; £40

**WALBRO.**—Three Auto-Wheels, standard models; £7, £9, and £10; in new condition.

**WALBRO.**—Brand new 5-h.p. twin Fairfax engine set, Fairfax 2-speed gear fitted to crankcase, Matchless silencer, all complete; the lot ready to fit; £30.

**WALBRO.**—Brand new Canoelet sidecars, models C3 and D3, in stock, fitted free while you wait.

**WALBRO.**—Six used speedometers, 25/- and 30/- each, Jones and Stewarts; two new Corbin-Browns, for Indians, 40/- each.

**WALBRO.**—1916 4½ h.p. B.S.A., model K, been 50 miles only; £58.

**WALBRO** Cycle and Motor Co., High St., Saffron Walden, Essex. 'Phone: 45. [X3154]

**2-STROKE** Lightweights.—We have a stock and can offer delivery of Sun, Calthorpe, Diamond, Wolf, Levis, all models; cash or exchange.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0816]

**RIDER TOWARD** has Browns (2), Douglasses (2), New Hudsons (2), New Imperial, New Ryder, Allon, Motosacoche, Blackburne, Indian, James, Enfield, and others. See to-day's small advertisements. Open 9 p.m. and Sundays. Exchanges. 'Phone: 5392-78, High St., Hampstead (one minute tube). [7790]

**MUST** be Cleared; on munitions; room wanted.—£5 to £100.—For a real bargain in second-hand motor cycles, cycle cars, gears, magnetos, etc., you cannot do better than call or write Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham, who can positively save you pounds, shillings, and pence. At the moment we have Bat, Brough, B.S.A., Bradbury, Calthorpe, Chater-Lea, Dot-Jap, Enfield, F.N., Humber, Matchless, New Imperial, Peugeot, Rover, Rudge, Singer, Sun-Villiers, Triumph, Levis, Williamson, Wolf, etc.; several cheap sidecars; six 2-speed countershaft gears, new, £5/10 each. Lists free. Trade supplied. [0748]

## COMMERCIAL MACHINES.

**LONGMAN** Bros., King St., Acton. 'Phone: 1578  
Chiswick.—We are specialising in sidecarriers for tradesmen and commercial use. We are prepared to advise clients on the most suitable sidecarrier and machine for their requirements. Tuition free. Write, 'phone, or call for particulars. [7753]

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**MOTOR** Tricycle, differential axle, less engine; £2.—Whitcon, Shoemaker, Peasenhall, Suffolk. [7599]



Motor Cycles, New and Second-hand, for all purposes of pleasure or business, and the best pleasure Sidecars or business Sidecarriers for delivery work.

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## ALL DOUGLAS MODELS IN STOCK

whenever possible. Write us if you want earliest delivery. Also the following in stock:

WE HAVE	H.P.	
<b>SPECIAL</b>	6	Enfield Combination... 90 gns.
<b>FACILITIES</b>	6	Enfield Colonial Comb'n £89 15
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<b>FOR QUICK</b>	6	Enfield, dynamo, Com'n 105 "
<b>DELIVERY</b>	3	Enfield, Mod. 140 & 150 55 "
<b>OF SCARC</b>	5	Indian, Model B, 3-sp. £70 0
<b>1916 MODELS</b>	7	Indian, Model G, 3-sp. £75 0
<b>AND</b>	7	Indian, Model C ..... £78 0
<b>BUSINESS</b>		All Indian Sidecars in Stock.
<b>SIDE-</b>	2½	Calthorpe, 2-str., 2-sp. £32 11
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<b>CARRIERS</b>	4	Calthorpe-Jap Comb'n £70 7
<b>FROM</b>	2½	Excelsior, 2-stroke £30 16
<b>3 CWT. UP.</b>	2½	Excelsior, 2-str., 2-sp. £44 2
<b>TELL US</b>	2	O.K. Junior, 2-speed, £33 1 6
	2	O.K. Junior, 2-stroke £25 10
<b>YOUR WANT,</b>	2	" " " 2-sp., M.A.G. £42 10
<b>AND</b>	4	B.S.A., Model K ..... £62 0
	4	Levis Popular ..... £32 0
<b>RECEIVE</b>	2½	Diamond, 2-str., 2-sp. £38 17
<b>OUR OFFERS.</b>	2½	Diamond, 2-stroke .... £31 10

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NEW 1915 REDUCED AND SECOND-HAND MACHINES. THE BIGGEST VALUES ON OFFER.

2½ h.p. 1914	DOUGLAS, kick start	£38 0
8 h.p. 1915	HARLEY-DAVIDSON & S'car	£60 0
7 h.p. 1914	INDIAN, 2-sp., spring frame	£47 10
7 h.p. 1915	INDIAN Combination, electric, speedometer, spring frame, new f99, for	£88 0
5 h.p. 1916	INDIAN, 3-sp., used 40 miles	£59 10
2½ h.p. 1915	HOBART, 2-stroke, new	£31 10
2 h.p. 1915	O.K., 2-speed, new	£29 10
1915	ROYAL RUBY, 2-stroke, as new	£24 0
3½ h.p. 1915	Twin 2-sp. MOTOSACOCHE, new	£48 0
3½ h.p.	HUMBER and Sidecar	£28 10
3½ h.p.	TRIUMPH, 2-speed	£20 0
1916	ENFIELD 180 Combination, used few miles	£79 10
7 h.p. 1916	INDIAN Powerplus and Sidecar, as new	£79 10
3½ h.p.	EDMUND, spring frame	£40 0
7 h.p.	INDIAN and Sidecar	£45 0
3½ h.p.	B.S.A., 1913, 2-speed	£33 10
1915	SUN-VILLIERS, 2-stroke	£25 0
3½ h.p.	TRIUMPH, 2-speed	£20 0
3 h.p.	ENFIELD, almost new	£44 0
8 h.p.	WILLIAMSON and Sidecar	£70 0
3 h.p.	HUMBER and Sidecar	£28 0

## ALEXANDER &amp; CO.,

113-115, LOTHIAN RD., EDINBURGH,  
272-274, Gt. Western Rd., GLASGOW.

## SIDECARS AND FORECARS.

**B**ASTONE'S for value in sidecars.

**B**ASTONE'S.—New cigar pattern sidecars, complete with Michelin tyre, £7/10.

**B**ASTONE'S.—New coachbuilt latest undersnog sidecar, complete with Michelin tyre, £7/15.

**B**ASTONE'S Sidecar Dept., 228, Pentonville Rd., King's Cross, London, N. Close 6.30, Saturdays 1 o'clock. [6227]

**M**IDDLETON Sidecars.—27, Stroud Green Rd., Finsbury Park, N. [3633]

**S**IDECARS.—We have a model to suit any machine, including 2-strokes having 2 speeds.

**F**ACTORS who already have supplies of chassis will find it pays to fit our bodies, proof of which one customer of ours sold 100 this way during season 1915.—Write, T. Williams and Co., Sidecar Manufacturers, Collyhurst St Works, Manchester. [7857]

**P**HOENIX Sidecars and Phoenix Sidecar Bodies.—We are actual manufacturers. Established 1889.

**P**HOENIX Sidecars.—38 models to suit all motors. Write for list.

**P**HOENIX Sidecars.—1916 list now ready, immediate delivery; largest stock in London.

**P**HOENIX Sidecars.—100 complete sidecars always in stock; Harley and American models

**P**HOENIX Sidecars.—Coachbuilt from £8/5, wicker and cane from £5.

**P**HOENIX Sidecars.—We make special models for American motors from 11 gns.

**P**HOENIX Sidecars on Hire, exchanges made; good prices allowed for other makes.

**P**HOENIX Sidecars, second-hand. We have always a large selection from 50/-.

**P**HOENIX Sidecar Bodies.—Special line in coachbuilt from £2/5; own make.

**P**HOENIX Sidecar Bodies.—Guaranteed largest stock in London; several stock-soiled and clearance.

**P**HOENIX Sidecars.—Largest and most varied sidecar and body catalogue published.

**P**HOENIX Sidecars are manufactured throughout in our own works, originators of the Phoenix Trim forecar, popular throughout the world.

**P**HOENIX Sidecar Dept., Proprietors Phoenix Motors, Ltd., 736, Holloway Rd. and 4, 5, 6, Criterion Mews, London, N. Tel: Horsey 449. T.A.: Sycanix, Upholl, London. [2218]

**G**ROSVEGOR 12 go Coachbuilt Sidecar, luggage grid, like new, mileage 100 only; £8-21, Rupert St., Bolton. [7427]

**B**RAND New Grosvenor Sidecar; £9/10; suit lightweight—Sutton, 29 Holywell Lane, Conisborough, near Rotherham. [X3195]

**B**RAMBLE Sidecar, No 1, painted green, lined gold; cost 17 gns. two months ago, offers wanted.—Shayle, Great Alne, Alcester. [X3283]

**S**IDECARS.—Several bullet-shaped coachbuilt bodies, with or without chassis, cheap.—Write, Stokes and Holt, Ltd., Belgrave Rd., Leicester. [0718]

**D**DOUBLE-SEATER Can Sidecar, child front, special underlug, 4-point, Axon; cost £11, accept £6, nearest offer.—23, Westland Rd., Wolverhampton. [X3156]

**G**ROSVEGOR Sidecars, special sporting model lightweight sidecar for Douglas, and similar machines; £9/15. Catalogue free.—Grosvenor Motor Co., Bradford St., Bolton. [7574]

**S**ALE, 2-seater Sidecar, practically new, Woodbrowne cane body, B. and H. chassis, having wheel trough, and 4-point connections; £10.—Otty, Laurieston, Osmondthorpe, Leeds. [X3120]

**S**PECIAL Sidecars to suit American Excelsior and Harley-Davidson; Cape hoods 30/-, wind screens 17/6; splendid value in lightweight model at £8.—Melville Sidecars, Halifax. [X1034]

**W**ATSONIAN and Juno Sidecars, 9 models, immediate delivery; cash, prices from £6/13/6; gradual payments from 12/3 monthly.—Juno Showrooms, 248, Bishopsgate, London. [7823]

## BODIES.

**B**ASTONE'S for value in sidecar bodies, full range, latest models; inspection invited.

**B**ASTONE'S.—New cigar pattern bodies; £2/5.

**B**ASTONE'S.—New coachbuilt bodies; £2/19/6.

**B**ASTONE'S Sidecar Dept., 228, Pentonville Rd., King's Cross, London, N. [6228]

**C**AMBER Cigar Bodies, Indian red; £4/7/6.—Bright and Hayles, Church St., Camberwell. [7874]

**C**AMBER Tandem Bodies, for adult and child; £4/17/6.—Bright and Hayles, Camberwell. [7873]

**B**RAND New Coachbuilt Canoe Body; offers.—Langley, 100, Elgin Crescent, North Kensington. [7844]

**C**AMBER Coach Bodies; £3/12/6; lists free.—Bright and Hayles, Church St., Camberwell. [7872]

**C**OACH Bodies, latest; great sacrifice, 26/-; brand new.—Venus Sidecars Co., 746, Seven Sisters Rd., Tottenham. [3723]



## BODIES.

**COACH** Bodies, 2-seaters, 1916 bargains, 70/-, direct from Venus Sidecar Factory, 746, Seven Sisters, Tottenham. [7509]

**CONVERT** Your Old Sidecar to Coach Bodies from £47.5—Bright and Hayles, 73, Church St., Camberwell. [7875]

**COACH** Bodies made to any model; repairs, re-painting, re-upholstering; estimates free.—Venus Car Factory, Tottenham. [5594]

**SIDECAR** Bodies.—Coloured sketches of original designs and working drawings supplied; first-class work guaranteed.—Cooper's Vehicle Journal, Ltd., 19, Garrick St., Long Acre, London, W.C. Tel.: Gerrard 2425. [0818]

**250** Bodies always in stock. Practical 2-seater bodies, coach cigar bodies, 87/6; cane ditto, 52/6; wicker cigar bodies, 40/-; lightweight coach bodies, naderlung, beautifully finished, 55/-; featherweight bodies, 50/-—G.K. Sidecar Co., Lorenzo St., Pentonville Rd., London, W.C. [7503]

## RUNABOUTS AND CYCLE CARS.

**DUO** Cycle Car, 1912, in good order, 8h.p. J.A.P.; £27.—Jones, Garage, Broadway, Muswell Hill. [7291]

**MORGAN**, sporting type, J.A.P. engine, Bosch mag., lamps, horn; £45, guaranteed.—Wauchope's, 9, Shoe Lane, London. [7772]

**RILEY** Cycle Car, 3-speed, hood, screen; £50, offers; exchange 3-wheeler, or combination—9, Redcliffe Mews, Earl's Court. [7724]

**CYCLE** Car Back Axle, chain drive, differential, hand brakes, springs, wheels, nuded; £6/10.—Trevaylor, Obelisk Rd., Woolstou, Hants. [X3124]

**1914** Sporting Morgan, new hood, gears, and chain. acetylene lamps, tyres good, engine excellent. £65.—Broadbent, Collingham, Yorks. [X2876]

**BEDELIA**, 4hp., new condition; £25; seen Preston, Lancashire; or exchange with cash 1914 Morgan—Lieut. Cockshot, Orderly Room, Fishguard Harbour. [7575]

**SMART** Little Cycle Car, single, 2-seater, mag., Car, den shaft, 60 m.p.g., brass lamps, horn, etc.; £37, or exchange 2-cyl. or modern combination, cash adjustment.—C.W.L., 351, North End Rd., Fulham. [X2628]

**A.C.**, 6hp., lamps, hood, wind screen, speedometer, recently overhauled, re-painted, and varnished, nearly new tyres, very little used; will sell cheap, or exchange for motor cycle.—6, Alberta Terrace, Nottingham. [7883]

**TRUMBULL** 2-seater, 11hp., 4-cyl., completely fitted, including detachable wheels, used 700 miles only, owned and specially tuned by Brooklands expert; serious illness prevents use; cost £155, accept £115, or near offer.—Tollady, Hemingford, Bicester, Oxon. [X3245]

## CARS FOR SALE.

**4 1/2** h.p. De Dion Car, running order, make good cycle car; £9—13, Licacre Rd., Willesden Green. [7719]

**WAVERLEY** Light Car, must sell at once; what offers? photo, stamp.—65a, Rosendale Rd., Dulwich. [7743]

**TRUMBULL** 13.2hp. Light Car, brand new, late 1915 model; special reduced price, £125.—Crow Bros., Guildford. [7115]

**FORD** 5-seater Touring Car, in good condition; bargain, £56; part exchange considered.—Toms, Catherine St., Leicester. [7737]

## EXTENDED PAYMENTS.

**EXTENDED** Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618]

**INSURANCE**—Lloyd's motor policies payable monthly. Before insuring elsewhere write for prospectus to Manager, General Insurance Co., 193, Piccadilly, London, W. [0810]

## ENGINES.

**2** h.p. Motor Cycle Engine; 35/-—42, Ventnor Rd., New Cross. [7797]

**PRECISION** Engine Repairs and Spares.—Grandex Motor Cycles, 86, Gray's Inn Rd., W.C. [X2107]

**3 1/2** h.p. Brown m.o.v. Engine, good condition; £3/5.—19, Kimberley Av., Seven Kings, Essex. [7564]

**3 1/2** h.p. Peugeot, 80x90, automatic inlet; 30/-; good condition.—Rushop House, Chapel-en-le-Frith. [X3171]

**ENGINE**, 5-6hp. twin, and Bosch mag., £8/10; also 10hp. 1916 2-cyl. w.c. engine, as new, complete, £12.—65a, Rosendale Rd., Dulwich. [7740]

**BRITON** Engine, 10-12hp., 2-cyl., water-cooled, complete with Bosch mag., carburettor, flywheel and clutch; £19.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [6661]

## IGNITION APPLIANCES.

**BOSCH** Magneto, off Triumph, sale £3/5; one same, only watertight, £3/15; also twin £24, open type, £4; exchange—24, The Parade, Upper Tooting. [7829]

**MAGNETO** Repairs and all spare parts.—The Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester. [0715]

## OFFICIAL PRICES OF STANLEY BELT ACCESSORIES.

JULY  
6.

**THIS** week we interrupt our talks to emphasize the point, which does not appear to be fully understood in some cases, that the prices stated week by week in our advertisements are the prices at which you should be able to buy STANLEY goods. Do not pay more.

**The "STANLEY" FASTENER** as ordered by H.M. War Office. Used wherever motor cycles are used. The BEST at any price. Hardened and tempered hook and flanged pins. Never breaks. 9d.

**The "LION" FASTENER** Introduced to meet the demand for a CHEAP, RELIABLE BELT FASTENER. Guaranteed 5,000 miles. 6d.

**The "STANLEY" SPARE LINK** the best belt length adjuster yet invented. Saves time, trouble, any money. Saves the cost of a new belt: Fits any hook fastener. 1s.



Showing how the "Spare Link" is used.

**The "STANLEY" SHIELD** protects the belt fastener, prevents wear of the pulley, and conserves power. Specially designed for use with the Philipson Pulley. 8d



Showing how the "Shield" is used.

**Stanley Adjusting Links, 6d. for 3.**  
**Stanley Belting, 1/3 to 2/5 per ft.**  
(A Stanley Fastener given free with each Belt.)  
**10% increase on Belting only.**

Two interesting booklets sent on request.

## STANLEY MOTOR BELT & FASTENER CO.

(Inventors of the Original Hook  
Fastener and other  
practical Belt Aids).

(C. Webb, Manager).

**BROMLEY, KENT.**

Write Dept. B,  
Ruffy-Baumann School  
of Flying,  
London Aerodrome,  
Hendon, N.W.  
Phone:  
151,  
Kingsbury.

Write  
Dept. B,  
Ruffy-Baumann  
School of Flying,  
Kendall's Mews,  
Portman Square, W.  
Phone: 5046 Mayfair.

LEARN TO FLY

## IGNITION APPLIANCES.

**PARKER** and Rice, Magneto Specialists; experts on all magnetos, Bosch, Eisemann, etc.

**PARKER** and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

**IMPORTANT**—Parker and Rice give 12 months' written guarantee with each repair, and deliver magnetos to time.

**PARKER** and Rice have a large stock of spare parts for all makes and types of magnetos.

**PARKER** and Rice have some good new and second-hand magnetos for sale, which will be guaranteed for 12 months.

**PARKER** and Rice have taken over larger premises at Acton. Their address now is 75, Park Rd. North, Acton, London. Phone: Chiswick 1518. State your trouble. Let us quote you. [4605]

**SEND** Your Magneto Repairs to the Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Phone: 8266 City (3 lines). T.A.: Runmag, Manchester.

**REPAIRS**—The Runbaken Magneto Co., Ltd., have the largest and best equipped works in this country for dealing with this class of work. Moderate charges. Can return within 24 hours.

**SPARES** Department.—We can supply from stock all spare parts for Bosch, Eisemann, Mea, U.H., etc. Send for illustrated booklet.

**THE** Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Phone: 8266 City (3 lines). T.A.: Runmag, Manchester. Call or write. [0404]

**MAGNETOS** Repaired by Bosch specialists; skilful workmanship, expedition, and moderate charges. 1 and 2-cyl. magnetos in stock; every magneto guaranteed.—Magneto Mart and Repairing Co., 142, Wardour St., W. Phone: Gerrard 727. [7584]

**MAGNETO** Repairs of Every Description. We have had some years' experience with the Bosch Co., and are entirely British, and give same guarantee at half their prices in 24 hours. We stock all spare parts, also new and second-hand magnetos.—The Magneto Repairing and Winding Co., 158, Seymour St., Euston, London. Phone: Museum 1158. [7547]

## BELTS.

**ZILLA** Belt, 7ft. 8in., new March, used very little; 10/-—Fuller, Malton, Yorks. [X3082]

**19** 16 Belts, best makes, sent on approval, post paid against cash; 6ft. 6in. x 1/4 in. 7/-, 7ft. 6in. x 1/4 in. 7/6, 7ft. 6in. x 1/2 in. 8/6, 8ft. 6in. x 1/2 in. 8/6, 7ft. 6in. x 1/2 in. 9/6, 8ft. x 1/2 in. 10/-—Pitts' Stores, Redditch, Tel.: 91. [X291]

## TYRES.

**LEGGATE'S**, Edinburgh, for Tyre Valves.

**LEGGATE'S**, Edinburgh.—For great reductions in broad new clearance tyres. See below for approval terms. Prompt despatch guaranteed.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 new pattern Clincher Dreadnought, 6-ply fabric, extra heavy, rubber-studded, beaded covers, 26x2 1/2 31/-, list £2; 26x2 1/2, to fit 2 1/2 rims, 31/6, list £2; 26x2 1/2 32/6, list £2.

**LEGGATE'S**, Edinburgh.—Clearance.—1915 new pattern Clincher de luxe, extra heavy rubber-studded, beaded covers, 26x2 1/2 21/-, 26x2 1/2 21/-, to fit 2 1/2 rims, 23/6, 26x2 1/2 25/6.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 new Clincher de luxe, beaded edge, 6-ply fabric, special heavy, rubber-studded covers, 26x2 1/2, for 2 1/2 rims, 27/6, list £1/16/6. A customer writes: "I have covered over 8,500 miles on one of your extra heavy Clincher De Luxe tyres fitted on my Triumph. It is the best value I have ever struck."

**LEGGATE'S**, Edinburgh.—Standard 1916 Clincher Dreadnought, 3-ribbed, 6-ply fabric, beaded covers, 650x65 39/9, 700x80 44/9, 700x80 for 650x65 rims 44/9, specially made for voiturette rims of extra powerful passenger outfits and light cars. A customer writes: "Your 700x80, for 650x65 rims, is truly marvellous value."

**LEGGATE'S**, Edinburgh.—Standard 1916 Dunlop 4-ply, extra heavy, rubber-studded, beaded covers, 26x2 1/2 37/9, 26x2 1/2 39/-, 26x2 1/2 for 2 1/2 rims 40/-, 26x3 for 2 1/2 rims 40/9, 650x65 41/-.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 extra heavy, 4-ply, rubber-studded, beaded covers, 28x2 1/2 (for Indians) 31/-, list 41/3; 28x3 (for Indians or Harley-Davidsons) 33/-, list 44/-.

**LEGGATE'S**, Edinburgh.—1916 Dunlop tubes, best quality, extra heavy, fully guaranteed, 24x2 6/6, 24x2 1/2 7/-, 26x1 1/2 6/6, 26x2 6/9, 26x2 1/2 7/9, 26x2 1/2 8/6, 26x2 1/2 8/9, 26x3 9/6, 650x65 10/6, 28x2 9/9, 28x3 10/6.

**LEGGATE'S**, Edinburgh.—These goods are all brand new, and sent anywhere on 7 days' approval against remittance, cash refunded in full if goods not approved of.

**LEGGATE** and Co., Motor Cycle Specialists, 15, Slatford Rd., Edinburgh. Phone: Central 8693. [X2688]

**7/6** Allowance Guaranteed for old tyre towards newly all new motor cycle covers.—Particulars to Tailors'. Tyre Stockists, Store St., London, W.C. [0626]



## TYRES.

**ECONOMIC.**—Free. We present where stated below a fully guaranteed Simms plug.

**ECONOMIC.**—Commercial users note. We are prepared to quote special terms for business purposes. Send requirements.

**ECONOMIC.**—Kempshall clearance non-skids, 26x2 1/2 30/-, specials 32/6, 26x2 3/8 35/-, 26x2 1/2 40/-, 26x3 for 650x65 52/-, including plug.

**ECONOMIC.**—Kempshall clearance deepened tread 26 x 2 1/2 anti-skid, 23/-; special for Douglas and 26 x 2 rims, including plug.

**ECONOMIC.**—Kempshall clearance anti-skids, 26x2 18/-, 26x2 3/8 oversize 25/-, 26x2 1/2 27/-, 28x2 3/8 27/-, 28x3 30/-, including plug.

**ECONOMIC.**—Kempshall 28x2 1/2, 2 1/4 special racing cover, for Indians, 25/-; as used in the T.T. races.

**ECONOMIC.**—Clincher 24x2 heavy 4-ply De Luxe, 17/6; 26x2 1/2, 2 1/4, 6-ply Dreadnoughts, shop-soiled only, 37/6.

**ECONOMIC.**—Continental, 26x2 1/4, wired, oversize for 26x2, 10/6; heavy studded ditto, 17/6.

**ECONOMIC.**—Continental Model de Course, 26x2 1/2, 2 1/4, oversize, 23/-, listed 35/-; including plug.

**ECONOMIC.**—Large numbers of odd 26x2 1/4 and 26x2 3/8 covers from 7/6 to 17/6 to clear.

**ECONOMIC.**—Continental 26x2 1/4 steel stud combinations, 36/-; basket pattern, 26x2 15/-, 26x2 1/4 16/-, 26x2 3/8 17/6.

**ECONOMIC.**—Special clearance of 26x2 1/4 Wood-Milne covers, special rubber studded 20/6, listed 31/6; special grip ribbed, 25/-, listed 39/-, including plug.

**ECONOMIC.**—Wood-Milne 28x2 1/4 Grip-ribbed specials 16/6, listed 31/9, extra heavy 21/-, listed 39/-; including plug.

**ECONOMIC.**—Wood-Milne 26x2 1/2, 2 1/4, oversize for 26x2 1/4, rubber-studded special 22/6, listed 32/9; extra heavy Grip-ribbed 27/6, listed 40/-; including plug.

**ECONOMIC.**—Wood-Milne, 28x3, for Indians, heavy grip ribbed 30/-, heavy grooved 30/-.

**ECONOMIC.**—Avon 26x2 Druids 15/-, 26x2 1/4 Invicta 16/-, 26x2 1/4 tricar 25/-, 26x2 3/8 27/6; free plug with tricar.

**ECONOMIC.**—Tubes, fully guaranteed, not clearance, 26x2 1/4 7/6, 26x2 3/8 8/6, 26x2 1/2 9/6; Continental, 28x2 1/2 2 1/4, 7/6, 650x65 6/-; Clincher, 24x2, 3/6.

**ECONOMIC.**—Enfield riders note. Continental, 650x 75, very heavy rubber studded, oversize for 650x 65, 27/6; special for driving wheels.

**ECONOMIC.**—Pedley Belts, latest pattern, fully guaranteed, 3/4 in. 1/5, 7/8 in. 1/8, 1 in. 1/11; 1 1/2 allowance for old belts.

**ECONOMIC.**—Clincher Flexis helting, 8 in. 6 in. x 1 1/2 in. 1/6, 7 in. and 7 in. 4 in. x 1 1/2 in. 1/3, Continental 7/8 in. 1/-, fastener free.

**ECONOMIC Tyre Co.**, 137, Lewisham High Rd., New Cross. Phone: New Cross 1393. Open till 9. [7318]

**BASTONE'S.**—Presents free a 3s. repair outfit to purchasers of Goodyear, Henley, Peter Union, and Michelin clearance covers, as below:

**BASTONE'S.**—Goodyear heavy rubber-studded covers, B.E., 26x2 1/4, 21/-, list 32/6.

**BASTONE'S.**—Henley rubber-studded covers, 26x2, 14/-, list price 30/-; 26x2 1/4, 16/-, list 32/-; 26x2 3/8, 18/-, list 33/-.

**BASTONE'S.**—Michelin standard heavy covers, 26x2, 16/6, list 29/-; 26x2 1/2 or 650x65, 19/6, list 36/6.

**BASTONE'S.**—Peter Union twin-ribbed heavy covers, 26x2, 19/6, list 29/3; 26x2 1/2, 26/6, list 34/3.

**BASTONE'S.**—Guaranteed red tubes, 26x2, 4/6; 26x2 1/4, 4/9; 26x2 3/8, 6/-; 26x3, 7/6.

**BASTONE'S.**—New 1916 Michelin covers (not clearance), beaded, 26x1 3/4 11/6, 26x2 14/9, 26x2 1/4 16/-, 26x2 3/8 18/-, 28x2 16/6, 28x2 1/4 17/-; also wired edge in stock.

**BASTONE'S.** 228, Pentonville Rd., King's Cross, London, N. Close 6.30 o'clock, 1 o'clock Saturdays. [6225]

**EXCEPTIONAL Offer for month only**, in order to advertise British made motor tyres and belts, absolutely new, direct from works, with makers' guarantee. We will supply any size tyre or tube at reduced prices. Agents wanted for Kempol, the famous petrol substitute.—Kemp's Rubber Works, Hardman St., Manchester. [7527]

## TANKS.

**TANKS** Repaired and Re-enamelled; 10/6.—Bright and Hayles, 73, Church St., Camberwell. [7876]

**TANKS.**—Tanks any shape to order, repaired, or enamelled; all-metal sidecar bodies; general sheet metal work; lists free.—Attwoods, 86, Rosebery Av., E.C. Tel.: Central 12445. [5591]

## PATENT AGENTS.

**INVENTORS** Advised Free.—King's Patent Agency, Ltd., 165, Queen Victoria St., London. [5818]

**HENRY SKERRETT**, Chartered Patent Agent, 24, Temple Row, Birmingham.—Patents, trade marks, and designs. Motor patents a speciality. [0636]

A26 All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

# WANTED IMMEDIATELY

## GOOD SECOND-HAND OUTFITS

Solo or Combination.

Call with them if possible.

## CASH IMMEDIATELY on acceptance.

We pay carriage on machines sent for inspection subject to our asking for same.

The following

## NEW MACHINES

Delivered from STOCK:

ENFIELD, NEW HUDSON, B.S.A.,  
INDIAN, ALLONS, LEVIS, CAL-  
THORPES, NEW IMPERIALS.

## LAMB'S

151, High Street, Walthamstow,  
and 50, High Road, Wood Green.

Phones: Walthamstow, 169.  
Hornsey, 1956.



## ARMSTRONG & STURMEY GEAR REPAIRS.

Every part for every type of Armstrong motor gear actually in stock. Parts can be sent next post. Gears thoroughly overhauled and repaired. Urgent repairs in 12 hours.

Most Sturmeys parts in stock.  
**NO WAITING. COMPLETE STOCK.**  
Gears thoroughly tested before despatch by expert gear mechanics.

**COUNTY CYCLE AND ENGINEERING CO.,**  
The Gear Specialists,  
64, STAINES ROAD, HOUNSLOW.

## GARAGES.

**GARAGE.**—We can garage or store your motor cycle, or combination, or car.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7597]

**STORAGE.**—Owing to our taking over five additional premises as extensions to this garage, we are now able to store motors, not in use, at the following nominal charges: Motor cycles, 1/- per month; motor cycles and sidecars, 2/- per month; 3-wheeled cycle cars, 3/- per month; light cars (short wheelbase), 5/- per month; Ford cars 7/- per month, motor cars 10/- per month. For landaulets and extra long wheelbase cars there is a slightly higher charge.—Messrs. Green Taxis, Villiers Street Garage, Charing Cross, London. [6916]

## INSURANCE.

**FOR** Insurance of all kinds (specially motor), apply, Ernest J. Bass, Insurance Broker, Bishops Stortford. [0693]

**WHY** Pay Your Insurance Premium a year in advance when you can pay monthly without extra cost? Lowest rates for motor cycles. Before insuring elsewhere write for prospectus of Lloyd's Motor Policies payable monthly.—Manager, General Insurance Co., 199, Piccadilly, London, W. [7734]

## SITUATIONS VACANT.

**WANTED**, motor and motor cycle mechanics; good jobs to right men. No person on Government work need apply.—Apply nearest Labour Exchange, quoting No. A1959. [0819]

**PATTERN** Makers (wood) required for immediate Government work. Experience of high-class petrol motor work an advantage. Good wages and prospects, war bonus, and overtime. No man on Government work can be engaged.—Write, or apply in first instance to your nearest Board of Trade Labour Exchange, mentioning this paper and No. A2016. [7502]

## AUCTION SALES.

**WE** May Not go in sixpenny three farthing bargain sales, but we will put your motor in auction sale on commission basis.—Messrs. Green Taxis, Villiers Street Garage, Charing Cross, London. [6914]

## LOST AND FOUND.

**LOST** on Brockley Hill, 25th June, brown toolbag. Will gentleman on Indian who found same kindly return.—154, Church Rd., Willesden. [7670]

## WANTED.

**WANTED**, A.J.S. Motors, new; half profit to secure.—Cross, Agent, Rotherham. [X3227]

**PEUGEOT** Cylinder, 3 1/2 h.p., new or second-hand.—Smith, 67, Duncan Rd., Sheffield. [X3112]

**UNDERSLUNG** Conchbuilt Sidecar, cheap for cash.—12, Bream St., Old Ford, Bow. [7619]

**SCOTT**, 1914, perfect, cheap.—Write, Oughton, 15, Brownhill Rd., Catford, S.E. [7711]

**MAGNETO** wanted, also Grado or N.S.U. gear, for cash.—L1, 716, c/o The Motor Cycle. [7882]

**WANTED**, modern sidecar combination, cash.—35, Palmerton Rd., Forest Gate, Essex. [X3210]

**DOUGLAS** 1915 Silencer, complete.—Brown, 25, Ormiston Rd., Shepherd's Bush, W. [7571]

**WANTED**, good combination; state lowest spot cash.—12, London Place, Hackney, N.E. [7834]

**1915** Combination, 4 1/2 h.p. B.S.A., 6 h.p. Enfield, or Zenith.—4, Trinity Rd., Chelmsford. [7833]

**F.N.** Agent, to take up successful paraffin vaporiser.—Particulars, Burnett, Manse, Stonehaven. [X3075]

**WANTED**, Roc-Humber 2-speed wheel, 1911.—85, Trafalgar Rd., Moseley, Birmingham. [X3109]

**100** Motor Cycles Wanted; spot cash paid.—Bring or send, Palmer's Garage, Tooting. [7745]

**SIDEAR** or Chassis for spring frame Indian, cheap.—Mogridge, 33, Rodney St., Liverpool. [X3254]

**T.T.** Levis, Douglas, or Connaught; about £20.—48, Devonshire Rd., Orrell Park, Liverpool. [7573]

**WANTED**, motor cycle, Levis or Triumph preferred, cheap.—200, Montagu Rd., Edmonton. [X2881]

**GOOD** Second-hand Machine or combination for immediate cash.—46, Hillcrest Rd., Acton. [7755]

**WANTED**, heavy spring forks, 7 1/2 in. head, 1 1/2 in. stem.—90, Albion Rd., Stoke Newington. [7645]

**WANTED**, motor cycle, cheap; also push cycle.—E. May, Greyhound Lane, Streatham, S.W. [7861]

**NEW** Imperial-Jap, 1915 model, also Binks carburetter.—Glazebrook, Castle Rd., Kenilworth. [X3286]

**LIGHTING** Dynamo, small, Motosacoche type preferred.—Angus, Pitreave, Loughton, Essex. [X3081]

**ROLLO** Tandem Senter Variable Gearing Cycle Car, in good running order.—Box 579, c/o The Motor Cycle. [X3080]

**TWO** Magnetos wanted, single and twin, cheap; exchange.—24, The Parade, Upper Tooting Rd., S.W. [7828]

**INDIAN**, 1915, 3 1/2 or 5 h.p., perfect condition; cheap.—Tucker, Victoria Quadrant, Weston-super-Mare. [7666]

**1916** 6 h.p. Royal Enfield Combination, cash.—Particulars, Smee, Luther's Farm, Sewardstone, Chingford. [7718]



## WANTED.

- WANTED, good motor cycle, with speed gear preferred.—436, Whitehorse Rd., Thornton Heath. [7664]
- WANTED, 6h.p. twin, with speed gear, cheap for cash.—Saunders, Brockwell, Chesterfield. [X3213]
- MOTOR Cycle or Combination, recent model, lowest cash.—99, St. Stephen's Av., Shepherd's Bush. [7697]
- WANTED, motor cycle or combination, any condition, cheap for cash.—75, Telford Av., Streatham Hill. [X2878]
- WANTED, Whittle or Zilla belt, 7/16 in. x 8 ft., good condition; cheap.—37, Hamilton Rd., Walthamstow. [7676]
- 1915 or 1916 Triumph, B.S.A., or P. and M.—MacDowell, 5th Black Watch, North Camp. Ripon. [X3214]
- WANTED, combination, countershaft gear, about £50, not earlier 1914.—Myddelton House, Warrington. [X3228]
- WANTED, 1915 Indian, 5h.p., 3-speed, or 1914 T.T. Triumph.—Newham, 223, Hammersmith Rd., W. [7750]
- WANTED, Triumph cylinder, 1907, 3 or 3 1/2 h.p.; state full dimensions.—Minford, Hunthill Rd., Blantyre. [X3190]
- MOTOR Cycle, not earlier than 1914; exchange free engine Triumph and cash.—Rupert Smith, Thrapston. [X3248]
- WANTED, Auto-Wheel, with or without cycle; cheap for cash.—268, Lavender Hill, Clapham Junction, S.W. [7634]
- SHOULD You Wish to Buy, sell, or exchange a motor cycle, write W. Bunting, North View, Wealdstone. [7729]
- AUTO-WHEEL, any model, good condition, or low powered w.e. engine; spot cash.—65, High St., Beckenham. [X2871]
- WANTED, Sturmer 3-speed gear, with controls, also Triumph chain stays.—Mountain, 148, Church St., Grimsby. [X3117]
- WANTED, 2, 3, or 4-speed countershaft gear, kick-starter; cash waiting.—Morgan, 681, Fishponds Rd., Bristol. [7802]
- MOTOR Cycles and Chassis. Twenty wanted, cheap, out or repair.—Motor Repair Co., 740, Seven Sisters Rd., N. [7618]
- WANTED, good combination, new condition; state mileage and lowest price.—A. Hobbs, High St., Shepton Mallet. [X3101]
- WANTED, Douglas, Colonial, 3-speed, not later than 1915; must be perfect.—Pemberton, Jeweller, Gt. Harwood, Lanes. [X3086]
- 2 1/2 h.p. m.o.v. Brown Engine (only), or cylinder and 4 piston, in good condition.—59, Church St., Shirley, Southampton. [X3046]
- WANTED, A.J.S. Sunbeam, Zenith, or Triumph, 1915 or 1916; cash waiting.—Willson, 22a, Princess St., Mayswater. [7863]
- WANTED, A.J.S., Enfield, Sunbeam, Harley-Davidson, Douglas; spot cash.—Green, 7, Cromford Rd., Wandsworth. [7610]
- WANTED, motor cycles, cash waiting.—Wandsworth Motor Exchange, Ehner St., Wandsworth Town Station. [X3281]
- WANTED, crankcase, for 7-9 h.p. Peugeot twin engine, must be in first-class condition.—Nichol, Hippodrome, Southend. [7744]
- SECOND-HAND Motor Cycles, purchased for cash. Send particulars and lowest prices.—Service Co., 292, High Holborn, W.C. [70479]
- DOUGLAS, 1915-16, T.T. model, perfect, for immediate cash.—Albert, c/o Leach Bros., Grocers, 23, Market Place, Kingston. [7795]
- MAGNETOS Wanted, especially Dixies, second-hand, any condition, for cash; best prices given.—Parrie, 13, Hardwick Rd., Chiswick, W. [7627]
- WANTED, rear cylinder for 6h.p. Enfield, 1912 model.—P. J. Robson, Blackhill Garage, Ritson's Rd., Blackhill (Co. Durham). [7716]
- WANTED, 3 1/2 h.p. free engine clutch, 1914, or later; must be cheap.—Palmer's, Motor and Cycle Engineers, Orwell Rd., Clacton-on-Sea. [7625]
- BRAMBLE No. 1 Model Sidecar, 26x2 1/2 wheel, good price given for one in good order.—Marriott, Market Sq., Wellingborough. [7811]
- 1915 Combination, 6h.p. A.J.S., Sunbeam, or Norton, good condition.—Particulars and lowest cash price, 47, Waterloo Place, North Shields. [X3083]
- WANTED, N.S.U. 2-speed gear, Philipson pulley, adjustable pulley, to suit Triumph.—E. Westwood, 1-3, Bradford St., Ancoats, Manchester. [7643]
- WANTED, good 4h.p. combination; exchange Calthorpe-Jap 2-speed lightweight, new last month, cash adjustment.—Bright, Owleshayes, Aylesbeare. [7852]
- MOTOR Cycles, combinations, light cars, bought for cash and sold on commission.—Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham. [X2560]
- DOUGLAS, T.T., 2 1/2 h.p., or single-cyl. Norton or Triumph, recent model, good condition; bargain.—Letters only to Potter's, Koh-i-noor House, Kingsway, London. [7589]

EVERY time you have a Beldam Retread you save nearly the cost of a new tyre—and the Retread usually lasts longer than the original Cover.

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## NEW 1916 MODELS ACTUALLY IN STOCK.

HARLEY-DAVIDSON, Model 16F, 7-9 h.p., 3-speed .....	£80 15
ROVER, 3 1/2 h.p., 3-speed .....	£66 10
HAZLEWOOD, 2 1/2 h.p., 3-speed .....	£65 0
CALTHORPE, 2 1/2 h.p., 2-speed .....	£37 16

## SECOND-HAND.

CLYNO, 1913, Combination, 5-6 h.p., 3-speed ..	£60
BRADBURY, 1912, 3 1/2 h.p. ....	£22
ENFIELD, 1912, 2 1/2 h.p., twin, 2-speed .....	£22
TRIUMPH, 1909, 3 1/2 h.p., and all accessories ..	£20
MATCHLESS, 1914, 7-9 h.p., Combination, 3-sp. B.S.A., 1915, 4 1/2 h.p., Combination, 3-speed ...	£70
FORWARD, 1912, 2 1/2 h.p. ....	£65
VELOCETTE, 1916, 2 1/2 h.p., 2-stroke, 2-speed ..	£14
DOUGLAS, 1913, 2 1/2 h.p., 2-speed .....	£32
DOUGLAS, 1914, 2 1/2 h.p., 2-speed .....	£33
NEW IMPERIAL, 1916, 2 1/2 h.p., 2-speed, as new A.J.S., 1916, 4 h.p., 3-speed, as new .....	£33
B.S.A., 1913, 3 1/2 h.p., 3-speed .....	£68
BRADBURY, 1912, free engine .....	£30
	£24

WRITE FOR FULL LIST.

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55, High St., OXFORD.

'Phone: 308.

## WANTED.

- WANTED to purchase, second-hand motor cycles, for spot cash; Douglas, Triumphs, B.S.A., Royal Enfields, and others.—Wauchope's, 9, Shoe Lane, London. [7773]
- LONGMAN Bros., King St., Acton. 'Phone: 1578 Chiswick.—We are in immediate need of machines: good prices paid. Rudge specialists; distance no object. [7754]
- WANTED, modern combination, about 6h.p., A.J.S., Sunbeam, Enfield preferred, must be in good condition.—J. Empson, Susans Rd., Eastbourne. [X3215]
- WANTED, good second-hand lamps, horns, speedometers, and other modern accessories.—Particulars and lowest price for cash, Service Co., 292, High Holborn, W.C. [0743]
- WE Have no bargain basement, but we will sell your motor for you on quite reasonable terms.—Messrs. Green Taxis, Villiers Street Garage, Charing Cross, London. [6915]
- WANTED, combination and solo mounts; good prices paid on up-to-date mounts. Call with them, if possible, or 'phone; cash on acceptance.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7658]
- RIDER TROWARD can accept several more motor cycles for sale; 5% commission; advertised, garaged, cleaned, insured, collected, free; no sale, no charge. New premises, 78, High St., Hampstead. 'Phone: 5392. [7791]
- GEO. SMITH, 283, Lavender Hill, Clapham Junction, are buyers of motor cycles, combinations, sidecars, speedometers, lamps, etc., for cash; write, bring, or send; good prices paid. 'Phone: Battersea 1271. [7140]
- WANTED, 1915-1916 powerful combination, single or twin, or Morgan runabout; give value in motor cycles, as advertised under "Miscellaneous Motor Cycles"—The Walbro Motor Co., Suffron Walden, Essex. 'Phone: 45. [X3152]
- WANTED.—Advertiser will pay good price for a 1914 or 1915 Douglas, must be in good condition; also modern combination, Enfield, A.J.S., or B.S.A. preferred; no dealers.—Box 11,671, c/o The Motor Cycle. [7315]
- WANTED, Bowden, Armstrong, Albion, N.S.U., Sturmer, or any good make of gear, also magnetos, carburettors, engines, frames, forks, tyres, or any motor parts, also Sturmer and Armstrong hub gear parts.—Firth, Woodbridge Rd., Moseley, Birmingham. [7721]
- SEND Your Motor Cycle to Palmer's Garage, Tooting, Wimbledon Station, L. and S.W. Railway, per goods or Tooting Junction passenger train. Cash offer will be telegraphed immediately on receipt of machine. Machine can be included in fortnightly auction without charge if offer not accepted. Reserve price may be fixed.—Sole address, Palmer's Garage and Motor Cycle Auction Rooms, 183, 185, 187, 189, High St., Tooting. [7746]
- EXCHANGE.
- F.N. Cycle Engine, for motor cycle Dynalite, complete.—King, Lisnora, Ireland. [X3123]
- RUDGE, 3 1/2 h.p., clutch, for 2-stroke, Allen preferred.—75, Kent House Rd., Beckenham. [7851]
- 1916 Aldays Alloo, 2 1/2 h.p., 2-speed, for late Rudge Multi, or combination.—19, Garton St., Leicester. [X3114]
- CYCLE Agent closed, exchange stock for motor cycle to value.—70, High St., Lye, Stourbridge. [X3108]
- POWERFUL Tandem Combination for lightweight ditto or sell £35.—Miss E. Holland, Eastry, Kent. [X3107]
- EXCHANGE Ford van, as new, late model, for combination and cash, or sell.—C.S., 497, Old Ford Rd., Bow. [7859]
- MATCHLESS, 1915, 6h.p., clutch model; and sidecar, for lower power solo, good make.—Riley, South Av., Stourbridge. [X3167]
- N.S.U. Gear, complete, for 3 1/2 h.p. single anti-clock magnetos, or sell cheap.—C. Buckley, 35, Beresford St., Camberwell, S.E. [7586]
- EXCHANGE.—Any make of motor cycle taken in part exchange for light cars.—Service Co., Featherstone Buildings, W.C. [70664]
- EXCHANGE Rec. 4h.p. F.E., H.S., Bosch, B. and H. fast machine, and cash, for 2-stroke, or sell £12.—Wiggin, Ipswich. [7899]
- 2 1/2 h.p. Twin Royal Enfield, in good condition, and 4 cash to £40 for first-class combination.—Walton, Dawson Sq., Burnley. [X3087]
- EXCHANGE New Household Furniture for 1914 or later 4 1/2 h.p. B.S.A. or Scott motor cycle.—Ashworth, Dursley, Glos. [X3212]
- 3 1/2 h.p. Rudge Multi, 1914, and coach sidecar, and 2 cash, exchange 2-seater car.—Deal, 23, Thornbury Av., Southampton. [7849]
- EXCHANGE Good Coachbuilt Sidecar, splendid condition, for Auto-Wheel, or what offers?—244, Dudley Rd., Birmingham. [X3151]
- WANTED, recent cycle car, or A.C.; exchange late 1915 Rudge Multi coachbuilt combination.—See Rudge column.—Gayford. [7854]
- EXCHANGE Your Present Mount for new model, good allowance.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [7731]



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## HIGH POWERED MACHINES.

1916 INDIAN Powerplus and Sidecar	£96 0
1916 INDIAN, 5 h.p., 3-speed	£70 0
1916 ENFIELD, 6 h.p., and Sc.	85 Gns.

## MEDIUM POWERED MACHINES

1916 A.J.S., 4 h.p., 3-speed	£76 0
1916 B.S.A., 4½ h.p.	£62 0
1916 NORTON T.T.	52 Gns.
1916 ENFIELD, 3 h.p., 2-sp.	50 Gns.

## LIGHTWEIGHTS.

1916 NEW IMPERIAL-J.A.P., 2-speed	£38 0
1916 LEVIS Popular, 2-stroke	£32 0
1916 LEVIS, 2-speed	£47 10
1914 DOUGLAS, 2-speed	34 Gns.
1915 NEW IMPERIAL-J.A.P., 2-speed, lamps; horn	28 Gns.
1916 LEVIS, very slightly shop-soiled	27 Gns.

## WHAT OFFERS for the following?

1916 MORGAN Sporting, complete.
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Biggest Motor Cycle and Light Car Dealers in the South.  
45 years' reputation. Phone 1024.

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EXCHANGE 1915 Calthorpe, 2-speed, 2-stroke, for recent 3½ h.p. machine or combination.—Newnham, 223, Hammersmith Rd., W. [7749]

EXCHANGE Stewart speedometer, trip, nearly new, for Grado, or N.S.U. gear, suit lightweight.—16, Charnock St., Bethnal Green, London. [X3113]

SIZAIR, 8 h.p., sporting 2-seater, mag., screen, lamps, accessories, complete, for good powerful combination, or £50.—14, Dodbrooke Rd., West Norwood. [7887]

EXCHANGE Rudge and Coachbuilt Sidecar or 6 h.p. twin Ixion for lightweight and cash.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [7730]

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2½ h.p. Bradbury, drop frame, footboards, B. and B. mag., runs well; bargain, £11/10, or give with cash for higher power.—Wilson, 85, Church Rd., Willesden. [7690]

TRIUMPH, 1910, 3½ h.p., good condition, and Rover, 3 h.p., low, coil ignition; wanted, light car or cycle car, or sell £16 and £8.—V.E.W.S., 160, Norwood Rd., W. Norwood. [7671]

MATCHLESS-J.A.P. 6 h.p. Combination, 2 speeds, twin belts, nearly new Stelastie tyres; exchange for cycle car, 3-wheel preferred, sell £48.—21, Grant Elms Rd., Bromley, Kent. [7572]

LATEST £20 Model Cabinet Hornless Gramophone, inlaid Sheraton style mahogany, as new; exchange (with cash if necessary) for motor cycle (private).—Box L1, 717, c/o The Motor Cycle. [7880]

WILL Exchange value in motor cycles (see advert. under "Miscellaneous Motor Cycles") for 1915-1916 combination, single or twin, or Morgan runabout.—The Walbro Motor Co., Saffron Walden, Essex. [X3153]

EXCHANGE 3½ h.p. Rex, Binks 3-jet, Bosch mag., spare tyre, all accessories, good condition, 3in. 3ft. gap bed screwcutting lathe, tools, accessories, treadle, and £10 for B.S.A. 4½ h.p. chain-cum-belt.—16, Queen St., Barnard Castle. [X3265]

3½ h.p. Erol, m.o.v., side by side valves, B. and B. carburettor, Simms mag., T.T. bars, spring forks, low frame, comfortable, fast, good running order; sell cheap, £14/10, or give with cash for geared machine, or 2-stroke.—Thomson, c/o Hinkley, Mill House, Wittersham, Kent. [7691]

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A J.S. Specialist.

A J.S. Repairs are my speciality.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [3555]

VALVES.—Nickel steel valves, any size, 4/6; per pair, 8/6.—C. R. Foster, Kirkstall Rd., Leeds. [0253]

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REPAIRS.—Motor Cycle Repairs, best attention.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [7596]

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TONGUE Welding Works, 174, Oldham Rd., Middleton, Manchester.—Sound work; reasonable charges. [4523]

FOR First-class Guaranteed Repairs to all makes of motor cycles call on Walter Matthews, Motor Cycle Repair Expert, 117, Suffolk St., Birmingham. [0820]

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FRAME Repairs and Alteration.—Special frames and tanks built, any designs; enamelling and plating.—A. Pilkington and Co., 54, Astor Rd., Birmingham. [6607]

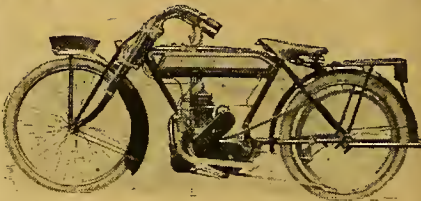
PISTONS, fitted with top and bottom step-cut rings, hardened steel gudgeon pin, and your cylinder re-bored and ground, 28/—C. R. Foster, Kirkstall Rd., Leeds. [0310]

SWIFT Cycle Co., Ltd., undertake the thorough repair and overhaul of any make of motor cycle at their large and well equipped repair works, 132-134, Long Acre, W.C. [7648]

1916

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A MACHINE OF PROVED MERIT AND HIGHEST VALUE.

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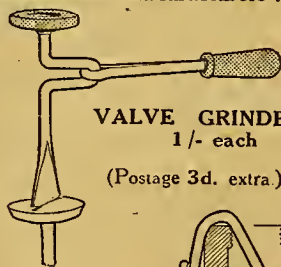
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AN INDISPENSABLE ADDITION TO  
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VALVE GRINDER,  
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Sole London and District Agents for—

**NORTON,  
ARNO, and  
OMEGA  
Motor Cycles.**

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1914 ROVER, 3½ h.p., T.T.	£38 0 0
1914 ENFIELD, 3 h.p., 2-speed	42 0 0
1913 DOUGLAS, 2-speed	32 0 0
1913 TRIUMPH, F.E., and Philipson	35 0 0

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1914 SINGER, Dynamo	£180 0 0
1914 LA PONETTE, as new. Cost over £300.	200 0 0
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**NOTE THIS PRICE**  
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It is the actual value of a motor cycle which I am offering for sale. The price will be reduced £2 10s. per week until sold. First cheque received in any one week secures the bargain, and the machine will be sent on appro. for two clear days, and can be returned if not as stated.

The machine is as follows:—

**ENFIELD 3 h.p. twin, 1913, two-speed gear, all chain drive, mechanical lubrication, tyres good, appearance, plating, and enamelling good; thoroughly overhauled and all mechanically sound, ready to ride anywhere.**

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'Sleuth' Motor Cycle Tyre is absolutely unbeatable at the price. It resists wear and gives satisfaction. Rubber-studded tread has about 3200s rubber backed with three-ly rubber proofed Egyptian canvas. Beaded edge. 26 x 2ins. 19/9 or 4/- monthly. 26 x 2ins. 21/- or 4/3 monthly. 26 x 2ins. 23/6 or 4/9 monthly. **TUBES**, 26 x 2ins. 5/9 26 x 2ins. 6/3 26 x 2ins. 6/6 Carriage Paid. J. G. GRAVES LTD., SHEFFIELD.

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**STURMEY-ARCHER and Armstrong Hubs** repaired by experienced workmen. All parts in stock. We do not keep you waiting for your repairs. Give us a trial. We quote you cheap, and guarantee our work. All hubs are given a road test before we despatch.—Jones, Garage, Broadway, Muswell Hill. [7895]

**CYLINDERS** Re-ground, fitted with pistons, rings, and hardened gudgeons; prompt delivery and moderate quotations; guarantee 3 months. Simplex steel pistons supplied to order. Valves, sprockets, timing gears, bushes, shafts, or crank-pins machined from patterns or sketched. Forged crankshafts or connecting rods supplied for Douglas or similar engines.—Norman and Bliss, Motor and General Engineers, London Rd., Hounslow. Phone: 227. [4318]

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**DOUGLAS Latest Handbook,** with price list of spares, 1/-, post free.—Below.

**DOUGLAS Spares,** huge assortments, all and sundry.—Robinson's Garage, Green St., Cambridge. [7708]

**ALBION Free Engine Pulley,** 45/-; 2-speed gear, 35/-.—Herbert, Nethergate, Dundee. [X3221]

**TRIUMPH Carburettor and Controls,** good order; bargain, 18/6.—55, Hercules Rd., S.E. [7603]

**ON Sale, Armstrong gear,** 3-speed, fitted in back wheel.—Islerwood, St. Paul St., Bury. [X3223]

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**TRIUMPH Spares,** pre-war stock, large assortments.—Robinson's Garage, Green St., Cambridge. [7709]

**EVEREST Carburettor and petrol pipe,** nearly new; 27/6.—Hazebrook, Castle Rd., Kenilworth. [X3285]

**LUKIN Carburettor,** cheap (practically new).—Bryant, Builder, Hartopp Rd., Saltley, Birmingham. [X3118]

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**MAC Carburettor,** just taken off 1915 Douglas, absolutely perfect; 11/-.—Jephson, Langdon Battery, Dover. [X3144]

**SPARKING Plugs.** Maxo electric horn, 26x2 1/4 Rich tube, decompressor.—Beardshaw, Auctioneer, Wood Green. [7642]

**BASTON'S.**—New Simms mechanical horns, list 25/-; clearance price 15/-.—228, Pentonville Rd., King's Cross, London, N. [6226]



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FROM 5/6 UPWARDS.

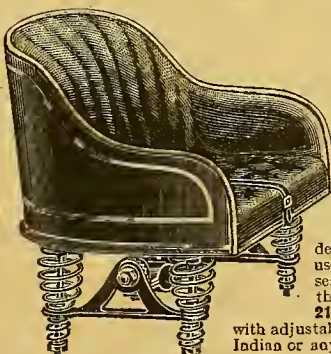
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The new Tynesider Carrier Seat folds up as shown above. Can be used for either passenger or fragile goods. A compact emergency seat. It is an ideal seat for light or heavy weights, sidecar combinations, and improves the appearance of the outfit. Mounted on a special spring attachment, it is self-balancing, absorbs road shocks, and adds to safety of carrier riding, while the spring rods work in guides on the principle of a piston—thus preventing sideways. All adjustable, and will fit any carrier. Price, complete with reversible cushion, 16/6; without the backrest, 12/6. Seat, complete with clips but without springs or backrest, 5/6. Tynesider Bucket-shaped Pillion Seats, from 15/6 to 35/6. Children's, 14/6, with safety strap.

## THE LAST WORD in MOTOR CYCLE SEATS.



The essence of comfort is the Tynesider Bucket Seat. Low position, surpasses pan seats, beautifully sprung, no sideways.

Can be detached and used as a Pillion seat. Cost less than a saddle. 21/- complete, with adjustable clip to fit Indian or any other cycle.

Without springs, 15/6. Better quality, 27/6. Superior quality, 36/6 complete.

Ask your dealer to get one for you.

**HENDERSON'S SEAT WORKS,**  
UNION STREET, NORTH SHIELDS, Eng.

**Leo-sco**

**TUBE SAVER**

A RUBBER band which fits between the tube and the rim. It saves the tube from rust, bolt heads, nips, and prevents cover from creeping. Cost 3/9 each. Saves you time, money, and trouble. Ask your Agent about it or write us

**LEO SWAIN & CO.**

**237 DEANSCATE MANCHESTER**

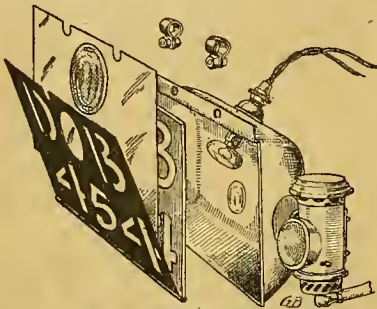


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The advantages of Wood's patent translucent Number Plates are as follows: They comply with the law, are always clear and legible, never require repainting, cannot possibly get out of order or broken as there is no glass in the construction. Are fitted with a Ruby rear sign. Sent ready for fitting, which can be done in a few seconds.

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## MISCELLANEOUS.

**ORTO** Wind Screens, Atkinson's patent; 30/-. An ingenious sidecar wind screen, vide "The Motor Cycle."

**HOODS**, wind screens, aprons, highest quality, lowest prices; price list gratis.—Atkinson's, 24, Arminger Rd., Shepherd's Bush, W. [7413]

**ARMSTRONG** Gears Repaired, or parts supplied promptly.—The Rotary Jointing Co., Regent St., Warrington. [5311]

**ROTARY** Metallic Paste for all screwed joints, 1/3 per tin; Rotary sheet jointing for cylinder to crank case joints, 1/2 sheet.—Above. [5311]

**BOSCH** Magneto, perfect, 75/-; B.E. carburetter, variable jet, 17/6; Grado gear, lightweight, 30/-. 193, High St., Tonbridge. [X3255]

**DOUGLAS** 1914 Carburetter, complete, 12/6; latest genuine Douglas T.T. bars, 7/6—32, Dartmouth Rd., Chorlton-cum-Hardy. [7856]

**OSBORNE** Variable Gear (used once), 35/-; wanted, 26x2 1/2 sidecar wheel, complete.—J. Billett, 2, Wyke Rd., Trowbridge. (11) [X3074]

**THE** Motor Exchange, 24, The Parade, Upper Tooting Rd., S.W., has following for sale, deposit system, open Sunday morning:

**26x2 1/2** Wood-Milne B.E. Steel Std Tyre, as new, 21; 26x2 1/2 B.E. front wheel, as new, 8/6; 26x2 1/2 B.E. back wheel and belt rim, as new, 12/6; Bosch DA2 magneto, single, anti-clock, 65/-; plated generator, Miller, 6/6; Phoenix coach sidecar, wind screen, new Lincolp, 26; 6-8 h.p. water-cooled Lincolp engine, 25; 3 h.p. m.o.v. Lincoln-Elk engine, perfect, 23; large stock new and second-hand tyres and tubes; U.H. magneto, for lightweight, anti-clock, 22/15; B. and B. carburetter, late type, for 3 1/2 h.p., 21; another, 15/- [7830]

**1/9** Post Free, new acetylene tail lamp, fix number plate.—Palmer's Garage, Tooting. Approval against remittance. [7043]

**SILENCER** Extension Pipes.—Circular adapter and tube, 3ft. in length, 5/9; supplied to fit all makes.—Hodges, Exeter Rd., Dawlish. [7674]

**WIND** Screens, 6 patterns, for sidecars, 19/6, 27/6, 30/-, 32/6; sidecar hoods, 33/6.—Juno Showrooms, 248, Bishopsgate, London. [7824]

**CLEARANCE** Sale.—Motor frames, tanks, variable gears, plugs, covers, tubes, wheels, etc., new; lists.—W. A. Gorton, Wolverhampton. [7480]

**BONA-FIDE** Agents send trade card for latest wholesale catalogue, cycle and motor cycle accessories; deliveries from stock.—Burslem, Oldham. [7479]

**RIDER TROWARD** has large stock second-hand lamps, horns, tyres, tubes, belts, and other accessories; lists free.—78, High St., Hampstead. [7792]

**HANDLE-BARS**, best quality steel, 10 gauge, stems 15 gauge, tops best plating, 12 patterns; 7/- each.—Juno Showrooms, 248, Bishopsgate, London. [7825]

**WANTED**, single magneto; sell 810x90 Dunlop grooved 20/-, Michelin 10/-. Breeze automatic car carburetter 15/-.—Norris, Underriver, Sevenoaks. [7736]

**PULLEYS** for any motor, Moto scoche 4/3, others 4/9, adjustable 10/6, plated, guaranteed; post free.—Perkins, 455, High Rd., Leyton. 'Phone: 248, Walthamstow. [7135]

**CALTHORPE** 1915 Gear Box, minus controls, 23/17/6; P. and H. lamp set, 21; Brooks belt and tube case, 6/-; Triumph Bosch wheel, 5/-—47, Newland Av., Hull. [X3263]

**LUMINOUS** Paint for wrist watches, clocks, matchboxes, etc.; remains luminous for years; bottles 1/6 and 2/9.—Tobin and Co., 39, Charles St., Hatton Garden, E.C. [7070]

**BANCROFTIAN** Co.'s Great Annual Sale.—Come and see us; we have the largest stock of accessories in London, and at unheard-of prices. Below are a few examples:

**TYRES**, clearance, but absolutely perfect: Clincher 650x65 light car, 21/-; 700x75 or 80, 22/6; studded 26x2 1/2, 16/6; 26x3, 17/6; Peter Union 26x2 1/2, 15/-; 26x2, 13/6; 26x2 1/2 Midland studded, 16/6; Hutchinson, Firestone, Dominion, and other makes equally cheap. Wired 26x2 1/2 and 2 3/4 Clincher studded, 16/6.

**TUBES**—Hutchinson clearance, perfect, 26x2 3/6, 26x2 1/2 4/3, 26x2 1/2 5/3, 26x2 3/4 4/6, 26x3 6/6; other makes equally cheap. Don't buy any tyres until you see us; we can save you money.

**WATERPROOF** Clothing.—Double-breasted heavy texture suit, complete, 21/6, as sold at 22/2; very best on the market as sold at 23/10, our price 38/6; dust suits, complete, 7/11; dust coats, long, 6/3; seamless trousers, heavy waterproof texture, 13/6; leggings from 4/6, and everything for motor cyclists at cut prices. Handle-bar watches with patent lock, 5/6, 10/- line. No lists.—Bancroftian Co., 64, Bishopsgate, London, E.C. T.A.: Chaikel, London. Tel. No.: London Wall 9897. [2989]

**VALVES**, high-class finish, 3% nickel steel, guaranteed, 3/6 each; piston rings, best quality, most popular makes, 1/6 each.—Juno Showrooms, 248, Bishopsgate, London. [7826]

**OILSKINS**, motor suits, handle-bar muffs, rain coats, for everything waterproof, send for list.—The Para Rubber Co., Waterproof Garment Makers, John Bright St., Birmingham. [X2458]



**I**NTO every Coverall for Motor Cyclists I make, goes not only my 20 years' experience as a tailor and cutter, but my long experience of actual riding. Just how much this means to you in the matter of an efficient really rain-proof, tailor-made coverall, is explained in my post free Booklet, with patterns.

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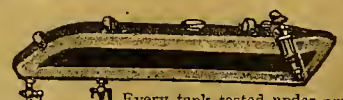
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Telephone: 219 Central.



## MISCELLANEOUS.

N.S.U. Gear, complete, 50/-; 26x2 1/4" butted tube, 5/-; 2 1/4" butted, 2/6; endless, 2/6; saddle, 4/-; Swan seat-pin, 3/-; girder forks, 4/6.—C. Buckley, 35, Beresford St., Camberwell, S.E. [7585]

ARIEL Motor Frame, £2; Indian pan saddle, 15/-; 24x2in. beaded cover, new, 10/-; 26x2 1/2in. ditto, 17/6; 1914 Auto-wheel, £8/10; new 650x.65 steel-studded cover, 35/-—Murray, 37a, Charles St., Hutton Garden, Holborn. [X3267]

MAGNETOS.—1-cyl. Bosch, DA2, 4/5; 2-cyl. Bosch, ZA2, waterproof, 4/15; several motor cycle lamps, generators, horns, speedometers, tool boxes, tools, mirrors, etc.; all goods on approval.—Smith, Ltd., 53, Museum St., W.C. [7798]

ONE 26x2 1/4" Dunlop Cover, beaded, mused, 12/6; wicker sidecar, 26in. wheel, wood sides, £3; Ridge adjustable pulley, 10/-; Lucas King's Own motor cycle lamp set, perfect, £1/5; 26x2 1/4" endless tube, new, 7/-; W. Jones, 64, Rhosddu Rd., Wrexham. [X3224]

BOLTS, nuts, studs, screws, spindles, cotter, washers etc., a most useful assortment, cycle, Whitworth, and metric threads; 5 gross assorted for 5/-; steel balls assorted, 1/4 to 3/4, 7d. gross.—Assets Auctions Co., Ltd., 129, Newington Causeway, London, S.E. [4870]

PHILIPSON Pinley, 45/-; Brampton gear, 30/-; N.S.U. gear, 45/-; Druids, 25/-; Binks 3-jet, 41/-; 1911-12 Arno ball bearing engine, Bosch mag., 26/-; pair 26x2 1/4" wheels, 15/-; 24x2 1/2" 7/6; 2 wicker sidecar bodies, 5/-; 7/6; tank, with fittings, 7/6.—Guinn, Carlton, Carlisle. [7851]

BARGAINS.—8ft. 2in. of 5/8in. x 1/4in. Renolds chain, 8/-; plate clutch, chain drive, 30/-; 5-6h.p. Rex cradle frame, spring forks, tank, wheels, etc., 60/-; 26x2 Hutchinson, 3/6; Lucas self-contained, 4/-; cylinders flywheels, pistons, handle-bars, tubes, cheap; exchanges.—Chalkley, 31, Carlton Rd., New Southgate. [7813]

2-SPEED Chain-cum-belt Gear Box, £3; 26x2 1/4" heavy Kempshall, new, 30/-; 3h.p. Ariel engine, 30/-; 3 1/2h.p. Ariel engine, 35/-; 3 1/2h.p. Humber 1911 cylinder, 3 1/2 h.p. T3 Quadrant cylinder and piston and rings, 25/-; 45/- Powell and Hammer lamp and generator, new, 30/-; 26x2 1/2" front wheel, 8/-; Wanted, 7/6in. Whittle belt.—349, Gloucester Rd., Bristol. [X3268]

MODERN Lightweight, complete, less unit and tank, 2 new tyres, 24; new frame for 4.5h.p., 30/-; frame with tank and wheels, 30/-; suitable 3 1/2h.p.; Minerva engine, 2 1/2h.p., complete and perfect, 30/-; Fafnir, incomplete, 15/-; B. and B. carburettors, 10/- each; Matchless bars, 8/-; sidecar luggage carrier, 9/-, cost 20/-; Rear wheel, complete, 10/-; numerous other parts.—Watson, Dawson Sq., Burnley. [X3089]

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GODDARD'S Ltd., Crown W'ks, Vicarage Lane, Ilford, Essex  
Telephone—880 Ilford.

From £3 : 5 : 6

Made in sections to bolt together. Made of well-seasoned tin. T and G. and V-jointed Matchboards, and complete with floor and window. New, illustrated list post free.

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Every Wednesday. ONE PENNY.

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All about Economical Motoring.

## MISCELLANEOUS.

BUTTERWORTH'S, Butterworth's, Butterworth's.—Minerva, 2 1/4h.p., m.o.v., vertical, new mag., complete machine, in good running order, low frame, clear at £7; M.M.C. 3 1/2h.p. engine, carburettor, saddle, frame, wheels, bars, tank, low frame, £2/10 lot; Carlton 3h.p. engine, 12/6; A.K. knee grip, 3/6; car steering column, new and complete, 30/-; light cycle car differential bevel and pinion drive, 25/-; two belt-driven back wheels and axle, suit one building cycle car, £1; Radco 1915 2-stroke lightweight, nearly new, and all accessories, including speedometer and tools, £20; 7/6in. Whittle belt, in splendid condition, 7/6.—Call after 8 o'clock evenings, or week-ends, on invitation work, Butterworth's Garage, 64, Mill Lane, Brixton Hill. [X3149]

DOUGLAS Pistons, 15/-; connecting rods, £1/7/6; crankshaft complete, £2/5; valves complete, 5/-; crank case, 1914, £2; crank case, 1915, £2/5; two Douglas magnetos, £3/3; pair of 1915 cylinders, £2 each; tappets, 3/6 each; tappets guides, 2/6 each; rings, 2/6 each. I have something of everything in the Douglas line. One 1911 cylinder, £1; Douglas gear box, £7/10; 1911 connecting rod, 10/-; 1910 piston, 5/-; a large quantity of Douglas cams and timing wheels, footrest pads, complete, 7/6 pair; one Stewart speedometer, new, 50/-; Stamp for replies. Midland covers, 26x2 1/4, new, 22/-; Hutchinson T.T., new, 22/-; Continental, 650x65, new, 25/-; Midland belts, 7ft. 6in. x 7/8in., new, 8/6; one new Watford speedometer, £3/10; sidecar outer cover, Clincher, 12/-; tube cases 3/6; belt cases, 4/6; belt and tube cases, 5/6; all new leather goods; wicker sidecar body, 5/-; tradesman's push-bike sidecar carrier, £2/10; Chemico vulcanising plant, cost £10/10, as new, hardly used, all necessary tools included, £7/10; 3-speed Armstrong hub, T.T. pattern, suit 3 1/2, 25/5; Strimmer-Archer 3-speed hubs, new J.A. and J.S., £10/10; Douglas valves, 5/- each. I carry a large stock of Armstrong spare parts, and can repair gears immediately, also supply parts by return.—Jones's Garage, Broadway, Muswell Hill. [7890]

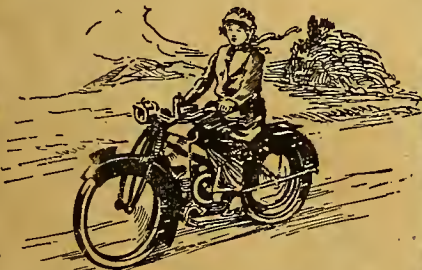
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**MEMO**  
To ensure insertion letters containing advertisements intended for these columns should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

## Ladies' Machines.

IN view of the increasing interest ladies are taking in the pastime, and in order that our lady readers may as readily as possible get into touch with those offering machines specially designed for them, we have instituted a special heading for advertisements relating to LADIES' MACHINES. See page 31 of this issue.

ADVERTISEMENTS for this column are accepted at the usual rate, viz.: first 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately, and name and address must be counted. "Copy" should be posted so as to reach us not later than first post on Friday mornings, and be addressed to "THE MOTOR CYCLE," 20, TUDOR STREET, LONDON, E.C.



**SEE WHAT  
YOU GAIN**  
By Using

**SIMPLEX  
BELT FASTENERS**

Greater security and freedom from Belt trouble, more pleasure from your riding, no time lost in Belt adjustment, and all the expense of fastener renewals saved over long periods, often more than the entire life of the machine.

THESE POINTS PLEASE ALL WHO MUST HAVE THE BEST, LIKE THE FRENCH WAR OFFICE AND THE THOUSANDS OF EXPERT RIDERS FOR WHOM WE SUPPLY THESE FASTENERS. YOU SHOULD TRY THEM.

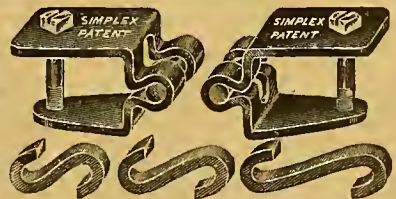
ASK YOUR DEALER. HE WILL RECOMMEND AND SUPPLY THEM.

Sold by Dealers Everywhere.

SIMPLEX ADJUSTABLE - 1s.  
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# THE MOTOR CYCLE

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## Sectional Motoring .. Maps ..

**C** Experience has shown that sectional maps are the most convenient for use on the road. The two maps described here have been prepared by Messrs. Bartholomew especially for the convenience of motorists. They are well printed, strongly mounted, and occupy very little space on the car. Military officers and other car users travelling in unfamiliar districts will find these maps of the greatest possible assistance.

Obtainable from leading booksellers and bookstalls,  
or from the publishers:

**ILIFFE & SONS LIMITED,**  
20, Tudor Street, London, E.C.

*The Autocar*

## Sectional Road Map of England and Wales

This consists of the well-known "AUTOCAR" Road Map of England and Wales, divided into 24 separate and loose sections, printed on stout cardboard, and with a key map on the back of each section. Scale 8 miles to the inch. Size of Case complete, 8in. x 9in.

Prices:	Net.	By Post
In Stout Waterproof Envelope	4/6	4/11
In Neat Cloth Case	6/-	6/5
In Solid Hide Case, with transparent front	12/6	12/11

*The Autocar*

## Sectional Road Map of South Eastern England

With special contour colouring. The area covered by this map embraces Luton on the North, Portsmouth on the South, Winchester on the West, and Broadstairs on the East. It consists of eight separate sections, on strong card, with index map on back of each section. Scale 4 miles to the inch. Heights are shown by contour colouring and distances between towns are plainly marked.

Prices:	Net.	By Post
In Stout Waterproof Envelope	3/6	3/11
In Neat Cloth Case	4/6	4/11
In Solid Hide Case, with transparent front	12/6	12/11



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ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Telegrams: "Motorcycle, Coventry."  
Telephone: 10 Coventry (five lines).

## Northern Offices:

199, Deansgate, Manchester.

Telegrams: "Hlf, Manchester."  
Telephone: 620 City.

Subscription Rates: Home, 6s. 6d.; all countries abroad, 10s. 10d. per annum.

UNITED STATES—The International News Agency, New York.

CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 139, Bay Street, Toronto.

AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).

NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin.

SOUTH AFRICA—Central News Agency, Ltd.

INDIA—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.

PARIS—Smith's English Library, 248 Rue Rivoli.

## Imports of Parts for Existing Machines.

THE prohibition of imports of motor vehicles and parts is placing manufacturers who use foreign-made engines or other parts in an awkward position. Cases have come to our notice where such firms ordered some time before the prohibition came into force certain important replacements from abroad, but the Department of Import Restrictions has refused to issue a licence for importations of the goods. In one instance, we know that there has even been difficulty over the importation of parts which were intended to replace stock which had been taken to fulfil urgent Army orders, but it is not likely that the objection in this case will be upheld. It seems, too, a somewhat harsh ruling that existing British-made machines having, say, foreign engines, must be laid up for want of some important detail owing to the refusal of the Department of Import Restrictions to grant a licence to import the goods. It goes almost without saying that users of motor cycles of foreign origin, whose agents may not have had the foresight or opportunity to lay in complete stocks, are likewise suffering whilst their machines lie out of commission. Of course, the obvious retort of patriotic people is that British goods should have been favoured, but then a man might reasonably reply that leading British firms have sold machines with engines minus a name, and it has not been clear to novices that the engine, or whatever it may be, hailed from abroad. We could quote numerous instances where manufacturers have studiously refrained from any suggestion that their machines were not entirely British made. In any case, from the foregoing remarks it would appear that the owners are to be made to suffer for having refrained from obtaining the fullest details of the origin of the machine they purchased. It may be that as time goes on the Department of Import Restrictions may not maintain such a severe

attitude and grant permission for the import of parts *intended for existing machines*, so as to cause a minimum of inconvenience to the assemblers of the machines and their clients. At any rate, that is our suggestion in order to minimise the inconvenience of manufacturers as well as users. The case is rendered all the more difficult, as engineering firms are too much occupied on munitions at present to make special replacement parts, and in any case this method is not a desirable one, for the making of special parts, singly or in small quantities, entails a waste of time and money out of all proportion to the results obtained, and the parts when produced are both more costly and less satisfactory than those supplied by the manufacturers of the engine, or gear or whatever may be the unit in question. We hope the matter will receive the attention it deserves.

## A Suggested Extension.

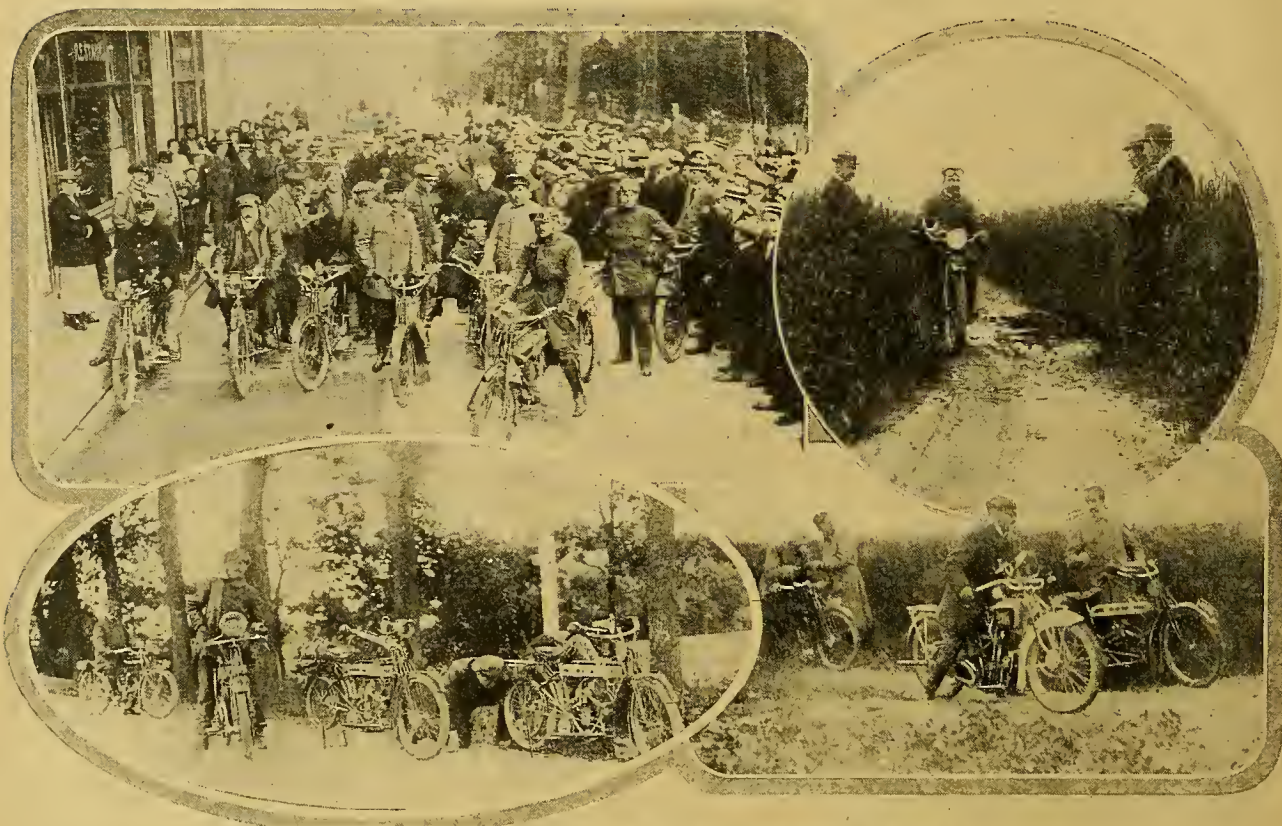
A precedent has been created by the proclamation gazetted last week, which announces that licences to import will be granted for replacement parts for vehicles intended for the conveyance of essential goods. The same proclamation permits the importation of spare parts for imported commercial vehicles which are already in the United Kingdom. It would prove a great convenience to owners of machines could licences be extended to the importation of parts for all existing motor vehicles, provided a suitable declaration is demanded.

We hope that this point will be duly considered by those in authority, for the matter is one of real importance to many. There has in the past been no inducement to riders, save individual patriotism, to purchase the British article, and all nations have been free to dump their produce upon our shores. It is, therefore, rather hard lines that those who have been encouraged by successive Governments to uphold free trade should be suddenly deprived of the use of their machines because Britain has at last awakened to her own interests.



## TRIALS DIFFICULTIES IN HOLLAND.

Our Dutch Friends hold another Motor Cycle Reliability Trial.



A DUTCH TRIAL—SCENES IN THE "THREE PROVINCES TOUR."

The control at Meppel. A Douglas rider suffers a puncture. There were many British machines in the trial.

A ticklish bit—negotiating the path through cornfields. "Coming through the rye."

**T**HOUGH Holland has remained neutral, the war has had a great effect owing to its geographical position in relation to the belligerent nations. Motoring and motor cycling, however, appear to be in a flourishing condition, and trials are held at intervals by the different clubs. These events have been referred to from time to time in *The Motor Cycle*, and we are now able to give some particulars of the most recent—the Three Provinces Tour of the Noord-Nederlandsche Motor Club.

Our Haarlem correspondent, describing this event, writes as follows: "Motor reporting is the most complicated form of journalism. In addition to the usual qualities, literary, artistic, poetic, which every reporter possesses, one ought also to be able to assist at small repairs between controls in record time, to be everywhere at the same time, to give a clear

account of what one sees (in this instance) of a 239 km. ride in seven classes, on fifteen different roads, with seven average speed limits. Your correspondent will advise the hiring of an aeroplane next time, offering his services as an observer!"

Of the seven classes three were for motor cycles, and there were thirty starters in the motor cycle classes. There was a separate route for each class, each route describing an irregular 8 through three provinces. The start was from Groningen at 7.30 a.m., and all classes finished in the early evening at Zuidlaren.

The motor bicycles covered 150 miles, the sidecars 135, and the cars 170. The routes took competitors through typical Dutch scenery, and one part of the course was through cornfields.

### 150 MILES TRIAL IN VICTORIA.

**F**ULL results are now to hand of the reliability trial held by the Victorian M.C.C. at Easter. The route was from Melbourne to Mortlake, and the event preceded the big 200 miles road race that we reported in our issue of June 22nd, page 590.

The weather was extremely bad, heavy rain falling most of the time. Bad climatic conditions are much more serious on an overseas trial than at home, owing to the unmade roads and their consequent rapid deterioration after rain.

Following are the complete results:

#### SOLOS UNDER 600 C.C.

1. { E. B. Murphy (2½ h.p. Douglas) } Tie
- { T. Purves (2½ h.p. Douglas) }
3. E. Holloway (¾ h.p. Rover)

#### SIDECARS UNDER 600 C.C.

1. A. J. Sutherland (¾ h.p. P. and M. sc.)
2. E. C. Roberts (4 h.p. Precision sc.)

#### SOLOS OVER 600 C.C.

1. H. Dickinson (7 h.p. Indian)
2. C. L. Ruck (7 h.p. Indian)

#### SIDECARS OVER 600 C.C.

1. J. Gunn (7 h.p. Indian sc.)
2. J. H. Rhodes (7 h.p. Indian sc.)

Gunn was the only man to lose no marks.

A Melbourne nurse, who is a keen motor cyclist, rode to Mortlake on her two-stroke lightweight, in order to be of assistance if necessary to any competitor hurt in the Victorian club's 200 miles race.



# NEATNESS IN LADIES' RIDING ATTIRE.

Latest Developments of the Striside Skirt.

THE developments of the past few years in the design of ladies' garments for motor cycling have been rapid. The symmetry and graceful appearance disclosed in the accompanying pictures would not have been dreamed of a few years ago. In one photograph we see a young lady garbed in a warm coat and skirt ready for a long spin on business. It is a serviceable hard-wearing garment, and the object for which it has been

The garment is the acme of simplicity, allows freedom of movement, and is suitable not only for use on a motor bicycle, but for the river and on the golf course. In one of these photographs the natural fall of the skirt (the Striside), the division of which is not noticeable, is clearly demonstrated. The mount is a single-gear Levis, though, naturally, for a lady's use the two-speed variety would be more suitable.

Now that the development of women's dress for motor cycling is receiving the attention it deserves, manufacturers should devote their attention to render-



Illustrating the suitability of the Striside skirt

for touring, visiting by motor cycle, or walking.

designed is at once apparent. In the last picture she is about to start on her daily errand of mercy. Note the apron tucked up ready to be let down for use in a moment as soon as the hospital is reached. It falls down over the divided skirt, the presence of which is not then detected.

ing their engines externally as clean as possible. Suitable clothing and well-guarded machines will greatly increase the number of lady motor cyclists. We are indebted to Mr. E. Harrison, 41, The Grove, Hammersmith, W., the seller of the Striside skirt, for these attractive pictures.

## A NEW COLONIAL MODEL NORTON.

MESSRS NORTON MOTORS, LTD., have in process of manufacture a new 4 h.p. model designed to suit Colonial requirements having a bore and stroke of 82 x 120 mm., 633 c.c. It is still in the experimental stage, and no machines can be supplied for some time to come, but it will appeal to our Overseas readers when it does appear.

Its chief features are increased clearance from the normal 4 1/4 in. to about 6 1/2 in.; this necessitates considerable alteration in the frame, most noticeable at the bottom bracket where the Sturmey-Archer three-speed gear box is carried, and at the head, which is of much greater depth than in the ordinary models.

The tank has been redesigned, but while it follows the usual Norton shape, the slope on the nose has

been reversed, and both the width and depth have been increased, giving greater petrol capacity (2 1/4 gallons). Mudguard clearance has been especially studied, and at all points so much space is provided between wheels and guards that it would seem impossible for them to become choked, no matter how bad the road conditions. The carrier has been enlarged and strengthened, and is of very substantial build. Engine details are practically as before. When certain other points have been decided upon, and the present conditions of labour, etc., which are causing delay, have been overcome, this model will be eagerly sought after by many motor cyclists Overseas, who know the splendid character and reliability of the Norton products.





### A Further Selection of Letters from Readers all over the World.

OUR June batch of letters from Overseas again brings us many letters from that enthusiastic motor cycling dominion, Australia. From many of the expressions scattered throughout these letters it is evident that new British machines, scarce at any time in the dominions, are now almost extinct. Many things lead to this state of affairs, the chief, of course, being that very few manufacturers are in a position to turn out machines at all, even for sale at home. We have heard of several instances where enterprising manufacturers have attempted to relieve this shortage and have succeeded in getting a few machines exported, but owing to the uncertainty of sea voyages at the present time quite a number of these mounts are now at the bottom of the ocean. This, of course, also does not help to increase the already small supplies. Many writers express regret that the American machines are getting such a hold in the Dominion, not only owing to the better facilities for obtaining spares, but also because the machines are in many cases more suitable for the road conditions. However, we feel sure there will be pleasant surprises for those Overseas riders who are patient and wait for the "after the war" British models. It is significant that of the four British motor cycles selected by the military authorities, and chosen specially owing to their proved road-worthy qualities when put to the most severe tests on English roads, three have had to be considerably modified to enable them to stand up satisfactorily when submitted to war zone conditions, and these conditions very closely resemble those encountered in the Colonies.

We select the following extracts from our Overseas mail:

#### A Novel Sidecar Wheel Stand.

Mr. H. SMITH, East London, South Africa: "I do not think underslung sidecar chassis are much good for this country, especially when off the main roads, as they are inclined to foul the tops of some of the humps. These roads are generally simply two deep cart ruts with a hump in between. When an underslung chassis is used this hump is quite useful for jacking the sidecar wheel up when a puncture has to be repaired, but has the drawback of stopping one's progress if the two wheels of the outfit get into the ruts at once. I have noticed that there is a great strain on the chassis, and some are very inclined to drop in the front."

#### Riding through Sand.

Mr. H. J. WRIGHT, Toowoomba, Queensland, Australia: "Am writing to thank you for so ably championing the cause of Colonials and those who have rough tracks and not roads to use their motors on. You ask in the issue of February 24th how we manage in sand. Well, I may say we class sand into two sorts—usually deep drift sand and that with intermittent lumps of rock, stumps, grass, and

so on. Most riders here, when coming to patches of loose drift sand that they know contain no stumps, etc., open up and rush it, putting as much weight on the front wheel as possible. The other sort—well, it generally means low gear and foot slogging. If you have not a low gear (fixed engine)—well, you usually hop off and run alongside as fast as you can; if you cannot run, it is 'push.' By heavens, if some of those British firms do not soon put on spring frames they are going to lose their business in these parts, and I am pleased to see that *The Motor Cycle* is taking this matter up so energetically. I myself have ridden a  $3\frac{1}{2}$  h.p. Triumph and a  $3\frac{1}{2}$  h.p. Precision (built in Melbourne). The Precision had Druid forks, Terry links, and large tyres, and was quite comfortable. Re spring forks, there is too much bounce and not enough shock absorbing. I have broken three front mudguards through the wheel continuously bumping back on to the head. Why does not some firm give us a fork with enclosed springs, similar to the Harley-Davidson and Rudge, and about 6in. play instead of 2in.?"

#### Popularity of British v. Foreign-made Mounts.

MR. DONALD FORREST, Te Aroka, New Zealand: "On reading your introduction to extracts from Overseas letters in January 6th number (which, by the way, is the current number here) I am tempted to answer your last paragraph.

"Yes, you see in these opinions the commencement of a waning of the popularity of British-made motor cycles in these countries, and it is only the patriotism of Colonials that is making the process as slow as it is. To take any good English machine and bump over these roads for thirty miles is often exquisite agony, yet the same road to an Indian rider seems quite all right. The longer spring frame, larger wheels, and 3in. tyres make all the difference between misery and comfort.

"As far as prices are concerned, I fancy that the American machine will soon command a higher price than the British

#### AN EGYPTIAN MOTOR CYCLING GROUP.



M. Bannounah sends us this photograph, taken in Cairo, of himself and his two nieces and nephews. The little girl on the left has since learnt to drive the Motosacoché, though she has some difficulty in reaching the controls



## Overseas Opinions.—

machine. To-day the Auckland agents are charging £95 for an Indian and Excelsior and £90 for many of the best-known British cycles.

"British manufacturers should foresee that if the Americans get a good hold of Australian markets it will take years and cost fortunes to oust them out again, whereas all that is required now to hold the market is a comfortable machine of good old British quality."

## British Quality Best.

"J.G.," Doll's Point, Sandringham, N.S.W.: "As a very satisfied subscriber to your paper for the last eight years, and having at heart the interests of Empire trade, I look with some apprehension on the growing American import of motor cycles. Reliable figures show how the Americans are cutting into the Australian market while Britain is unselfishly engaged in defending not only her own liberties but America's as well."

"I trust that English manufacturers will find means to bestir themselves, so that, in addition to filling the demand for munitions, they may spare attention to the urgent problem of retaining and extending their markets."

"It is particularly desirable that they should study Colonial requirements. What suits the Colonies will give superlative satisfaction at home; but what suits at home will very often be quite unsuitable out here. We want 7in. or 9in. under clearance, not merely for crank case but for everything—footrests, gear boxes, silencers, magneto platforms, front chain cases, kick starter, control wires—everything. The evidence I could give to support this would fill a long letter. We need larger wheels and tyres—at least 28in. x 3in. We need spring frames. We need American standards of service in spares, plus English standard in quality of goods, which America cannot pretend to approach."

## No Rain for Seven Months.

"A.M.O.," Broken Hill, Australia: "It may be of interest to your English readers to know that at present we are in this city paying 3s. 3d. per gallon for Shell and Plume benzine, and it is expected that the price will rise higher."

"The roads in this district are terrible, which is only to be expected, as we have not had rain for over seven months. We have also to pay very high prices for machines out here. Mine is a Blue Bell 3½ h.p. single, and cost £68 10s."

## Motor Cycle Useful to Farmer.

MR. A. T. STUART, Bredosdorp, South Africa: "You cannot imagine how useful a motor cycle is to a farmer. As you may know, we go in very largely for grain farming in this district. If one of the machines break, for instance, and an extra has to be obtained, much time is saved by going by motor cycle, when one can be back at work in a few hours, whereas if it is ordered by mail, a wait of two days and sometimes a week ensues."

## American Advertising in India.

MR. J. W. MURPHY, Sitarampur, Bengal: "I do not say that the American is not a good machine, but I do say that a British machine is better, and I have ridden both for years."

"The war, of course, may be the excuse of the British manufacturer for not letting us know here what he is selling, but before the war he was not doing his duty to the country in this respect. It is mostly English firms here who deal in motor cycles, and perhaps they get a bigger commission on American makes."

"There is very little solo riding done outside Calcutta, nearly every one going in for a sidecar. Even if they are single men they generally keep a sidecar attached and take a chum along. Again, the roads are not the ideal roads, and solo riding is accompanied with a certain amount of

danger, more so than at home. Your front or rear wheel may suddenly get into a sand pocket on the road, and unless you are an experienced motor cyclist you may come to grief. There are a hundred reasons which go against solo riding in India, but I have no time to jot them all down at once."

"I had no intention when I started this letter except to bemoan the lack of 'high explosives,' as shown by the dearth of advertisements respecting British motor bicycles. I do not know how my pen caught me napping and made me speak about solos and sidecars. I would like to see British motor bicycles advertised half as well here as, say, Beecham's Pills. It would pay the makers in the end."

## Australian Conditions.

"AUSTRALIAN," Annandale, Sydney, Australia: "Commenting on retail prices. My 4 h.p. Douglas outfit (without any extras), listed in England at £77, cost me £120."

"American machines are fast becoming more prominent—and why? They suit our conditions, and sell for a moderate price. English manufacturers must wake up to the fact that America is captivating the Australian market for the higher powered machines, and largely for the reasons given."

"I agree with other Oversea correspondents with regard to structural details. Our conditions require—(1.) Plenty of ground clearance. (A friend of mine, who rides an American machine, mounted my 4 h.p. English machine, and tried to turn at an angle, with the result that he broke one of my footboards and capsized with the machine.) (2.) Suitably sprung frame. (3.) Stronger rims and wider tyres. (4.) Wide mudguards without valances, and plenty of clearance between guard and tyre. (5.) Front fork attachments that will stand plenty of rough usage."

"No doubt the Great European 'Reliability Trial' will have as a result the production of machines that will suit Australian conditions. Let us hope so."

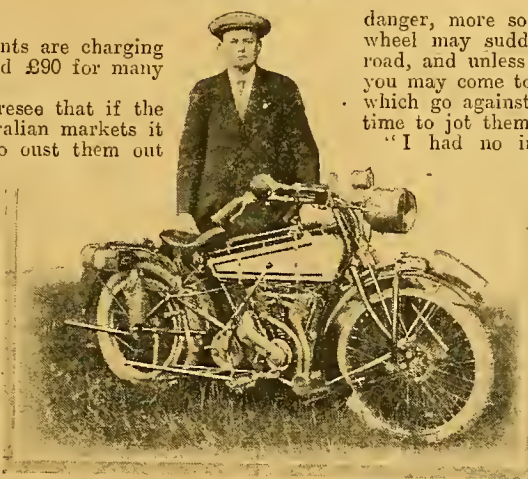
## A Lady Motor Cyclist in the Cape Province.

MISS L. HOPKINS, Cape Town, S.A.: "My mount is a lady's 2½ h.p. Douglas, on which I have travelled 8,000 miles in a period of two and a half years. My longest day's journey with passenger on carrier is 160 miles. It is a great pity there are not more spring frame machines. I think the general opinion out here is that the Douglas is the best lightweight, and, as regards sidecars, the Enfield and Indian run each other closely. There are about two dozen lady riders in this country. I consider I have been extremely lucky as regards breakdowns; not once have I had to train, and only twice have I pushed the machine, and then only a couple of hundred yards, owing to the chain breaking. I have travelled practically the whole of the above distance alone; in fact, the first 3,000 miles I rode the machine I had no one to accompany me. I have a fair amount of mechanical knowledge, and by careful study of 'Tracing Troubles' I had every confidence when I first ventured out on long journeys by myself. The motor cycle was so simple to learn that as soon as I got on the machine I was able to steer it, and after twenty minutes' tuition I rode home unaccompanied."

Men in the Services, either at home or abroad, may have "The Motor Cycle" sent to them regularly at the following rates, which include postage:

Home .. 6/6 per annum; 3/3 six months.  
Abroad .. 10/10, " 5/5, " "

Remittances, together with addresses in full, should be addressed to the Publishers, "The Motor Cycle," 20, Tudor Street, London, E.C.



Mr. J. Ferwerda, of the North Holland Motor Club. As many of our readers will remember, Mr. Ferwerda took a very prominent part in the Anglo-Dutch motor cycle *entente*. He is shown with his new Simplex, which is of Dutch manufacture. It is fitted with a twin-cylinder (64 mm. x 77 mm.) M.A.G. engine, combined chain and belt drive, kick starter, and three-speed gear. At a recent speed trial, held on a half-mile grass track, Mr. Ferwerda made fastest time in his class.





### The Consumption of Automatic Carburetters.

I recently remarked rather timidly that my own experiments pointed to the conclusion that automatic carburetters are extravagant in petrol. At the same time, my tests have been made with such a variety of engines that I rather threw out an enquiry than asserted a dogma; but a letter to hand from a trade reader confirms my speculation. He has recently tried out six different carburetters on a  $3\frac{1}{2}$  h.p. B.S.A. and sidecar, and the vaporisers which he employed were none of them genuinely automatic single-lever types, so that he has not tried the pattern which impressed me as remarkably thirsty. Nevertheless, his conclusions are as follow: Allowing for great pains and considerable skill in adjustment and fitting, the petrol consumptions registered with the sextet ranged from 55 m.p.g. to 80 m.p.g., and, without exception, the more sensitive the carburetter the greater the petrol economy. One of these two-lever vaporisers he describes as to all intents and purposes automatic in use, it being possible to keep the air lever wide open for practically the whole of the running; but his utmost efforts failed to procure a better record than 55 m.p.g. with it. At the opposite end of the scale he had no difficulty in securing 80 m.p.g. with the same load, the same road, the same conditions, when using the most sensitive carburetter of the six. This rather justifies the ancient sneer that an automatic carburetter is one which gives an imperfect mixture at all engine speeds.

### Two Corollaries.

On the other hand, the experiments outlined above are not conclusive against the automatic carburetter. They did not include a single car type carburetter; and many motor car vaporisers include, in addition to a multiplicity of jets and air intakes, an automatic petrol reserve, which enables the mixture to be kept thin during bursts at which engine speed is constant, by providing an emergency rush of petrol to enrich the mixture under sudden demands. These more complex designs may aid economy of fuel, though my personal belief is that they fail to do so. I have tried two such carburetters on motor cycle engines, and they both proved more extravagant of fuel than the semi-automatic motor cycle types, though they gave far better running. In the second place, my correspondent's tests did not include a multiple-jet type. The three-jet carburetter is at best only a compromise; it is an attempt to give perfect mixture at three arbitrarily selected engine speeds, *e.g.*, very slow, 20 m.p.h., and all out, coupled with a certain interaction and balancing of the various jets at intermediate engine speeds. The only three-jet which I have tried on motor cycle engines is the Binks, of which I am a great admirer; and I must except it from my accusations of extravagance. It requires care in tuning, but

when tuned up it usually improves the consumption no less than it extends the flexibility. Furthermore, the true multiple jets, like the Everest and the Wilkinson 12 jet, are stated by the few riders who know them to be very economical. I should therefore opine that the two-lever types are simple and admirable compromises, but are too simple to combine all the virtues; and that, if we want their virtues with real economy superadded, we shall have to advance into the region of multiple jets.

### Against Multiple Jets.

Whether such an advance is desirable remains an open question. Motor car engines provide no true parallel. The pilot jet of a 20 h.p. engine is huge compared with the pilot jet of a  $2\frac{1}{2}$  h.p., and is therefore less liable to choke. Again, the entire carburetter of a motor car is well sheltered under the bonnet, sucks in clean air, and is usually provided with a filter of generous dimensions. The motor cycle carburetter, on the other hand, is exposed to a great deal of dirt, and either has no filter at all or one of lilliputian size. Add to this an owner who may not understand anything about his machine, and so be incapable of the simplest diagnosis, and we cannot blame those designers who value simplicity above most other factors in a carburetter. Nevertheless, it is a fairly simple matter to conduct air to the carburetter through a pipe which will not admit dirt, and an even simpler affair to add a substantial and efficient filter. Therefore, if the multiple-jet carburetter ultimately proves to be the best, it can be standardised. In the meantime, there are certain carburetters so extravagant of petrol that I avoid them as I would the plague.

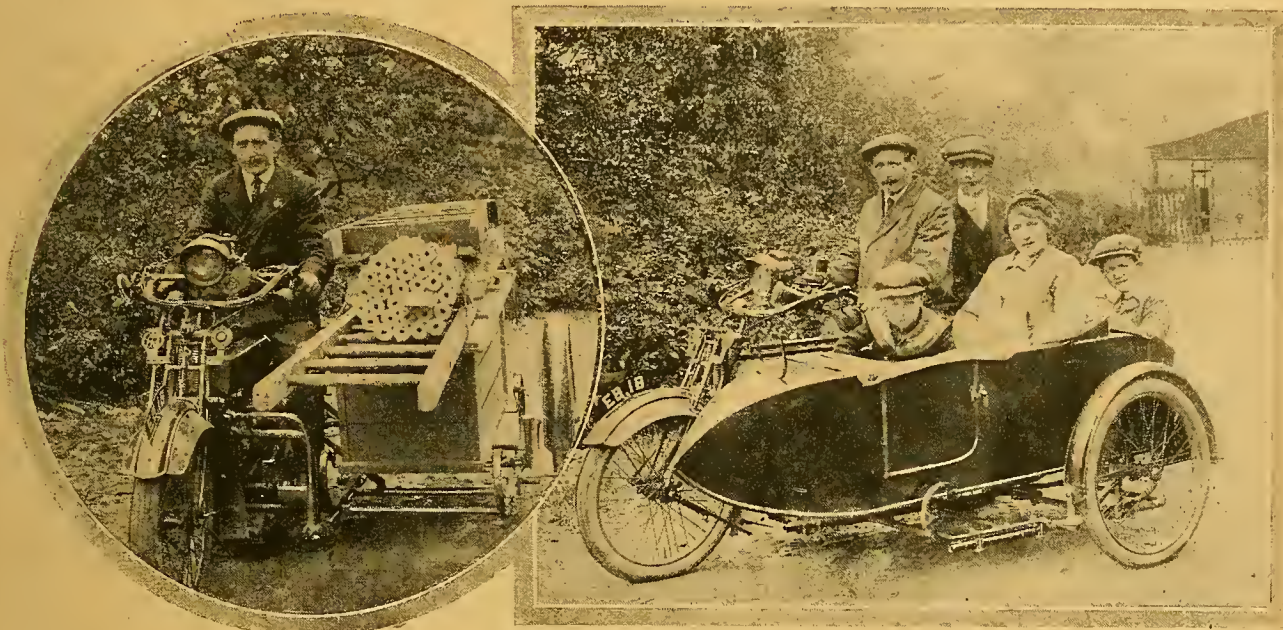
### The 1916 Douglas Engine.

I am one of the lucky few (outside Service men, *bien entendu*) who are running the latest  $2\frac{3}{4}$  h.p. Douglas, and it is extraordinary how each successive year brings an increase of power to this little engine. When I sampled its earliest model, I was frankly amazed at the plucky way in which it romped up long hills, and yet every spring since has added a new kick to it. The latest example is simply bursting with willingness, and rips away on top gear in astounding fashion; on a recent trip West, which included some fearful hills, I never found it necessary to drop below second gear. Moreover, the extra power is not attained by any sacrifice of flexibility, as sometimes happens. We all know what it is to rejoice on discovering that the 1916 edition of our pet  $3\frac{1}{2}$  h.p. can do 5 m.p.h. more than the 1915 edition; and presently to discover with a sigh that the slow running has been spoilt, or that the petrol consumption has gone up rather appreciably. But the new Douglas, possibly owing to carburetter improvements, is better at both ends of the scale; it can storm along in more masterful fashion than one expected; and eke it can tick like a sucking dove.



## Commercial Sidecarrier Reflections.

Much Already Done. More to be Accomplished.



### BUSINESS AND PLEASURE.

An 8 h.p. Coventry Excelsior owned by Edwin Bricknell, of Coventry. Mr. Bricknell uses it in his business of painter and decorator, and also for touring. It has proved an unqualified success, and since last August, when it was delivered, it has covered 4,000 miles. On the business box body 3 cwt. can be carried easily, and this load did not prevent the owner using his machine in the heavy snow of the early part of this year.

**I**N our last issue we produced a mass of evidence of the suitability of the motor cycle and sidecarrier for tradesmen's work, especially the rapid delivery of parcels. This applies with special force to those tradesmen, whether their shops may be in town or village, who have to deliver goods frequently to country customers. A sidecarrier can cover a given round in far less time than a horse and van; therefore deliveries can be made more frequently, with greater convenience to the customers, and more profit to the retailer. Evidence is reaching us almost daily of the increased popularity of the commercial sidecarrier, and we hear of it being used in what would seem the most unlikely trades. For instance, we illustrate herewith the outfit used by a paperhanger and decorator, which is shown carrying a ladder and steps, in addition to other trade requisites.

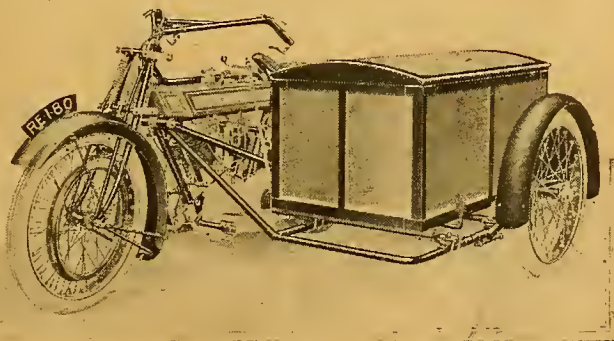
### Easy to Drive.

Every tradesman who adopts the sidecarrier should make a point of keeping careful accounts of all expenses; not only of running costs, but insurance, licences, and other incidental expenses. He will then have certain evidence that the sidecarrier is far cheaper to run and maintain than a horsed van. Another point is that a woman or girl, to whom it would be unsafe to entrust a restive horse, can drive a sidecarrier after a little practice, and drive it well. To obtain the best results the machines should be fully employed, but not overloaded, and kept in really good running order. With this object in view, a periodical overhauling is advisable. The most serious rival to the sidecarrier is a machine of the Auto-Carrier type of tricar. This

is not so speedy, but for some uses may be considered preferable in view of the fact that its load capacity is about double that of the average sidecarrier.

Doubtless in the near future manufacturers will devote much more attention to the sidecarrier; development will then be rapid, and we shall have vehicles eminently suitable for every trade.

An advantage of the sidecarrier that is often overlooked is that it is in itself a means of increasing a business. There are two reasons for this, the principal and most obvious being that by its adoption a business man's area of activity can be increased and more work done in a given time. Secondly, a smart motor vehicle with an attractive box body suitably lettered is a travelling advertisement in itself. It attracts attention, and so indirectly assists in bringing more customers to the owner's counter.



A typical British-built sidecarrier—the 6 h.p. Royal Enfield with delivery van body for 2-3 cwt. loads.



# RECREATION for WAR WORKERS

How a Lady Motorist is  
"Doing her Bit" in War-  
time.

**T**RAVELLING by train the other day I heard the question asked, "What are you doing in the great war?" and this question repeated itself over and over again to me until I fancied that it was intended for me personally.

What was *I* doing in the great war? What are a number of women doing who have homes and families to look after? Are we helping, are we denying ourselves, or working any harder to help our country and dear ones in this national crisis? Is it sufficient to feel we are sending our husbands, sons, and brothers to endure hardships in the trenches and battlefields? What can a woman with home ties do without neglecting her duties there? I cogitated over the question—in fact, it would not leave my thoughts—until a happy suggestion offered itself. *I* can help *those* of my own sex who are helping their country, and so do "my bit."

Therefore this is what I arranged.

Living in the Midlands, within thirty or so miles from the centre of munition manufacture, I am acquainted with numbers of the workers, who are toiling from morning to night in the big factories with little to brighten their lives. It was an easy matter to come in touch with several whose health was feeling the strain of confinement, and I felt sure they would do better work if for a short time their thoughts could be otherwise engaged and a healthy recreation offered them.



I am the possessor of a reliable and capable Royal Enfield sidecar combination, and journey to a munition works at midday on Saturday where, by arrangement, I meet a couple of workers and motor them through the busy streets to the quiet seclusion of shady lanes in Worcestershire and Warwickshire, where we partake of an *al fresco* lunch and get to my home in time for tea. After a rest and change, these busy people, who are out for a holiday (merely a short week-end), enjoy a real country meal sitting in a cool dining room with French window thrown wide open, through which the twitter of sparrows and robins and the song of the thrush and nightingale are heard.

Sunday is spent awheel, and the high roads shunned if possible, preference being given to the quietude of country lanes, when my guests delight in the fragrance of the flowers and trees of early summer, and the beauty of the fresh country side.

## Chestnut Sunday.

A recent trip was taken in the Cotswolds, and as it was "Chestnut Sunday," we chose the most appealing route where these magnificent blossoms could be seen in all their glory. Quite an early start was made, with lunch and tea packed securely in the locker under the seat of the sidecar, and the three of us wended our way towards Broadway. Parties of Royal Engineers were at work rectifying the damage done by the blizzard, and they must have been indeed busy to have got matters as ship-shape as they had in so short a time. Through the delightfully winding ascent in Broadway village we passed to the foot of the long hill, generally known as "Fish Hill." I secretly wondered how my Enfield would take the gradient, "with three up" and luggage, but the powerful engine never jibbed, and, knowing the district so well, I climbed the greater part "on top." We pulled up just past the summit on which stands the Fish Inn, and under the shade of some trees we were able to give assistance to another cyclist who had met with a puncture.

Motorists will do well to be wary in the districts where telephone and telegraph repairs are taking place, as nails and pieces of wire abound. My advice is to steer clear of the sides when possible. A turn to the right between a couple of stone pillars from which the gates have been removed brought our party through a



Big car, small car, and sidecar at Stanway.



**Recreation for War Workers.—**

series of fields into the picturesque village of Snowhill. The surface of these byways is fairly good, and the gates awkward, but the view is charming.

In the run from Snowhill to Ford we did not meet a soul, but at the old inn we encountered quite a bevy of motorists, some partaking of an appetising meal on the verandah.

**Lilies of the Valley.**

It may be interesting to motorists to learn that at a spot near Guiting Wood one is able to pluck, unmolested, quantities of wild lilies of the valley, whose blooms are as fine as those grown in any garden.

The fresh air was making us very hungry, so on reaching the woods on the top of Stanway Hill we dismounted and had lunch. How my guests enjoyed the home-cured ham, fruit tarts, and locally made cheese washed down with Worcestershire cider and gingerbeer, and so did I.

The drop down into Stanway village will long be remembered.

One overlooks the valley for miles, and the laburnum trees, which grow in wild profusion on both sides, were golden in their glory, the chestnut trees were lit up with their pyramid blossoms, and the scent of the hawthorn was wafted on the gentle breeze.

At Stanway a photograph was taken of the famous gateway designed by Inigo Jones, at the entrance to

Stanway House, the Gloucestershire residence of the Earl and Countess of Weymss, and here we were able to help a lady motorist who was in trouble with a big car. A little further we came in full view of the chestnut avenue on the Stanway estate. Its beauty is indescribable, the myriads of blooms, each in itself a

wonder, formed a picture never to be forgotten, and one which will remain in the memory of my guests as a bright spot during many a long tiring day.

It is surprising how much can be stowed away in a Royal Enfield sidecar, and my guests were astonished when I produced from its capacity a patent spirit kettle and stove, which will easily boil in a gale of wind, and a well-stocked tea basket. A cup of tea is always refreshing, but never before has one tasted so well as on this hot afternoon in such exquisite surroundings.

Still following by-lanes, we returned home *via* Toddington, Ashton-under-Hill, Elmley Castle, and Hinton Cross, and in the cool of the evening reached Evesham.

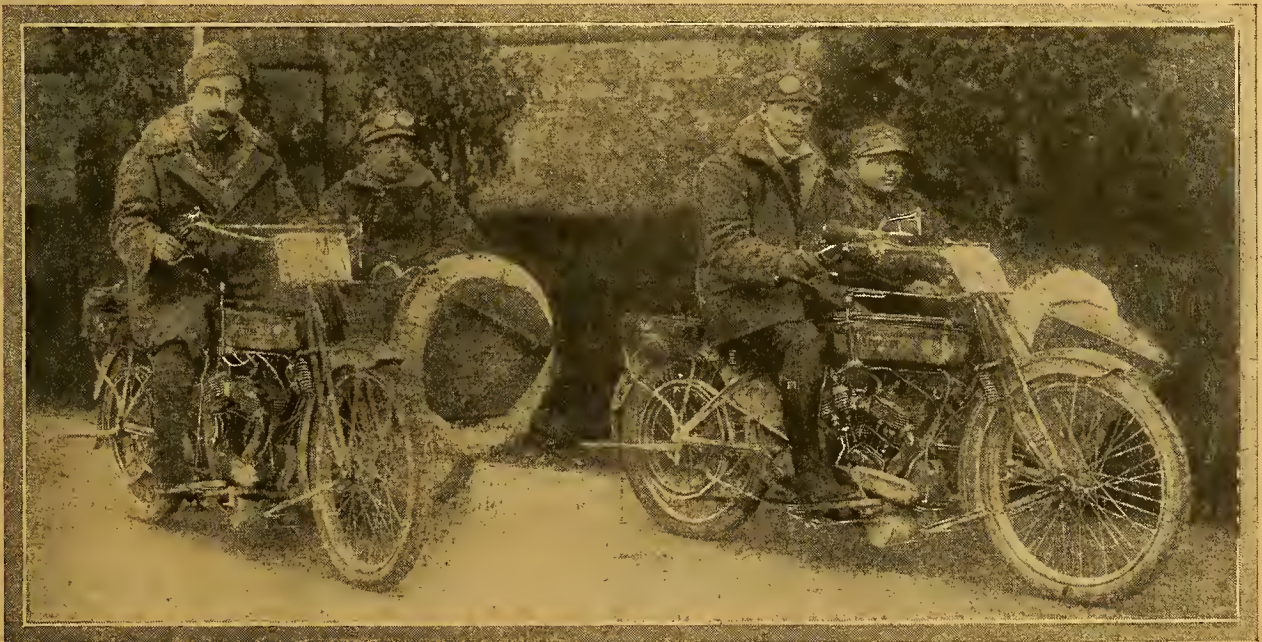
By quite an early start the next morning I took my war-workers back to their centre in time for business, and I felt with the aid of my staunch friend, the reliable Royal Enfield, I had not only given two indispensable munition workers a healthy recreation, but I had, in a way, done something to help the great war.

(Mrs.) M. HARTLEY-SMITH.



RECREATIVE AND RECUPERATIVE MOTOR CYCLING.

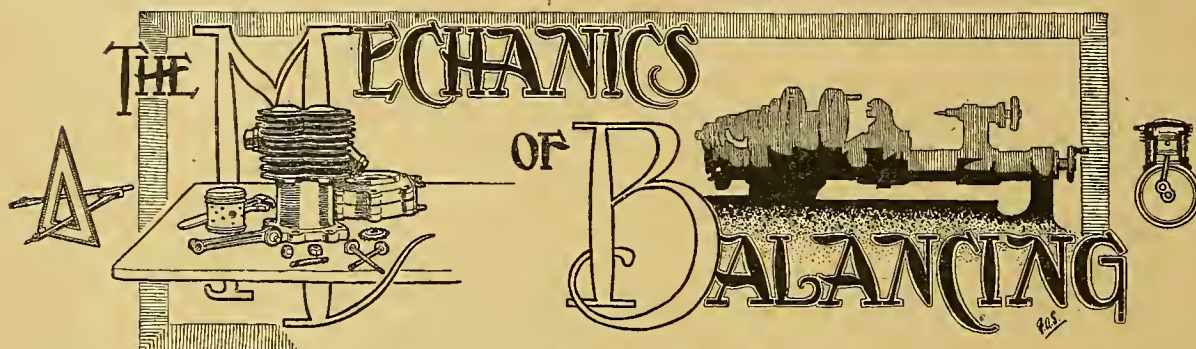
Taking women war workers for a sidecar run.



SIDECARS FOR THE ITALIAN ARMY.

A large number of single-cylinder Stucchi machines are being used by the Italian War Office, and now the 5-9 h.p. twin-cylinder model is being delivered. The illustration shows the two 6-8 h.p. outfits that underwent a 500 miles test in the war zone before being finally adopted by the War Office of our Ally.





By H. ADDISON, B.Sc., A.M.I.C.E.

IN THREE INSTALMENTS. (The first appeared on May 4th, page 422, the second on May 25th, page 486.)

THE question of balancing the horizontally-opposed twin is of particular interest, inasmuch as this class of motor cycle engine is the only one which can be literally perfectly balanced in every respect. Indeed, the engine is self-balancing, for at any moment one piston is travelling at exactly the same speed as, but in the opposite direction to, its fellow; hence the inertia effects set up completely neutralise each other without the necessity for any other balancing device whatever (fig. 8).

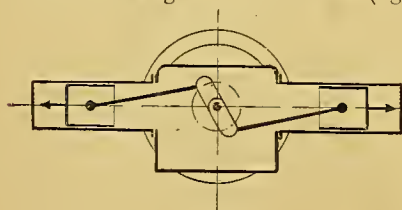


Fig. 8.

the engine in its usual form could not claim to be completely balanced. With the two-throw crankshaft generally employed, it is not practicable to arrange the cylinders co-axially; one of them is offset with regard to the other, consequently the inertia forces, although equal in magnitude, do not act in the same line. The result is that an "unbalanced couple" comes into play, tending to twist the engine about a vertical axis, as shown by the arrow in fig. 9 (a). Actually the

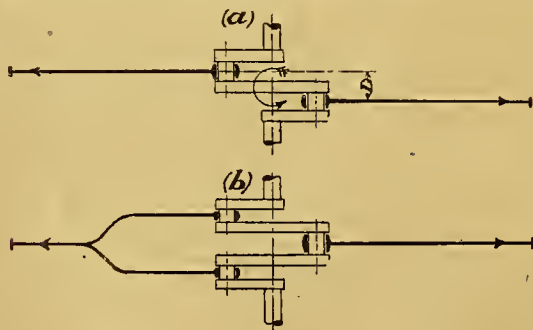


Fig. 9.

effect of this couple is quite unobjectionable; but it is possible to eliminate it entirely by using a forked connecting rod and a three-throw crankshaft, thus permitting the cylinders to be placed in line, as in fig. 9 (b).

#### The Ideal Engine.

From the practical standpoint the discussion of the horizontal twin might be left at this stage, but as

another step will bring us to the motor cyclist's ideal, the *completely* balanced engine, a few further remarks may be of interest. So far it has been assumed that the whole of the weight of the connecting rod is concentrated at the crank pin and at the gudgeon pin; no case has yet arisen where anything like complete balance is attainable, and so the slight error involved in this assumption is entirely negligible. Under the true condition of affairs, however, it may happen that on account of the oscillations of the rods about their respective gudgeons, a disturbing couple is introduced as shown in fig. 10, the inertia forces  $R$  tending to rock the engine about the axis of the crankshaft. Even this disturbance, trivial though it is, can be removed if the metal



Fig. 10.

in the connecting rods is distributed so that the "centre of percussion" of the rod, when the rod is swung about the centre of the small end, lies exactly at the centre of the big end. This condition is fulfilled if, when the rod is swinging freely about the centre of the small end, its oscillations just keep time with those of a simple pendulum having a length equal to the distance between the centres of the rod (see fig. 11). For this purpose a "simple pendulum" may be taken to mean a small metal ball suspended from a piece of thread.

To sum up, then, a twin horizontal engine would be perfectly balanced in every respect if (i.) the cylinders were arranged co-axially, as in fig. 9 (b); (ii.) the working parts of one cylinder were precisely equal in weight to the corresponding parts of the others; (iii.) the rods fulfilled the condition laid down above as regards the position of the centre of percussion; (iv.) the crankshaft were accurately balanced. None of these requirements are at all impossible of achievement, and consequently it is quite a practical proposition to construct a motor cycle engine which would run with as little vibration at 3,000 r.p.m. as at 300 r.p.m.

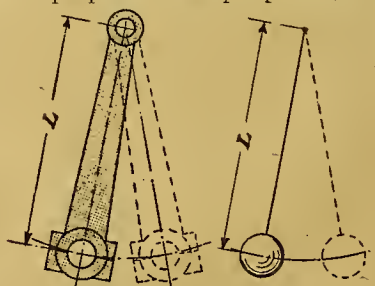


Fig. 11.



## The Mechanics of Balancing.—

**Balancing a Side-by-side Twin Engine.**

In this type of engine the axes of the cylinders are parallel one with the other, the crank pins being set at  $180^\circ$  (fig. 12); hence when one set of reciprocating parts is at the top of its stroke, and so exerting its maximum upward inertia force  $P_T$ , the other set is at the bottom of its stroke, thus exerting its greatest downward pressure  $P_B$ . Consequently the total unbalanced force will be  $P_T - P_B$ , that is,

$$P + P \times \frac{R}{L} - \left( P - P \times \frac{R}{L} \right)$$

which equals  $2 \times P \times \frac{R}{L}$ . Expressed in words, this means that the primary force of one cylinder exactly

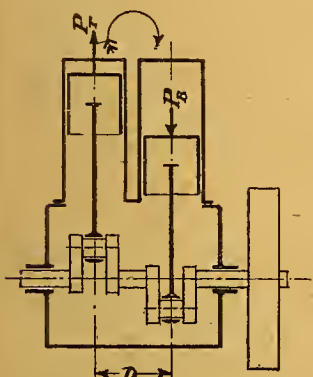


Fig. 12.

neutralises that of the other, leaving an unbalanced secondary force equivalent to twice the maximum secondary force of one set of parts. The engine as it stands is, therefore, as well balanced as is possible, for, as we have already seen, no system of rotating balance weights will counteract the effect of the secondary forces.

In addition to the unbalanced force, there

will also be an unbalanced couple represented by the arrow in fig. 12; it will be much more serious than the one at work in the horizontal twin engine, on account of the greater distance  $D$  between the centre lines of the cylinders (compare figs. 9 (a) and 12). This couple will tend to make the engine "pitch" about a horizontal axis at right angles to the axis of the crankshaft; if this latter lies parallel to the length of the vehicle, as in a car, this pitching tendency will be in a fore-and-aft direction, while in the Scott motor cycle (the only well-known machine employing this type of engine) it is across the frame. There is no means of completely eliminating the unbalanced couple except by introducing an equal and opposite couple, which can readily be effected by placing two two-cylinder engines end to end.

**Balancing a Four-cylinder Engine.**

A four-cylinder engine may conveniently be regarded as two two-cylinder units coupled together, and it follows from what has just been said that there need

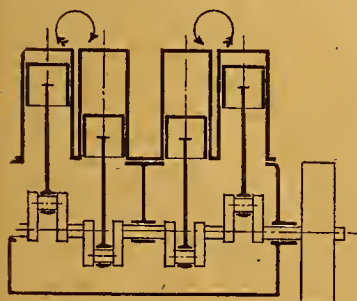


Fig. 13.

be no unbalanced couple in such an engine; if one unit be arranged the "opposite hand," as a draughtsman would say, to the other, the two rocking couples act in opposite directions, and so exactly neutralise one another (fig. 13).

Here we have the reason for the familiar arrangement of cranks in this engine—the two inner pins on the same axis, and the two outer pins on an axis  $180^\circ$  away from the inner ones. Although by this means the unbalanced couple is eliminated, the total unbalanced force remains unaffected, and will amount to four times the maximum secondary inertia force of one set of reciprocating parts.

It is interesting to note that if a third pair of cylinders be added, the cranks being set at  $120^\circ$ , the engine will be perfectly balanced in every respect, as regards both forces and couples. This accounts for the popularity of the six-cylinder engine among pleasure car owners; but, as the day of the commercially successful six-cylinder motor cycle has yet to dawn, the question need not detain us.

**Comparison of Various Types of Engine.**

In comparing the degree of balance or unbalance in various classes of engine, the fairest method will be to confine ourselves to engines of the same speed, total cylinder capacity, and ratio of connecting rod to crank length. This means that we shall have to deal with engines of different individual cylinder capacities, and therefore a further point that must be decided on is the manner in which the inertia force at a given speed depends upon the individual cylinder capacity. Very roughly, it may be taken that this variation is in simple proportion, i.e., halving the capacity halves the inertia force, or doubling the one doubles the other. Hence if the maximum primary inertia force  $P$  for a single-cylinder engine be represented by 100 lb., the value of  $P$  for each cylinder of a twin engine will be 50 lb., and for a four-cylinder engine 25 lb., provided, of course, that the conditions just stated obtain (speed, horse-power, etc., identical in all cases). This assumption is admittedly a somewhat sweeping one, but it is sufficiently accurate for present purposes. As before, it will be assumed that the connecting rods are five crank lengths long.

The results already obtained may now be summarised and tabulated thus:

Type of Engine. (Speed, H.P., etc., same throughout.)	Value of $P$ for each Cylinder.	Least Unbalanced Force, or "Unbalance."
(a) Single cylinder .....	100 lb.	$\frac{1}{2} P_T = \frac{1}{2} P \left( 1 + \frac{R}{L} \right)$ $= \frac{1}{2} \times 100 \left( 1 + \frac{1}{5} \right) = 60 \text{ lb.}$
(b) $50^\circ$ twin .....	50 lb.	$0.82 \times P = 0.82 \times 50 = 41 \text{ lb.}$
(c) Side-by-side twin ....	50 lb.	$2 \times P \times \frac{R}{L} = 2 \times 50 \times \frac{1}{5} = 20 \text{ lb.}$
(d) Four-cylinder .....	25 lb.	$4 \times P \times \frac{R}{L} = 4 \times 25 \times \frac{1}{5} = 20 \text{ lb.}$
(e) $30^\circ$ twin .....	50 lb.	$0.28 \times P = 0.28 \times 50 = 14 \text{ lb.}$
(f) Hor. opposed twin ..	50 lb.	$0 = 0 \text{ lb.}$

It should be explained that the value 100 has been chosen merely as an arbitrary standard of comparison; also that the figures in the last column refer to the theoretical unbalance still remaining after the engine has been balanced as well as possible.

This table reveals some rather striking facts. As we should expect, the single-cylinder engine is an easy first from the point of view of *bad* balance. Next in order comes the  $50^\circ$  twin, which is about two-thirds as much out of balance as the single. Then come the two-cylinder side-by-side and the four-cylinder



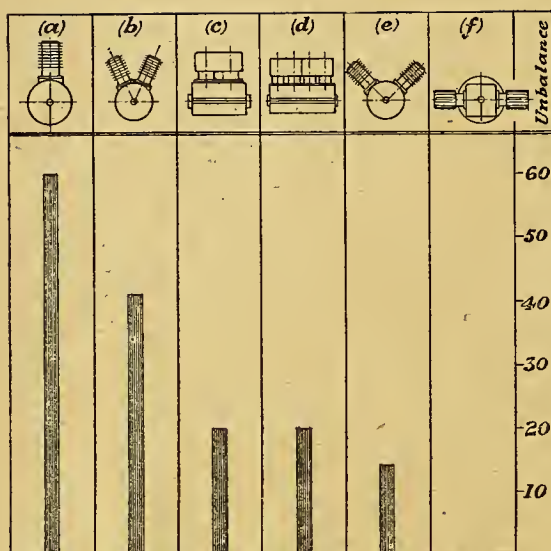


Fig. 14.

engines, both of these being only one-third as much out of balance as, or three times *better* balanced than, the single. (It may be noted in passing that the four-cylinder type has no advantage over the two-cylinder as far as the unbalance is concerned.) The 90° twin is a distinct improvement on all previous types, being about four times better balanced than the single-cylinder engine, and about three times better than the 50° twin. Finally, we have the horizontally-opposed twin with *no* unbalanced force.

It is worth while pointing out that the unbalanced forces in types *c*, *d*, and *e* consist entirely of secondary forces, and so can be materially reduced by lengthening the connecting rods.

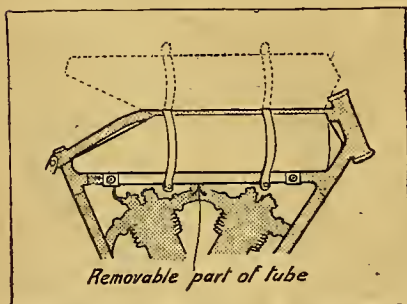
The accompanying diagram (fig. 14) is self-explanatory, its purpose being to show graphically the foregoing results. Although several assumptions have been made in calculating the figures from which this diagram was prepared, and important matters such as unbalanced couples have been neglected, yet undoubtedly these figures give a very fair idea of the degree of balance attainable in the various types of engine that have come under review.

## AN OLD FRIEND.

### WELL-CONSIDERED MODERNISATION OF AN OLD MACHINE.

THERE must be many well-cared for and improved machines of moderate age about the country of which the six-year-old Matchless illustrated here-with is a particularly good example. The owner, Mr. J. H. Wilkinson, of Doncaster, has added many improvements to bring the machine up to date.

The engine is a 5 h.p. J.A.P. with overhead valves, the rockers of which are fitted with lubricators. These are found to be far more efficient than the plain oil holes which did duty previously.



Removable part of lower tank tube to facilitate cylinder removal on J.H. Wilkinson's Matchless.



A SIX-YEAR-OLD MACHINE MODERNISED.  
J. H. Wilkinson's single-gear 5 h.p. Matchless in its latest form.

To allow of the easy removal of the cylinder the tube below the tank was cut near each end, and two half-tap joints made so that the tank can be swung to one side after the removal of the two bolts. The free engine wheel required no structural

alterations, and Mr. Wilkinson himself made the brake and foot levers, which included a foot-operated exhaust lifter. A long exhaust pipe terminates in a car whistle operated by the right foot; this has proved very useful in traffic.

The handle-bars were originally T.T. pattern; these have been bent up to a more comfortable angle, and long handle grips made of corrugated hose pipe fitted. The carburetter is, of course, the 12-jet Wilkinson which, the owner assures us, enables the machine to be run at any speed from six to sixty miles an hour. This has a hot air pipe not shown in the photograph fitted from the union of the front exhaust pipe, which has effected a considerable improvement, both in consumption and power, especially when running on a petrol-paraffin mixture.

The occupant of the saddle is in temporary charge of the machine.

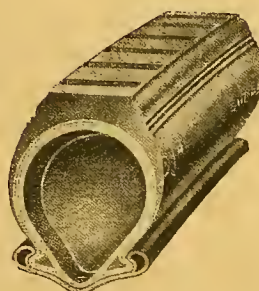


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Type.	For Machines	1½"	2"	2½"	2½"	2½" to fit 2½"	3"
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Combination .....	Up to 5-6 h.p.	—	—	53/-	55/-	57/9	59/9
Three-ribbed * .....	'Big' Models	—	—	—	—	—	48/4
Tricar.....	Up to 5-6 h.p.	—	—	38/6	41/3	44/-	49/6
Stonehenge .....	Up to 4 h.p.	—	22/9	24/9	26/9	29/6	31/4
Druid.....	Up to 2½ h.p.	17/4	19/3	21/2	—	—	—
Lightweight 3-rib ....	2-strokes, etc.	12/-	14/7†	16/9	—	—	—
Lightweight, studded..	do.	14/10	16/6‡	18/2	—	—	—
Endless Tube * * ..	—	6/11	7/2	8/3	9/4	9/4	10/2

\* For high-powered machines with motor rims. Also made 650×65 at 40/- and 43/8.  
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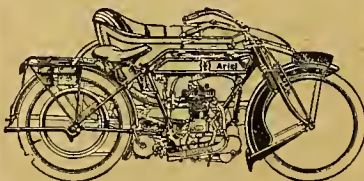
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# "THE MOTOR CYCLE" RECRUITING SECTION.

Further Vacancies in the M.M.G.S. R.F.C., and R.E. Railway Operating Division.

This section was instituted with the sole object of assisting readers and directing them to the many different branches of the Army and Navy for which their special knowledge suited them. At the outbreak of war numerous letters reached us (and continue to arrive) from men at home and overseas possessed of motor engineering knowledge, explaining their difficulty in obtaining particulars of Specialised Sections (notably the Motor Sections), recruiting officers being invariably occupied by the demands of the line regiments. The Editor is Inspecting Officer for the M.M.G.S., Heavy Section, Machine Gun Corps, and R.E. Despatch Riders. Throughout, the work has been purely honorary, and no commissions have been accepted. To date, 9,992 readers have taken advantage of our proffered assistance.

THREE telegrams, two telephone messages, and twenty-eight letters of application were the first day's result of the appeal in the last issue for experienced motor cyclists for the sidecar batteries of the Motor Machine Gun Service. Letters have followed each day since, and appointments were made for Tuesday and Wednesday this week with suitable men.

A further request for experienced riders having been received since the last issue went to press, applications are

various parts of the country (including Scotland and Wales) for the positions announced in our last issue, and was due at the Nottingham Recruiting Office, Stanford Street, for the same purpose yesterday. The popularity of the M.M.G.S. among Nottinghamshire and Lincolnshire men is surprising, and a score or so of men having applied from these counties, the Nottingham appointment was made for their convenience in the matter of travelling.

Among recruits accepted last week for the M.M.G.S. were:

Barker, A. J. E., Northampton.  
Hamilton, E. V., Filton.  
Stanger, W., Manchester.  
Brander, F., Earlstown.  
Lock, W., Romford.

## Notice to R.E. Despatch Riders.

In connection with the Royal Engineers' despatch riders, the age of recruits in this Section must now be between eighteen years nine months and thirty-five. The examination of applicants for this section has again been rendered more stringent.

With regard to the 2s. 6d. per diem rate of pay, there seems to be a doubt about this, judging from letters received from despatch riders now in training.

It is interesting to note that Lawrence Kemp, of Coventry, a motor cyclist passed by the Editor for the Royal Engineers' Despatch Riders' waiting list last week, has served three years in the Charron automobile works of Puteaux, and, of course, speaks French fluently.

## R.E. Railway Operating Division.

A notice regarding the above section of the Royal Engineers appeared under *The Motor Cycle* Recruiting Section in the issue of June 29th, page 610. Further to the statement made in that paragraph, we are now informed by the War Office

that recruits will receive 1s. 8d. per diem on joining, with a further rise of 6d. per diem after twenty-eight days, and after a further period of thirty-two days 5s. 2d. a day. The prospects of promotion are excellent. The type of man required is one who has been through an engineering works; in fact, only fully qualified men used to lathe work are being considered. The work will entail the looking after of internal combustion engines of high horsepower, and the training will be invaluable to those who receive it in after life. Applications should be addressed to Quartermaster-Sgt. Smith, Room 550, War Office, London, S.W.

## Royal Flying Corps.

We are constantly receiving letters from readers asking us the name and address of trade testing parties for the above corps, and we are now advised by the Special Recruiting Officer for the R.F.C., Capt. H. Stuart Ebber, that a R.F.C. Special Recruiting Officer will be at the Recruiting Office, Corn Exchange, Sheffield, during this week and until the 15th inst. The party will later visit Stockton-on-Tees, Carlisle, and Glasgow. There are other recruiting parties at present stationed at Leeds, Manchester, Birmingham, and London.

## MOTOR MACHINE GUNS TO THE FORE.

A BATTERY of the Motor Machine Gun Service is engaged in the German East African campaign. Reuter's correspondent with British Headquarters makes the following reference to the battery in his description of the advance on and fight at the Lukigura River: "At three o'clock in the morning General Sheppard's Punjabis and the Rhodesians swung down the main road, making for the bridge, and at

sunrise Sir John Willoughby's armoured motor dashed to the front and engaged a pom-pom at close quarters. A splinter went through the radiator of the car, and it had to retire, but repairs were made, and the car was soon again to the fore."

The battery referred to is the Light Armoured Motor Battery which formed the subject of a double page photograph in our issue of March 23rd, 1916.



## THE MOTOR CYCLE IN THE R.N.A.S.

An air-mechanic and former Tourist Trophy rider has a few minutes to spare after tuning up the engine of an R.N.A.S. aeroplane.

still invited. Readers ready to join immediately and conforming to the conditions of enlistment below may attend without notification at the Coventry Recruiting Office, Masonic Hall, on Tuesday next, the 11th inst., on which date an inspection has been arranged. Those applicants accepted will proceed at once to the training centre. Reserve cards should be brought for reference.

For the guidance of prospective recruits, the conditions of enlistment are appended:

Applicants must be experienced car drivers or motor cyclists, able to execute ordinary running repairs.

Pay, 1s. 2d. per day, all found.

Enlistment for duration of war.

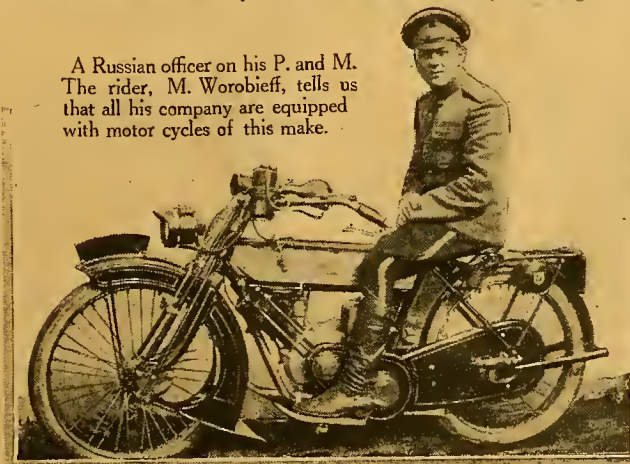
Usual separation or dependants' allowance.

Age limit, 19 to 40.

Applicants must be fit for General Service abroad, or for Garrison Duty abroad.

On Tuesday last, the 4th inst., Mr. Geoffrey Smith, Editor of *The Motor Cycle*, attended at the Recruiting Office, Coventry, to examine applicants from

A Russian officer on his P. and M. The rider, M. Worobieff, tells us that all his company are equipped with motor cycles of this make.

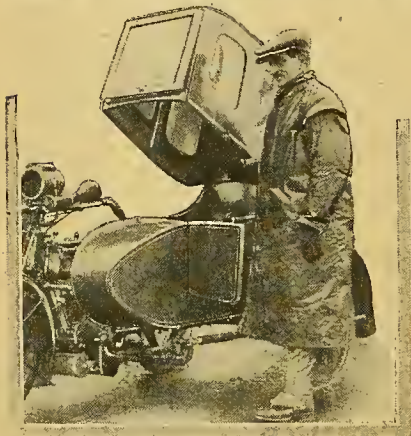




## SIDECAR DEVELOPMENTS.

### A LIMOUSINE TOP.

THE accompanying photograph has been sent to us by Mr. Leon McVicker, who gives the following particulars of the arrangement. The limousine top is coachbuilt, has celluloid windows, and weighs but 9 lb. It is

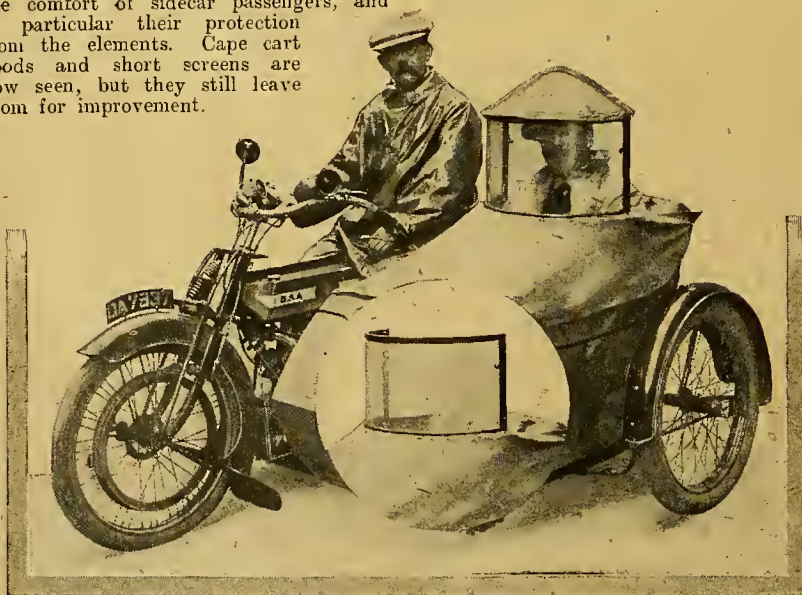


Detachable limousine top for sidecar, designed by Leon McVicker.

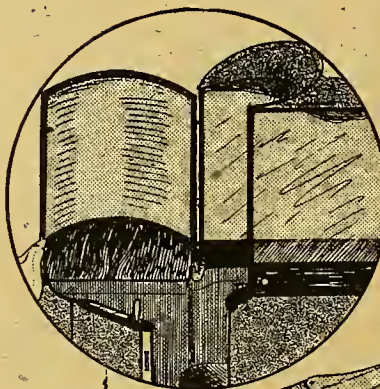
detachable and easily removed when not required. The outfit was regularly used last winter, and no trouble was experienced from head winds. The top obviously affords the passenger very complete protection against the elements. The motor cycle to which the sidecar is attached is a 4 h.p. New Hudson. This has given its owner great satisfaction.

### A GOOD DESIGN.

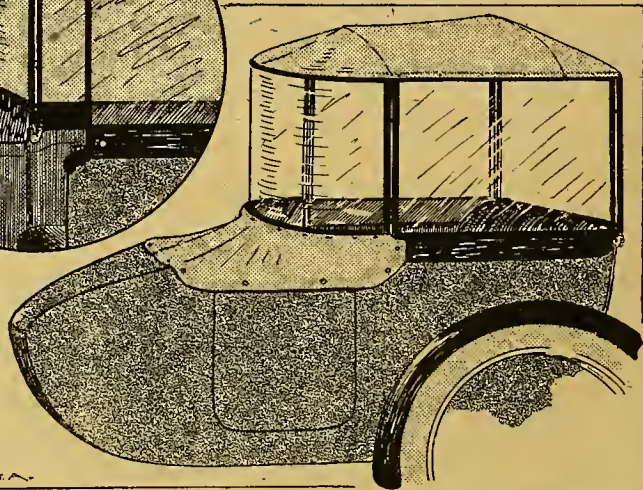
AN indirect result of the advent of the cheap car has been that increased attention has been paid to the comfort of sidecar passengers, and in particular their protection from the elements. Cape cart hoods and short screens are now seen, but they still leave room for improvement.



The asting screen in its present form. The complete design, when completed, will appear as in the sketch reproduced above. The photograph shows the designer driving his B.S.A. The inset shows the screen minus the top cover.



Design of detachable top for sidecar body provisionally patented by C. A. Easting. The circle shows the manner in which access is gained to the seat. Quickly detachable celluloid panels are used, and if desired the front screen only can be used as shown in the photograph below.



Quite one of the best attempts to provide protection for the sidecar passenger is that illustrated herewith. The arrangement, which consists briefly of easily detachable celluloid screens and canvas apron and top, has been provisionally patented by C. A. Easting, insurance broker, of 59, Abbey Road, Warley Woods, Birmingham. Mr. Easting is a keen motor cyclist, but his wife does not enjoy the best of health, and in order that she might enjoy sidecarring under adverse weather conditions, Mr. Easting evolved his detachable screen and hood.

At present only the front half circle shaped screen has been made, and this, with the front apron, provides good protection for the passenger. The complete design, as shown in the sketch, provides for the continuation of celluloid panels at side and rear, so that, with all in position and the canvas top, a completely enclosed seat is the result. The whole affair is light and quickly and easily detachable. Arrangement will be made for carrying the panels when not in use in a case at the back of the sidecar.

### A NORTON INNOVATION FOR CARRYING A CHILD.

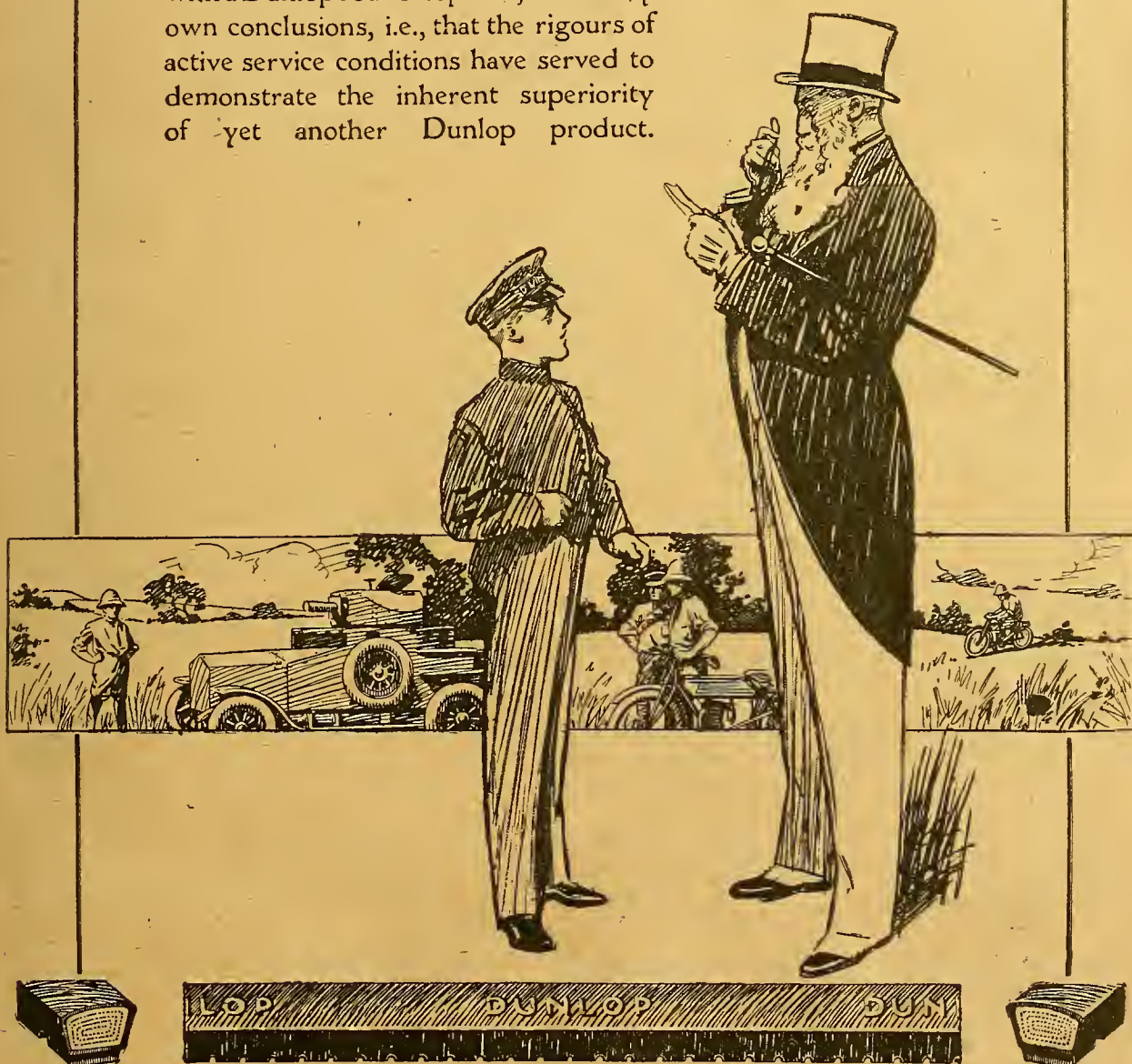
THE problem of carrying a junior extra passenger often confronts the family man who owns a sidecar outfit, and there are several methods of "stowing away" the child. Unfortunately, from the child's point of view, "stowing away" more aptly describes the usual methods, such as jamming the poor infant into the toe of the sidecar, perched on a stool, or petrol tin, and, incidentally, cramping the adult passenger; or again, the more dangerous mode of putting the child on a cushion on the carrier to hang on as best he can. There are also several makes of double-seated sidecars on the market, but most of them are remarkably heavy.

During a recent visit to the new works of Norton Motors, Ltd., at Phillips Street, Aston, Birmingham, we inspected a clever idea, which solves the problem effectively and neatly. In the usual pattern of Norton sidecars the back of the body forms a very commodious store for kit and luggage. Very little of this space has been occupied in the fitting of the miniature dickey seat. The back part of the body is hinged at the bottom, and two flat metal arms hold it firmly



## NEWS FROM GERMAN EAST AFRICA

German East Africa is certainly an interesting place from which to get reports on Dunlop motor-cycle belts! And when I hear that *every* belt-driven machine used by the Dispatch Riders under General Smuts' command is fitted with a Dunlop round-top belt, I draw my own conclusions, i.e., that the rigours of active service conditions have served to demonstrate the inherent superiority of yet another Dunlop product.



**DUNLOP RUBBER CO., LIMITED,**

FOUNDERS OF THE PNEUMATIC TYRE INDUSTRY,

Aston Cross, BIRMINGHAM. LONDON—146, Clerkenwell Road, E.C. BRANCHES—Coventry, Nottingham, Manchester, Newcastle, Bristol, Leeds, Liverpool, Glasgow, Dublin, Belfast.



# Sunbeams IN THE FIRST FRENCH LINE

## EXTRACT FROM LETTER.

"The Motor Cycles you supplied to us some time ago for the transport of Wounded French Soldiers in the Vosges Mountains have done, and are still doing, most excellent work in the first line of the French Army. These Cycles are spoken of in THE HIGHEST TERMS by all who have come in contact with them in France."

What satisfaction is expressed in these words—recognise the difficulties of heavy ambulance work over any and all sorts of so-called roads which strains every part and portion of the machines.

SUNBEAMS under such a test are spoken of "IN THE HIGHEST TERMS." No better testimony is needed of the Reliability, Workmanship, and Superiority of SUNBEAMS.

Owing to the great demand for Sunbeam Motor Cycles for War purposes, the public are respectfully informed that further deliveries cannot at present be made from the Works, and those who require Sunbeams should purchase the existing stock of the various Agents who have had the foresight to provide for this contingency.

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# LOOK FOR THIS NAME ON YOUR ENGINE

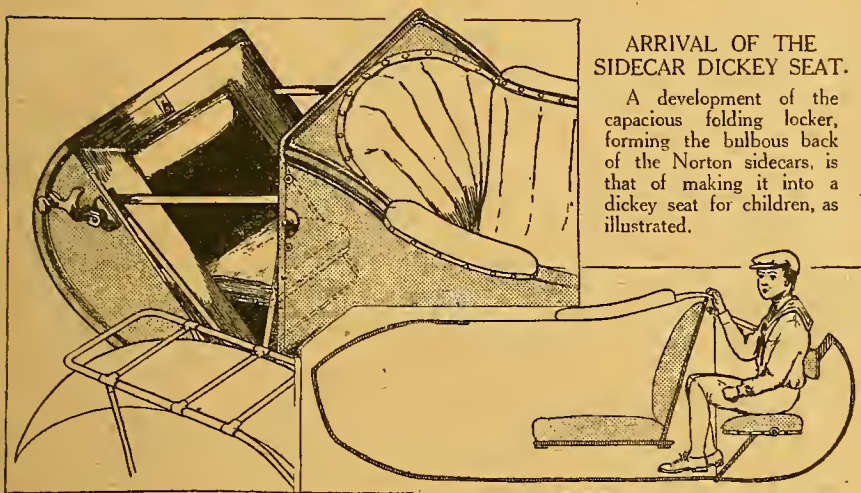
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Northumberland Park, TOTTENHAM, N.**

Telegrams: "Prestwich Tottlane, London."

Telephone: 1613 Tottenham.





### ARRIVAL OF THE SIDECAR DICKEY SEAT.

A development of the capacious folding locker, forming the bulbous back of the Norton sidecars, is that of making it into a dickey seat for children, as illustrated.

at an angle of about 45°. The centre of the cover board of the locker is cut out and a small upholstered seat is pivoted so as to shut up flush with the cover when not in use. A padded back rest is provided, and further elaborations will probably be added to give additional comfort. It is both strong and safe, as well as roomy, for a child; it is not in any way unsightly, and adds practically nothing to the weight of the sidecar. It does not affect the balance of the sidecar, and the whole outfit, with driver and one and a half passengers, rides as easily as can possibly be desired. We might suggest the addition of folding canvas side pieces to exclude the dust, raised by the passage of the outfit over the road.

Credit is due to Mr. Watson, the designer of Watsonian sidecars, who is responsible for the idea. At the same time, it should be noted that it is protected, and is supplied exclusively with Norton outfits.

### A WRIST WATCH PRO- TECTOR.

A WRIST watch may almost be considered part of the personal equipment of a well rigged motor cyclist, so great are its advantages for riding over a watch carried in a vest pocket. Since the war the use of wrist watches has spread enormously, they being very popular with soldiers of all grades, and for military motor cyclists they are a *sine qua non*.

Being carried in a somewhat exposed position there is always the risk of breakage of the glass, and to get over this trouble Hirst Bros. and Co., Ltd., of Roscoe Street, Oldham, have introduced the "Mesh Guard" illustrated. It is made of metal for fitting over the watch glass, and the squares are so designed, we are told, that each of the twelve-hour figures has its own individual square.



Hirst Bros.' wrist watch protector.

### IRISH TRIAL RESULTS.

THE awards in connection with the Twenty-four Hours Trial of the Dublin and District Motor Cycle Club, reported in our last issue, were announced on Friday last. Eight of the nineteen competitors secured full marks at the open controls, and made clean runs through the non-stop sections, and consequently the awards depended on the variation from schedule time at the two secret controls. W. H. Freeman was found to be but 13s. out, W. J. Henderson 15s., and A. W. Mooney 23s. Freeman consequently wins the Rudge-Whitworth Cup, and this being his second successive win the cup becomes his absolute property.

The prize for the best performance of a team of three riders was won by Messrs. Mooney, Dooly, and Lucy. The passenger machine prize, for which the winner of the Rudge-Whitworth Cup was not eligible, was won by W. J. Henderson, and the lightweight prize by C. E. Franklin.

The markings of the nineteen finishers were as follow:

#### GOLD MEDAL WINNERS.

	Marks.
W. H. Freeman (7-9 Indian) .. ..	200
W. J. Henderson (7-9 Harley-Davidson sc.) ..	200
A. W. Mooney (7-9 Excelsior sc.) .. ..	200
S. A. Allen (3 Enfield) .. ..	200
P. Grimes (7-9 Indian sc.) .. ..	200
A. Carton (7-9 Indian sc.) .. ..	200
T. Woods (4½ B.S.A.) .. ..	200
F. L. Dooly (4½ B.S.A.) .. ..	200
F. McDonagh (4½ B.S.A.) .. ..	199
C. S. Kettle (4½ B.S.A.) .. ..	199
D. Lucy (2¾ Douglas) .. ..	198

#### SILVER MEDAL WINNERS.

R. Walshe (4½ B.S.A.) .. ..	198
F. Cunningham (7-9 Indian sc.) .. ..	196
C. B. Franklin (2½ Indian two-stroke) ..	193
J. Stewart (2¾ Douglas) .. ..	193
C. S. Redmond (3½ Indian) .. ..	190
Cpl. J. Griffiths (2¾ Douglas) .. ..	180
T. Toole (4½ B.S.A.) .. ..	171
T. J. Dunphy (3 Enfield) .. ..	170

Walshe missed a gold medal by being early at an open control.

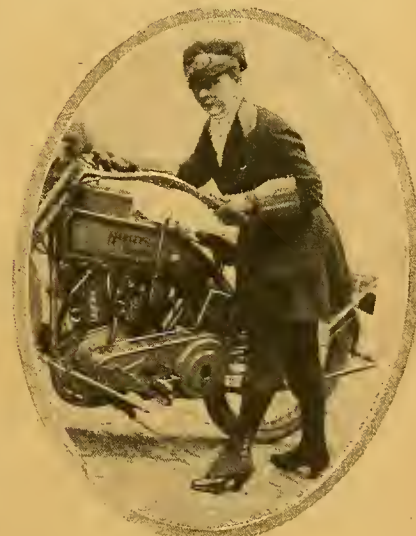
### WORTH REMEMBERING.

The rider of a two-stroke machine fitted with chain-cum-belt drive had the misfortune to break the magneto chain five miles from anywhere. Fortunately, he discovered that the driving chain, of which he had a spare, was of the same pitch as that for driving the magneto, and he therefore shortened the spare chain and used it for the magneto.

### LEST WE FORGET.

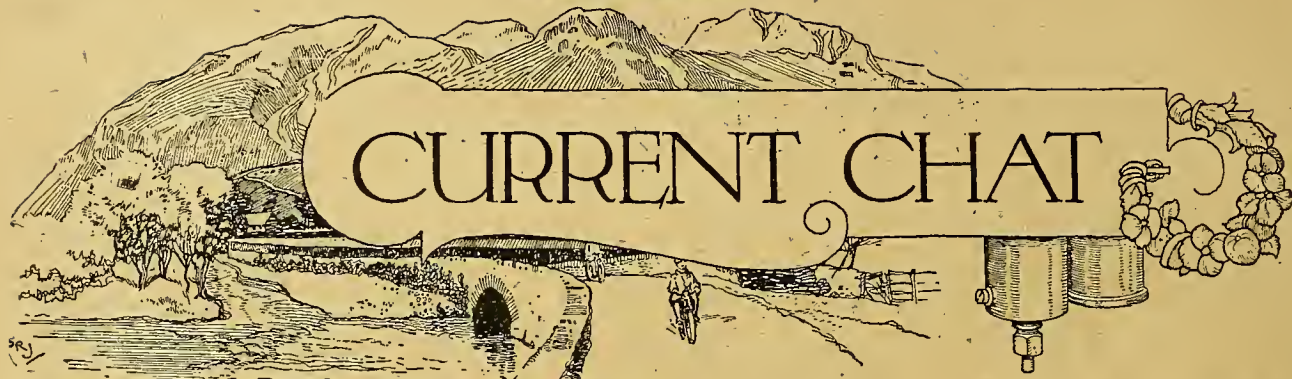
IT has occurred to us that a fit and proper way of perpetuating the memory of the late Sir R. K. Arbuthnot, Bt., C.B., M.V.O., would be that the Auto Cycle Union, of whose committee he was an active member, should put up a challenge cup, to be known as the Arbuthnot Trophy, to be competed for by officers of the Royal Navy. It may seem somewhat strange at first that we should suggest that a sporting trophy should be employed for the purpose of commemorating the life of a great man who died a hero's death, but the case is an exceptional one. Here we have a gallant sailor who, if he had lived, would have received many honours at the hands of King and country, and who devoted the major portion of the little spare time he had to his motor bicycle. He was not only a keen rider and a hard rider, but he worked diligently for the movement when he could, and his good work will long survive him. By popularising the motor bicycle in the Navy he helped to spread the pastime among the general community. That is a point which must not be forgotten. His name is inseparably coupled with his profession and with his favourite sport; therefore we argue that the cup which is to perpetuate his memory should be a trophy to be won annually in a motor cycle competition, and that the competitors should be officers of the Senior Service in which he had so distinguished a career. There will be difficulties, we admit. The naval officer is a keen and skillful rider, but his leave days are few and far between; still, that the right kind of competitor can be got hold of we are sure.

We would finally suggest that all who wish to contribute to a trophy to perpetuate the memory of one who may be said to have been the premier motor cyclist of Great Britain, should send their donations to the Secretary, the Auto Cycle Union, 83, Pall Mall, S.W., as soon as it is announced that that body is willing to organise the event. We do not, of course, suggest that the competition would be held until after the war.



A lady rider of a Harley-Davidson showing her neat and suitable attire.





## TIMES TO LIGHT LAMPS.

"SUMMER" TIME.

July 6th	...	...	9.46 p.m.
" 8th	...	...	9.45 "
" 10th	...	...	9.44 "
" 12th	...	...	9.42 "

## Sidecarriers and the Increased Petrol Tax.

Owners of sidecarriers who use their machines *exclusively* for business purposes are not affected by the increased petrol tax. When the additional tax comes into force, the ordinary user will pay 1s. per gallon in tax, whilst commercial vehicle users will only pay 1½d. per gallon in tax.

## "Cleveland Triumphs Again."

The above is a heading to an advertisement in an American contemporary of the Cleveland lightweight, that has been illustrated in these pages. The heading is rather amusing, in view of the undoubted external likeness of the Cleveland to the Baby Triumph.

## A Lost Machine.

Enquiries are being made for the whereabouts of a 5 h.p. 1915 model Indian that belonged to a man who lost his life on the *Invincible* in the Jutland naval engagement. Up to the time of writing all efforts to trace the machine have failed, though it is thought it may have been garaged somewhere on the east coast of Scotland. Registration number is BK 3212, and it had a Stewart speedometer and Lucas lamp. Any information that may lead to the machine's recovery should be sent to Mr. Gordon D. Dewar, 127, Festing Grove, Southsea.

## Liverpool Motor Cyclist Volunteers.

The Motor Cycle Section of the National Motor Volunteers, at Liverpool, recently held an inter-squadron team relay despatch carrying contest. The general scheme was the carrying, in the quickest time by teams of four men acting in relays of a despatch from Sefton Park to Hale, *via* Kirkby Station, Rookery Station, Collins Green, and Sankey Station. This course was specially chosen for its comparative easy nature in view of the fact that this was the first event of its kind. Four teams completed the journey, the best performance being only 40½ m., or an average speed of 20 m.p.h., which, taking into consideration that the way had to be found by map alone, seems extraordinarily good. Each of the winning team received a pocket compass as a prize. A somewhat similar contest is down on the programme for July 23rd.

## Women driving all Types of Road Vehicles.

A fortnight ago we commented upon the steady increase of women motor cyclists. But this is only one type of motor vehicle women are driving nowadays. They can be seen driving sidecarriers, light vans, and touring cars all over the country, and one day last week a young girl was seen driving a 3 ton Army lorry. And she was handling it very well, too.

## Importation of Commercial Motor Vehicles Prohibited.

As from July 6th the importation of commercial motor vehicles (in which are included sidecarriers) and chassis into this country is prohibited except under certain conditions.

Licences to import will be granted in cases where the goods were either *en route* for the United Kingdom or actually paid for at the date of the Proclamation, and also where it can be shown that the importation is desirable in the national interests or where the car is urgently required for any of the purposes specified in Class A of the Order of Priority for the distribution of motor spirit or for agricultural purposes, or for the conveyance of essential goods. Licences will further be issued for the importation of spare parts for imported commercial vehicles which are already in the United Kingdom.

A SPEEDY SIDECAR  
IN APPEARANCE AND  
REALITY.

## SPECIAL FEATURES.

RECREATION FOR WAR WORKERS.  
THE CONQUEST OF WRYNOSSE AND  
HARD KNOTT PASSES.  
OVERSEAS VIEWS AND NEWS.

## More Petrol Substitutes.

We extract the following from last week's *Punch*:

"The following letter was received from a Chinese storekeeper, in response to an order for benzine:

"Madam,—Very sorry we have no benzine, but we have ground cloves, nutmegs, cinnamon, and ginger. Hoping to be excused for the trouble."

"Victims of the petrol census may be glad to know of these substitutes."

## Cruelty to Lightweights.

The reader who writes to us and asks if his 2½ h.p. lightweight is big enough to take a sidecar should bear in mind the following extract from the excellent little booklet published by the Villiers Engineering Co., Ltd., on their 2½ h.p. two-stroke motor: "As engines are easily liable to derangement by neglect and misuse, our guarantee does not apply to defects caused by wear and tear, misuse or neglect. The term 'misuse' usually includes . . . the attaching of a sidecar to the motor cycle driven by this engine."

The machine is an A.B.C., and the rider will be recognised as J. L. Emerson, a Brooklands record-breaker.



Irish 24 Hours' Reliability Trial.

**HARLEY-DAVIDSON**

Sidecar Combination wins

**THE SPECIAL CUP**

AND

**A GOLD MEDAL**

for the best performance in the Passenger Class.

**WE ENTERED ONE MACHINE**  
**WE OBTAINED HIGHEST AWARD.**

THE ABSOLUTE SUPERIORITY OF THE  
**SILENT GREY**  
DEMONSTRATED BEYOND QUESTION.

**HARLEY-DAVIDSON MOTOR CO., LTD.,**  
74, NEWMAN ST., OXFORD ST., LONDON, W.



*In answering this advertisement it is desirable to mention "The Motor Cycle."*



NEVER have the lonely wilds of Wrynose or the rugged crags of Hard Knott seen anything like the coming of the munition men, at least not since those far-distant days when Roman legions made the seaward slopes of the westerly pass their abode and training ground. But the modern chariot is not noisy in its movements, and, as we struggled up the Wrynose steeps, from everywhere came the echoing bark and whirr of motors. All were not victorious on Wrynose or its approaches, and as we came from northern Lakeland, a Rover, left derelect, was passed on Owlett Hill, and there were

machines crossed the notorious pass speaks well for the efficiency of modern construction. Amongst the light machines the 2½ h.p. Douglas and the 2½ h.p. Royal Ruby figured prominently. The former was skilfully handled by B. Boyren, of Barrow, whilst George Braithwaite, of Kendal, "fairly ate up everything," as a keen Yorkshire spectator described it. The silent steady stride of the 3½ h.p. Scott was worth noting, the more so as the machine, ridden by H. Harland, had just come from Hull specially for the day's sport. Another distant visitor was Gilbert Browne, a keen despatch rider, who, on special leave, had come from the



others. After the previous day's heavy downpour, we were not surprised to pass many machines left at the foot of the climb and others at various stages of the ascent.

The lower slippery grass corner close to Fell Foot Farm had caused little serious trouble, and it was on the upper section, the most trying part of Wrynose, where real "liveliness" was in evidence. About a dozen machines were more or less held up, or kept down, by the grip of gravitation. The slimy, sliding slope of stony looseness, set at an angle verging on 1 in 3, which forms the road, was in very bad condition, and nobody made a complete non-stop climb at the first attempt. Doubtless this was partly caused by the hurried nature of the attack, for all were anxious to reach Cockley Beck farm at the further side of the pass and meet another large batch of munition workers, who had come up Duddon Dale direct from Barrow-in-Furness.

#### Wrynose.

Still, to climb Wrynose at all on such a day was a remarkable motor cycling feat, and the fact that over a dozen

sunny south to his native mist and mountains. Amongst the sidecars an 8 h.p. Enfield, driven by H. Cleary, performed splendidly. The same must be said of the 6 h.p. A.J.S., which, though carrying a huge load, reached the summit in charge of Harry Whinnerah. A 2½ h.p. Humber, driven by R. Chaplow, secretary of the Westmorland Club, also climbed well.

#### Spring Frames on Freak Hills.

On the westerly side of Wrynose there was still greater "stir," for more than a dozen of the Barrow contingent were encountered struggling bravely up. Thanks to some marvellous gymnastics, the English machines made especially good non-stop ascents. Those noticed on the other side of Wrynose were again conspicuous, and both T. Dudson, on a 3½ h.p. Rudge Multi, and W. Tomkins, on a 6 h.p. Matchless, made fine ascents. On the other hand, the uncertain performances of others led to general remarks regarding the unsuitability of spring frames for the class of work in hand. A recent kindly criticism on this point by "Ixion" in the pages of *The Motor Cycle* was recalled by the writer,

## The Conquest of Wrynose



(Centre top) Riders of 2½ h.p. Royal Ruby (Left) The second hairpin on Hard Knott followed by H. Harland (3½ h.p. Scott) (Right) Big twin-cylinder solo machines on (6 h.p. Matchless) followed by A. Walker (6 h.p. Matchless) (Lower centre) The party at Cockley Beck

whose remarks in a former article have been questioned: Would that "Ixion" could have been present on Wrynose or Walna Scar, for evidently he does not realise the kind of hills which the sporting munitioners have been tackling. A solid frame was obviously best, for there was absolute danger in being sprung into



# Hard Knott Passes

OF MOUNTAIN  
RELAND, 1916



h.p. Indian machines on Wrynose.  
ed from Cockley Beck. J. Wardle (2½ h.p.

double hairpin on Hard Knott. W. Tomkins  
S. Observe the group of riders in background.  
between Wrynose and Hard Knott Passes.

mid-air and flung down the precipitous  
mountain side. Space forbids detailed  
description of the further adventures on  
Wrynose: suffice it to say that, despite  
the laggards and those who would not  
linger for lunch, over two dozen machines  
were gathered together during the picnic  
part of the programme at Cockley Beck,

the half-way halting place between the  
two passes.

## Hard Knott.

A busy afternoon was spent in climb-  
ing Hard Knott Pass from both sides,  
though some, having once descended the  
farther side to Eskdale, seemed satisfied  
to stay there. The main features of the  
Cockley Beck side of Hard Knott were  
its dozen "hairpins" and comparatively  
good surface. The lower double bends  
proved exciting, and some of the side-  
cars made skids that scattered the road  
surface and spectators very effectively.  
The two 3½ h.p. Indians, driven by J. H.  
Wilson (Grasmere) and B. Pole (Barrow),

where the gloomy crags of Hard Knott  
loomed threateningly.

The weather now became somewhat  
damp, yet this did not deter several  
enthusiasts from tackling the westerly  
side of Hard Knott, which must cer-  
tainly be considered the most difficult  
part of the two passes for motor cycles  
as well as cars. Undoubtedly the best  
performance here was made by George  
Braithwaite, on the 2½ h.p. Royal Ruby,  
for, except for a momentary halt through  
the crank case wedging in a big mass of  
turf near the summit, he made a full  
length non-stop run. B. Boyren, on the  
2¾ h.p. Douglas, was almost equally  
successful, except for a stop on the



By **GEORGE D. ABRAHAM.**

Author of "Motor Ways in Lakeland," "The Complete Mountaineer," "Mountain Adventures  
at Home and Abroad," etc.

took the corners steadily, whilst the  
5 h.p. of the same make, ridden by J.  
W. Wilson, of Kendal, was up midst  
the brackened heights on the skyline  
almost before one realised its success.  
Of the bigger machines, the thrilling  
attack of C. Dyson (5-6 h.p. Ariel),  
Stanley Bewsher (8 h.p. Bat), and A.  
Walker (6 h.p. A.J.S.) enlivened the  
proceedings, whilst the skilful handling  
of a single-speed Triumph by R. F.  
Sharratt deserved attention. The splendid  
dash of young Eric Peacock, another one-  
armed member of the party, was so sur-  
prising that the writer unfortunately  
forgot to note the make of his machine.  
This rider made a remarkable recovery  
when one of the descending Indians  
jumped a hairpin bend prematurely, and,  
landing in the road below, left only a  
few inches of wheel grip on the edge of  
the precipice for the up-coming climber.  
Half-a-dozen sidecars succeeded in reach-  
ing the top, and finally the quiet, steady  
ascent of a P. and M. outfit was especi-  
ally soothing after the uproar of the  
crowd foregathered in the summit mist,

treacherous hairpin below the upper zig-  
zags. This portion of the climb was  
tackled successfully by several riders.

## Good Climb by a Single-cylinder Outfit.

From the average spectator's point  
of view, the climb by T. Wilson, on  
the 3½ h.p. Rover with light sidecar  
attachment, was most remarkable. The  
astonishing agility of the one-armed  
passenger, young Eric Peacock, did  
almost more than anything else to make  
success possible. The way he shed him-  
self and rescued the outfit on the pre-  
cipitous outside edge of the lower hair-  
pin, whilst still keeping all on the move,  
was one of the most stirring sights of  
an exciting day. The crowd on the  
upper "hairpin" spontaneously cheered  
the plucky pair as they swung upwards  
and out of sight in the clouds. Then,  
after some of the bigger machines had  
shown their paces, the party was  
scattered by the oncoming storm. Thus  
ended a glorious day, which will live  
long in the memories and records of  
motor mountaineering in Lakeland.



## CHAT (continued)

## "Notice to Quit."

The Germans have "got the push," to use a term with a double meaning.

## Motor Cyclists Ineligible.

The list of motor cyclists ineligible for military service or discharged, which we compiled some weeks ago, was applied for by another Birmingham manufacturer last week. Will those on the list who obtain positions kindly notify us, so that their names may be removed?

## The Petrol Census.

A correspondent writes from Eskdale to say that, as no daily papers reach that place, he only heard of the petrol census after the last date given for filling up the forms, when he saw particulars in *The Motor Cycle*. Certainly the technical papers should have had ample notice of the proposed census.

## The National War Funds.

At the week-end the principal war funds stood as follow:

The Prince of Wales's National			
Relief Fund	£5,328,000		
(distributed)		£5,914,220	0 0
British Red Cross Fund		4,025,140	0 0
Tobacco Fund		109,499	6 11
The Queen's Work for Women			
Fund		169,599	3 4

## Cattle on the Roads.

A decision of considerable importance to motor cyclists was given by Judge Harington at the Reading County Court last week. In January, Lt. A. D. Ross was driving his wife in a sidecar, and encountered a herd of sixty cows. He slowed up, but one of the cows ran into the sidecar and overturned it. Judgment was given against the owner of the cows, on the ground that he had not exercised sufficient care in providing only one man to look after the cows. This seems to us a most just decision.

## Petrol Supply.

All petrol users are anxiously awaiting intimation as to the commencement of the petrol permits, but no official statement has yet been made. In the meanwhile, however, it is worth drawing attention to the statement made last week by the Chancellor of the Exchequer when questioned as to the position of a motorist stranded far from home with an empty tank and his petrol licence showing that he had purchased all the petrol to which he was entitled. Mr. McKenna stated that the unfortunate motorist would not be able to buy any more, and would have to trust to a friend coming along who would offer a helping tin.

## The Sailors this Time.

The sidecar outing to be organised on July 8th by the Harley-Davidson Motor Co. will be for the benefit of sailors who were wounded in the recent great naval action. The men will be transferred from the R.N. Hospital at Greenwich to South Palace Yard, Westminster, outside the House of Lords, and a start will be made thence at noon for Lord Northcliffe's seat, Sutton Place, Guildford, which is just off the Ripley Road. Owners of Harley-Davidson sidecar outfits who are able to co-operate are requested to get into communication with Mr. J. A. Masters, the Harley-Davidson Motor Co., Ltd., 74, Newman Street, W.

## More Petrol Figures.

In reply to questions asked in the House last week, it was stated that the total import of petrol spirit into the United Kingdom in the twelve months ended May 31st, 1916, was 144,000,000 gallons. The quantity imported apart from that used for Government purposes cannot be stated. The quantities on which duty was paid in the same period were: At commercial rates, 48,500,000 gallons; at private rates, 65,100,000 gallons; total amount on which duty was paid, 113,600,000 gallons.

## Another Advantage of a Motor Cycle.

Near Dunchurch on Sunday afternoon, about 4.30 p.m., two M.M.G.S. men—one on a twin Rex sidecar, the other on a Triumph—passed us at a lively bat. Evidently they were on the way to camp after short leave. Service men who travel by train have to start back an hour or two earlier to that district owing to the restricted Sunday train service, and men must, of course, report at the time they are due back. Thus a motor cycle is cheaper to run than the cost of railway fare, and the leave is prolonged.

## Meeting a Meat Eating Beast.

Encounters with wild beasts are fortunately not a thing to be expected or to take precautions against in this country, but it appears that a motor cyclist clergyman, when riding in Wales recently, came almost face to face with a savage-looking brown bear who was at that moment engaged in dining off mutton (uncooked). Putting on all speed, the rider flashed by, a mile or so further on passing a gipsy encampment, from which it is probable the bear had escaped.

## In Memory of a Gallant Sailor.

At the A.C.U. committee meeting this evening (Thursday) Mr. E. M. P. Boileau (*The Motor Cycle*) will move a resolution to the effect that, in order to perpetuate the memory of the late Rear-Admiral Sir R. K. Arbuthnot, Bart., and his association with the motor cycle movement, a challenge trophy be put up. It would be known as the Arbuthnot trophy.

## PETROL SUBSTITUTE.

It was reported last week in the daily press that Mr. F. W. Bricknell, the Hull City Engineer, had arranged for a six months' supply of motor fuel at 8d. a gallon. This seemed too good to be true, and that our scepticism was justified is proved by the following letter from the gentleman in question in reply to an enquiry we addressed to him:

## PETROL SUBSTITUTE.

"Sir,—Referring to yours of the 29th June, the report to which you refer is totally inaccurate.

"I informed my committee that I was making a contract which would effect a saving of about 8d. per gallon on present prices, but as the supply was limited and not marketed I suggested that no entry should be made in the minutes, and asked the reporters not to mention the transaction. One of them, however, who, I believe, is a motor cyclist, became unduly excited, and, it appears, sent a report to the Central News, with the result that I am to-day inundated with enquiries.

"As a matter of fact the spirit is a petroleum spirit of a somewhat higher specific gravity than Taxihus.

F. W. BRICKNELL."



TESTING STUCCHI MILITARY SIDECARS ON A 1 IN 5 GRADIENT WITH A HAIRPIN BEND.

The Stucchi is an Italian machine and large numbers are in use by the Italian War Office.



# "The good old ZENITH" —but read the letter—

Zenith Motors, Ltd.,  
Hampton Court.

Hull, 16/6/16.

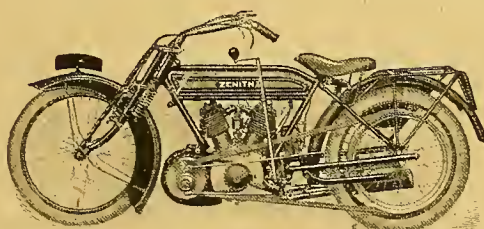
Dear Sirs,

You will no doubt be interested to hear that the 6 h.p. Zenith, which was supplied through your local agent just three years ago, is still running as well as ever.

Its mileage to date is approximately 60,000, and I have never once been hung up with mechanical trouble. I have found it to be a most economical machine in every way. The Petrol consumption has been very satisfactory, averaging close upon 60 m.p.g., and I do not find that the Gradua Gear appreciably shortens the life of a belt.

I think a word of praise is due to the finest machine I have ever ridden—"the good old ZENITH."

Yours, etc.



A "Clutch and Countershaft" type, with Kick Starter, Positive Locking Clutch, longest Belt Drive, and the Gradua Gear.

Models from 3½ to 8 h.p.  
Catalogue with pleasure.

ZENITH MOTORS, Ltd.,  
HAMPTON COURT, ENG.

# Norton

## 1916 MODELS.

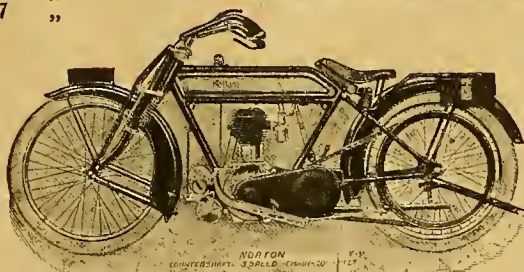
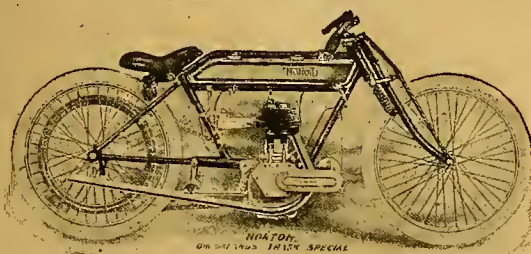
The Norton  
3½ Sports  
Models  
hold 21  
WORLD'S  
RECORDS

Model		Price
1	Big Four, 82 x 120 chain drive .. .. .	68 Guineas
2	3½ h.p., 79 x 100 chain drive .. .. .	66 "
3	Big Four, chain belt .. .. .	67 "
4	3½ h.p., chain belt .. .. .	65 "
15	Big Four Combination, chain or chain belt, 3" tyres .. .. .	85 "
7	Brooklands Special, certified 75 m.p.h. .. .. .	68 "
8	Brooklands Road Special, certified 70 m.p.h. .. .. .	63 "
9	Tourist Trophy .. .. .	52 "
16	Countershaft T.T. .. .. .	67 "

ALL WORTH WAITING FOR.

NORTON MOTORS, LIMITED,  
BIRMINGHAM.

LONDON: Bartlett & Co., Gt. Portland St.



"I made a 7-9 .... look like a baby 2-stroke."

In answering these advertisements it is desirable to mention "The Motor Cycle."



# WHITELEYS

will supply you with

## Any Make of Motor Cycle by Easy Payments

and add 2 per cent. only to the List Prices for a year's credit.

Should you select a Calthorpe two-stroke, two-speed (cash price, 31 guineas), you pay 13/- extra only. The machine is delivered after payment of £6 4s. od., to be followed by 12 monthly payments of £2 5s. od.

## WE HAVE THE BEST ASSORTED STOCK OF MOTOR CYCLES IN GREAT BRITAIN.

New machines arrive from the works daily—it is therefore impossible for us to give a complete list. Among the machines on show in our Showrooms are the following—

### SOLO MACHINES.

7-9 h.p. 16J 1916 HARLEY-DAVIDSON, dynamo electric lighting set	£	s.	d.
7 h.p. AMERICAN EXCELSIOR, 3-speed	89	0	0
4-5 h.p. ZENITH, clutch, Model D	75	0	0
4 h.p. No. 6 JAMES, 3-speed	73	18	0
4 h.p. N.U.T., twin, T.T. (late 1915, new)	66	5	0
2 h.p. ALLON, 2-stroke, 2-speed	65	0	0
2 h.p. CALTHORPE-J.A.P., 2-speed, variable ignition	42	0	0
2 h.p. ROYAL RUBY, 2-stroke	37	15	0
2 h.p. ROYAL RUBY, 2-stroke, 2-speed	29	10	0
2 h.p. WOLF, Model "A", 2-speed	36	10	0
2 h.p. NEW IMPERIAL, 2-speed, variable ignition	33	10	0
2 h.p. HOBART, 2-stroke, 2-speed	37	12	0
2 h.p. LEVIS, latest model	37	16	0
2 h.p. ALLON, 2-stroke	32	0	0
2 h.p. O.K., 2-stroke	36	0	0
2 h.p. IXION, 2-stroke	25	10	0
2 h.p. IXION, 2-stroke, 2-speed	28	10	0
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	98	16	6

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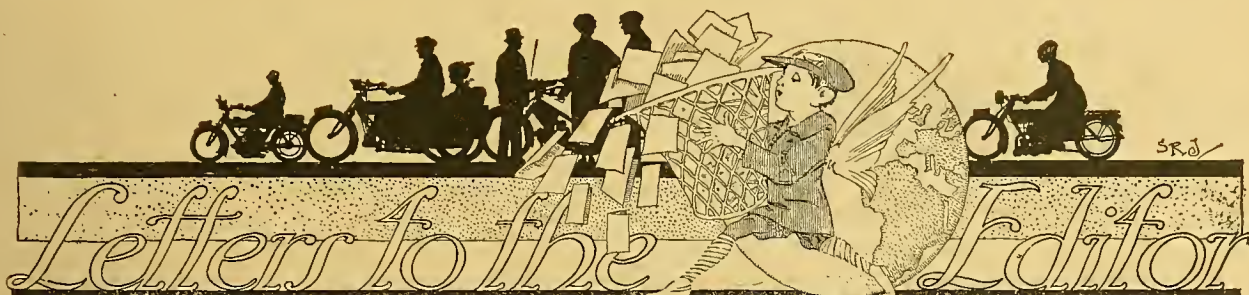
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The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Copper Cooling Devices.

Sir,—I am sorry I have not replied to Mr. Donaldson's letter sooner. I shall be very pleased to give full particulars as to making and the results of using these radiators. I may say I am now getting 81 m.p.g. out of my heavily laden De Luxe Norton sidecar outfit over long runs—a marked increase on my consumption previous to fitting the radiators.

A. LINDSAY (CAPT.)

#### Piston Tap or What?

Sir,—I have had recent experience on the subject. After taking down a 7.9 h.p. Indian, to fit a new big end bearing, I was troubled with a slight scraping knock which apparently emanated from the front cylinder. I put down the cause to lack of lubrication, and on testing the mechanical oil pump I found practically no oil was being delivered to the front cylinder. After cleaning the pumps and slightly increasing the flow of oil the knock completely disappeared. The Indian is, of course, fitted with a lead direct from the mechanical pump to the front cylinder.

H. W. KILBY.

#### Spring Frames on Freak Hills.

Sir,—Referring to "Ixion's" remarks on the spring frame for freak hill-climbing, I might say that if he will try a hill like Walna Scar on one of these machines he will find, when he meets with a piece of rock standing above the level of the road, he is lifted up, and when he drops again he rebounds with the springing, and probably meets with another piece of rock and does the same thing. What chance has he of climbing a hill like this when he is constantly doing gymnastics in the air? There is no doubt the spring frame machine is very comfortable on the main road.

J. G. BETHWAITE.

#### A Trip to Imbros.

Sir,—I ask you, in fairness to myself, to publish this answer to a letter which appeared in your issue of June 22nd.

This may help your three correspondents to remember the incident. I was staying for a few days only in Imbros, and had gone from the R.N.A.S. camp to the departure office to find out if trawlers were leaving, as the weather was rather rough and delayed departures were frequent. One of the three correspondents was sent down with the Clyno outfit to meet me, and was good enough to let me ride back.

I trust the disclosure of this fact has not caused any trouble, which is the only explanation I can see for the curious, though rather unnecessary, denial.

G. L. ROSSITER.

#### Four-cylinder Engines.

Sir,—I was very pleased to see Mr. Thompson's letter on June 29th. If Mr. Lee does not avail himself of Mr. Thompson's offer, I should be pleased to borrow the patterns, with the owner's permission. It is a good sporting offer of his. I must also thank Mr. Thompson, as since cleaning the magneto and taking the inner tube out of the silencer my machine has improved in starting, slow running, and picking up on top. I have trouble with the back wheel continually slacking back on its bearings. The makers cannot suggest a remedy except punching the threads of the nut. Can any of your readers suggest something permanent?

CHARLES H. VOWELS.

#### Average Speed.

Sir,—I have been very much interested from time to time regarding the average speed of some of your readers. Having heard several fellows talk lightly of averaging 40 m.p.h. on a long run, I decided to see exactly what my machine (T.T. Scott) would do the journey from North London to Pontypridd—a distance of 176 miles—with a 10 st. passenger on the carrier, I myself weighing 13 st.

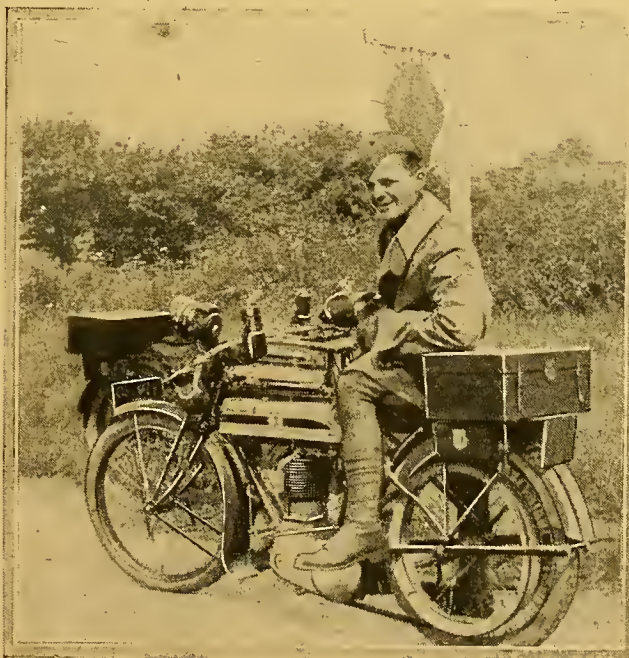
Starting at 11 a.m. we covered the first eighty-eight miles in three hours and the remaining eighty-eight in 3h. 10m., at an average running speed of 29 m.p.h.

Now, I was running all out practically all the way, towns and villages excepted, and I venture to say that few machines would overtake me for any length of time on account of water cooling and wonderful speed at which curves can be taken on the Scott. I have been the owner of three machines prior to the Scott—all first-class makes—and can safely say that for speed on give and take roads they cannot be compared with the Scott.

It seems absurd to hear men say they averaged 40 m.p.h. for the run, when I know from experience that I can invariably leave them should I come across them on the road.

I have just seen a Scott taken down for decarbonising after 3,000 miles, and was surprised to find all the rings were absolutely free in their grooves. I may say I have nothing to do with the Scott Engineering Co. beyond that of a very satisfied owner.

A. COLLINGS.



Triumph mounted motor cyclist of the Royal Flying Corps. The machine is one of the latest 4 h.p. countershaft models with the semi-T.T. bars, and is the type now being supplied to the R.F.C.



### Wounded Soldiers' Outings.

Sir,—I am rather envious of the various tellows I see from time to time in your excellent photographs of "Wounded Soldiers' Outings." I suppose there is no chance of one being held down here (Portsmouth), as I should dearly like to be on "the road" again, for I have now been separated from "the old 'bus" for eight months, "owing to business abroad," and my home is in Birmingham, so there is no chance of visits from friends.

T.T. TRIUMPH.

[Perhaps the publication of this letter will induce some patriotically-minded motor cyclist (and what motor cyclist is not patriotic?) to fulfil the desire. Others in different centres might follow suit.—Ed.]

### The Public Schools Motor Cycle Club.

Sir,—I note with considerable astonishment that it is suggested a Public Schools Motor Cycle Club should be formed. I am sure that many readers of *The Motor Cycle* have not forgotten that in 1914 a club bearing this title was already in existence. This body had its registered offices at 17, Basinghall Street, and was a very active and energetic little club. It was open to past and present members of the Public Schools and of Woolwich, Sandhurst, Osborne, and Dartmouth. As regards the Public Schools whose members it admitted, these were taken from the list drawn up by the Public Schools Club.

May I point out that this club is not dead but dormant? It has a record to be proud of, and its committee and members have acquitted themselves nobly for King and country. Clive Preen, the secretary, is at present doing Government work in Egypt; C. Q. Roberts and Tallboys-Getting were both killed in action; B. C. Barton is in the Army Service Corps in France; R. L. Keller and P. C. Douglas in the Royal Flying Corps.

Is it fair to advocate the organisation of another body at the present time when our own club is necessarily dormant owing to its committee and members being otherwise engaged? It is a properly recognised club, duly affiliated to the Auto Cycle Union, under whose auspices it held numerous competitions, such as inter-Public Schools race meetings at Brooklands, hill-climbs, and week-end runs. In its competitions there took part both past and present members of our great Public Schools, and the naval and military training centres, and there is no doubt that it fulfils the duty which it was intended to fulfil. I therefore ask for fair play. As soon as the war is over the club will use its endeavours to foster the sport. A. Q. ROBERTS.



HEALTHY RECREATION AT THE M.M.G.S. TRAINING CENTRE.

The C Battery 'eam in the recent cross-country race. The winner, Knight, is shown by a x. The names are: Back row (left to right), Elliott, Miller, Martin, Lovat, and Evans; front row (left to right), Stott, Knight, Harnes, and Bacon. The man in uniform is Batt Sgt.-Maj. Keen

### Petrol War Tax.

Sir,—I feel sure that the motor cycling community as a whole are grateful for the good influence of *The Motor Cycle* on their behalf in materially assisting towards the present more equitable form of taxation. I for one shall quite smilingly pay up—and economise. I confess when I first read the news I was filled with joy at the thought that the thousands of cheap over-powered non-British cars and the huge road-destroying commercial lorries would at last be compelled to toe the line with us at least in one degree. And now my "envy, hatred, and malice" will soon turn to downright cursing and swearing. Why should the tradespeople and manufacturers get off? Hundreds of shopkeepers who keep a small pleasure car, when they heard of the proposed tax, quietly hung the business plate on the back of the car—and smiled! I know a watch repairer who used a small car, but has recently hung up his name and address, and so converted his car "for business only." Now, how on earth is anyone to know should the watchmaker decide to deliver a watch two miles away by going a pleasant fifty mile run to do so? I am quite sure private car owners and motor cyclists would like to see all types of petrol using vehicles bear with them the sixpenny petrol tax for the duration of the war.

SPARTING PORSON.

### Piston Tap or What?

Sir,—Regarding the article by "Trials Rider" on piston tap in your issue of May 25th, I had an experience a few weeks ago which, I think, throws some light on the subject.

About three months ago I took over a new Triumph (1915, countershaft) and "ran it in" very carefully. After about 1,000 miles the machine was running perfectly, the engine being particularly quiet. On dismantling the cylinder for cleaning, however, I accidentally snapped the lower piston ring, and, not having a spare handy, I replaced the cylinder minus the bottom ring, thinking that I should benefit by the oil groove thus formed.

On returning the machine to the road I was surprised to hear a peculiar tapping when running under certain conditions. I thought at first that it was play in one of the tappets, but on examination the adjustment proved to be correct. The tapping was very distinct when running at about 10 or 15 m.p.h., especially after a stretch of hard driving, but on opening out again it would entirely disappear. I soon discovered that the trouble was due to a slight piston rock, owing to my removal of the bottom ring, which would naturally have a steadying effect on the skirt of the piston and compensate for any slackness between the piston and cylinder walls. On replacing the ring the trouble entirely disappeared.

I should be pleased if you could find room for this letter in your columns, and should like to hear other readers' experiences on this matter.

A. RYCROFT.

B.E.F., France.

### Petrol Waste.

Sir,—From time to time I have read in your interesting paper letters from correspondents dealing with the wastage of petrol that goes on in the A.S.C. and other branches of the Service. I myself had occasion to witness an incident of wilful wastage of the "precious spirit" which will no doubt be of interest to you.

A few days ago an Army biplane had a breakdown, and mechanics were sent down to put a new engine into it. When they had finished, instead of wiping their hands on a rag, one of them took a can of petrol, held it between his legs, undid the stopper, and washed his hands and arms in the petrol as it gushed out, just as if it had been water from a tap! Some of the other mechanics then did the same. Meanwhile the driver who had brought down the spare engine was giving the bodywork of his transport a wash down with petrol from another can. It was then found necessary to make some adjustment to the carburettor of the aeroplane, part of which was taken out and adjusted. Meanwhile—I should say for at least ten minutes—petrol was running out on to the ground in a steady stream, none of the mechanics thinking of turning it off.

I am a schoolboy, and own a 2½ h.p. Douglas, which I use to go backwards and forwards to school on, instead of using a train. At the most I use no more than ten to twenty gallons of petrol per year. D. G. TREGELLES.



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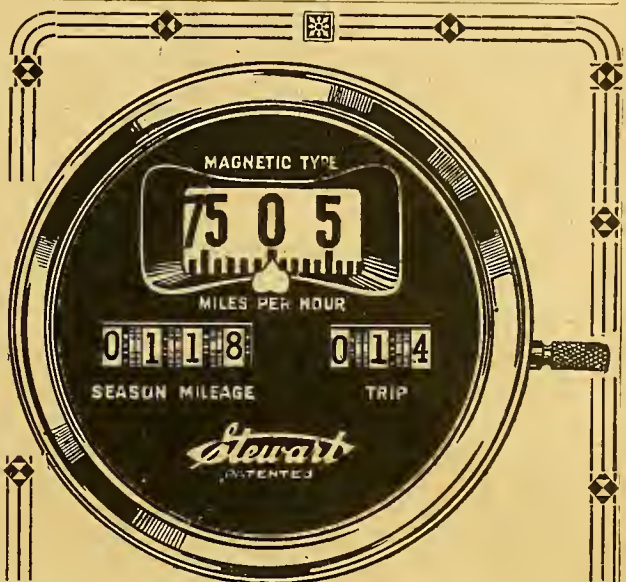
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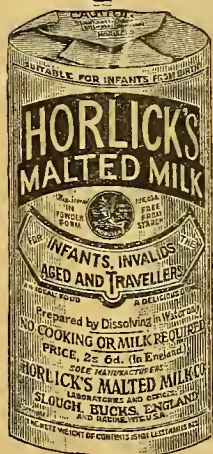
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## QUESTIONS



## REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

**Magneto Chain Adjustment.**

**Q.** I have a 1913  $3\frac{1}{2}$  h.p. Triumph motor cycle. A very annoying noise has developed, which is, I think, due to the rattling of the magneto driving chain in its case. It is especially noticeable at speeds of 30 m.p.h. or over. Will you please inform me if there is any way of tightening this chain?—B.B.

Yes; you undo the holding-down bolts of the magneto and slide it on its base. You will find that these pass through elongated holes.

**Another Argument.**

**Q.** Some of my friends contend that, given a motor engine running at, say, 1,000 r.p.m., and giving, say, 10 m.p.h., it will, if the spark be advanced to give 1,500 r.p.m. (the throttle not being touched), increase the speed to 15 m.p.h. and so on, the speed increasing in exact proportion to the engine revolutions. In theory this may be so, but in practice I think the two do not keep in proportion.—AMATEUR V.

The road speed varies with the engine speed, of course, on the same gear, provided that no slipping takes place in the transmission or between the tyres and the road, and this should not occur at the speeds you name, though it undoubtedly does occur at racing speeds.

**Spark Timing too Early.**

**Q.** I have recently purchased a 4 h.p. 1911 single-cylinder and side-car. This is my first machine, and I am, consequently, quite a novice. The combination runs exceedingly well, with plenty of power. The only trouble I have is knocking. This happens when going slowly on top gear such as when turning corners and also when I change from low gear to top (N.S.U. gear). If I retard the spark the knocking at once stops; in fact, I find the machine runs much better with the spark almost fully retarded. Has a retarded spark a bad effect on the engine? I believe the engine is quite clean, as I had it overhauled after I purchased it, and have since done only about 300 miles. The knocking also stops if I cut down the air a little. The free engine on the N.S.U. gear (which is quite new) does not seem any too free. Will this improve as it gets used?—F.J.N.

It entirely depends upon how the engine is timed, but, from the symptoms, we should say that the spark is timed too early. It should be timed in the follow-

ing manner: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break, and the ignition lever two-thirds retarded. This will mean that the explosion when the ignition is fully retarded will take place when the piston has travelled about 1.5 mm. down the firing stroke. You should check this, and if you find the timing is in advance of this setting it would be advisable to retune the magneto. If the engine is as far advanced as it appears to be, no harm will ensue through driving with a retarded, or partially retarded, spark; but, of course, if the machine were normally driven on a retarded spark it would cause overheating and an increase in carbon deposit owing to incomplete combustion. We think that the clutch will free after a little further use. It is

necessary to see that the gear is adequately lubricated.

**An Inefficient Horn.**

**Q.** I have a French three-note motor cycle horn. Whilst away touring the notes refused to sound on compression of the bulb, and the air seemed to blow back. I have recently taken the horn to pieces, and on assembling it again I can only get one note to sound. Will you please suggest the cause and remedy?—W.F.D.

Remove the reeds from the horn and blow through them. Also slip a piece of thin paper between the tongue and the other portion of the reed. This should clear away all dust, and the horn should then sound. These horns are very easily choked by dust.



FIRST APPEARANCE OF THE TWO-STROKE INDIAN LIGHTWEIGHT IN A BRITISH TRIAL. (See our last issue.)

C. B. Franklin leaving Newathbridge in the Dublin and District M.C.C. twenty-four hours trial. The Franklin-Indian combination did remarkably well, as usual.



**A Magneto Failure.**

**?** I had my machine down last winter, and since then I have been unable to make it go. The engine is perfectly timed. I have had a new Lodge three-point plug fitted, and had the carburetter overhauled by the makers. When I take the plug out to see if it sparks on the top of the cylinder nothing happens, but a decent shock can be got by holding the terminal and just walking the machine. When I take off the magneto, place it on wood and the plug on a dry brick floor, I can get a splendid spark, not only at the points but all over the plug, by turning the magneto round slowly; but when I place both magneto and plug on cast iron nothing happens. I may say I run the motor cycle fairly fast when trying to start down a decent hill. I do not think there are any leaks in the induction pipe.—GREEN HORN.

The magneto seems to be in quite good order, and we should therefore imagine that the trouble is due to a defect in the high-tension wire. The magneto should spark when standing on cast iron. Of course, when you lay the plug on the iron you must be sure that only the body is in contact. If the terminal were touching you would get no spark. We cannot understand why the plug should spark when the magneto was insulated, as the current must pass from the plug body to "earth," i.e., the frame of the magneto.

**Hiring Motor Cycles.**

In response to enquiries we often receive from readers desirous of hiring motor cycles, we may state that a Manchester firm undertaking this class of work is the Manchester Motor Cycle Hire Co., of 194, Oxford Road.

**A Rebellion Souvenir.**

Under the title "Dublin after the Six Days' Insurrection," Messrs. McCreedy, Percy, and Co., Ltd., 11, Findlater Place, Dublin, have issued a picture souvenir of the Sinn Fein rebellion, containing thirty-one camera pictures by Mr. T. W. Murphy. The pictures bring home to one the scenes of devastation that presented themselves when the suppression of the rising was accomplished. The booklet is published at 8d. post free.

**To Minimise Puncture Troubles.**

A correspondent strongly recommends "Puncture" (obtainable at Halford Cycle Stores) for use in porous inner tubes and as a cure for punctures. He has used this specific with great satisfaction for some time, and finds that it heals all small punctures, makes the use of an inflator very seldom necessary, does not interfere with the repair of large cuts, and has no bad effect upon the patches.

**A Good Record.**

H. E. Newcombe, a Cirencester owner of a 1914 model  $2\frac{1}{2}$  h.p. three-speed Jap-Wolf, writes that he recently made a clean ascent of Nailsworth Ladder, and that he also brought a passenger on the carrier up Birdlip. The machine has covered 7,500 miles, and the only renewals to the engine, we are told, have been valve springs and a new big end bush. On long runs the petrol consumption is about 140 m.p.g.

B26

**READER'S REPLY.****Fitting a Magneto Switch.**

In your issue of June 22nd there is a letter asking whether the fitting of a magneto cut-out does any harm to the magneto. I have owned three motor cycles, and on my first—a  $3\frac{1}{2}$  h.p. single-speed B.S.A.—I fitted a magneto switch, with the result that, not the magneto, but the engine, especially the big end, was very badly worn. When a machine is doing about 2,000 r.p.m. the sudden shutting off of the throttle, which takes, say, about a third of a second, will allow ten revolutions of the flywheel, that is five explosions, to slow the machine, but the magneto cut-out shuts off the engine instantaneously, thus causing great strain on the bearings. I think this may be of interest to some of your readers.—CONSTANT RIDER.

**RECOMMENDED ROUTES.****GREAT MISSENDEN TO HORLEY.—M.O.W.**

Great Missenden, Amersham, Uxbridge, Staines, Weybridge, Cobham, Leatherhead, Dorking, Reigate, Horley. Approximately 55 miles.

**BALDOCK TO CHELTENHAM.—R.E.I.**

Baldock, Hitchin, Luton, Dunstable, Tring, Aylesbury, Thame, Wheatley, Oxford, Witney, Northleach, Andoversford, Cheltenham. Approximately 103 miles.

**GLOUCESTER TO WORTHING.—C.D.**

Gloucester, Cirencester, Cricklade, Aldbourne, Hungerford, Newbury, Kingsclere, Basingstoke, Alton, Petersfield, Midhurst, Petworth, Washington, Findon, Worthing. Approximately 135 miles.

**CHICHESTER TO OXFORD.—H.L.A.**

Chichester, Petersfield, Alton, Basingstoke, Aldermaston, across the Bath Road, Pangbourne, Streatley, Wallingford, Dorchester, Oxford. Approximately 80 miles.

**STAFFORD TO PENZANCE.—W.G.**

Stafford, Penkridge, Wolverhampton, Kidderminster, Worcester, Gloucester, Stroud, Nailsworth, Bath, Chewton Mendip, Wells, Glastonbury, Durston, Taunton, Exeter, Moretonhampstead, Two Bridges, Tavistock, Callington, Liskeard, Lostwithiel, St. Austell, Probus, Truro, Redruth, Camborne, Penzance. Approximately 290 miles.

**FOLKESTONE TO BATH.—L.J.B.**

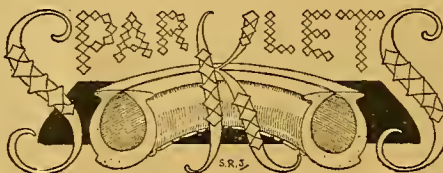
Folkestone, Shorncliffe, Hythe, Ashford, Charing, Maidstone, Wrotham, Heath, Ightham, Riverhead, Westerham, Limpsfield, Godstone, Redhill, Reigate, Dorking, Shere, Guildford, Farnham, Odiham, Basingstoke, Whitechurch, Andover, Ludgershall, Upavon, Rushall, Devizes, Melksham, Box, Bath. Approximately 165 miles.

18in. x 2in., and 18in. x  $2\frac{1}{2}$ in. The cost is 2s. for the smaller size, other sizes being proportionately more.

**Catalogues Received.**

We are in receipt of the latest catalogue of the Royal Ruby heavyweight motor cycles. It is a fine production, incorporating as it does numerous illustrations of the many interesting features which this machine possesses. It shows, for example, the adjustment of the footrests; the rear mudguard and carrier, which form a single unit, and on one of the horizontal stays of the carrier the pump is carried; the gear box bracket; the thief-proof device, which prevents the stand from being lowered when in position by means of a padlock; and the interconnected control of the clutch. Both the single and twin-cylinder machines of 5 h.p., 6 h.p., and 8 h.p., and sidecars also, are incorporated in this catalogue.

J.A.P. Motors. J. A. Prestwich and Co., Ltd., Northumberland Park, Tottenham, N. We have received a booklet of the  $2\frac{1}{2}$  h.p. J.A.P. engine, which deals with the subject in a particularly clear and lucid manner, the author being himself a practical rider as well as a highly qualified designer. The fullest possible information concerning this efficient little engine is given, and an illustration shows the name of every visible working part, which is, of course, invaluable to the novice. It is further illustrated by means of a sketch showing the interior parts. The trade man also is not forgotten, as mechanical drawings are to be found of the engine, giving the principal dimensions, so as to enable it to be built up into various frames, and also the size of the pulley side bearings and spindles, whether for chain or belt transmission.

**Petrol Substitutes.**

The demand for petrol substitutes continues, and we are told that one firm alone—Kemp's Vulcanising Co., Ltd., of Hardman Street, Manchester—have supplied more than a thousand barrels, each containing forty-two gallons of their "Kempol" fuel within the last few weeks.

**The John Bull Compound Patch Strip.**

Most motor cyclists have found the need for a long patch at some time or another, and probably it has been necessary to fix up a temporary repair with several smaller patches lapped over each other. With the object of obviating this trouble, the Leicester Rubber Co., Ltd., makers of the John Bull specialities, have introduced an 18in. band or strip of good red rubber, bevelled at the edges and prepared similarly to an ordinary patch.

With this the rider has the advantage of being able to cut off any length of patch to suit his requirements. It is made in three widths, viz., 18in. x  $1\frac{1}{2}$ in.,



The John Bull patch strip.



You can't  
drive a  
knife  
through  
the tread.



## THE STELASTIC TYRE

IS ABSOLUTELY CUT-PROOF  
AND  
PRACTICALLY PUNCTURE-PROOF.

A wonderful combination of spiral steel "meshes" of pure rubber working in perfect harmony.

Stelastice Tyres are the only Tyres holding the R.A.C. Certificate for 5,000 miles, on all four tyres, without cut or puncture.

And for these 5,000 miles the Stelastics carried a two-ton Daimler.

## THE NEW CHOCK BEAD

PREVENTS ROLLING and is a wonderful improvement on other makes.

	Covers.			Tubes.				Covers.			Tubes.		
	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
26 x 2½ ..	2	5	3	..	7	0	28 x 3 ..	2	9	6	..	10	6
26 x 2½ ..	2	7	9	..	8	3	650 x 65 mm.	2	9	6	..	10	3
(to fit 2½)							<b>LIGHT CAR.</b>						
26 x 2½ ..	2	7	9	..	8	3		Covers.			Tubes.		
26 x 2½ ..	2	9	6	..	8	3	700 x 80 mm.	2	19	6	..	13	6
(to fit 2½)							700 x 80 mm.	2	18	6	..	13	6
26 x 3 ..	2	14	6	..	9	6	Steel Studded						
							to fit 650 x 65 rims.						

IMMEDIATE DELIVERY OF ALL SIZES.

Write for particulars to

**STELASTIC TYRES, LTD.,**  
76, YORK ST., WESTMINSTER, LONDON, S.W.  
Telegrams—"Torkitire, London." Telephone—Vic. 4442 and 4361.



## The Originality

which has secured for  
Sphinx plugs their position of  
Honour throughout the world  
also finds expression in the mode of  
their packing.

The arrangement is such that without  
breaking the seal which holds the

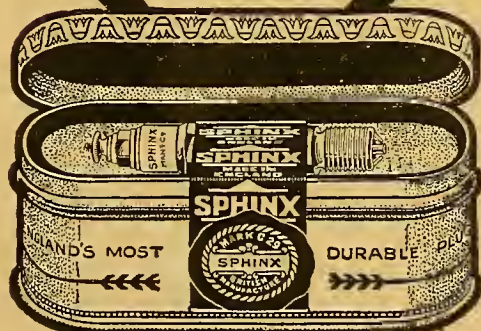
## SPHINX

plug in the box, the lid may be lifted,  
revealing a removable card fully de-  
scriptive of the type of plug. Thus  
the obvious merit of sealing is coupled  
with the equally essential advantage of  
knowing precisely whether the plug  
under the seal is the pattern suitable  
for the purpose in view.

Interesting booklet showing the  
various types of Sphinx plugs free  
on request.

## THE SPHINX

Manufacturing Co.,  
Dept. B/G,  
BIRMINGHAM.



In answering these advertisements it is desirable to mention "The Motor Cycle."



# Judge by Results

**T**HE superiority of "The Motor Cycle" as a medium for small advertisements of Second-hand Machines, etc., is very clearly demonstrated by the unsolicited testimony given below, which is typical of the correspondence we receive.

## Never Had so Many Answers.

Re your letter of the 4th inst. I thank you for same, but have to inform you that the article is sold. All the articles I advertised were sold the same week, and I have never had so many answers to an advertisement before. I am still having answers, and have to return the money in some cases.

*S. Hover, 208, Merton Road,  
Wandsworth, S.W.*

## Over 100 Replies Weekly.

Re Armstrong Parts advertisement. It says much for the way that "The Motor Cycle" readers study your columns, for we are pleased to be able to inform you that we have had weekly over one hundred replies to our advertisement, the majority of which we are able to supply by return with the parts they want.

*County Cycle & Engineering Co.,  
24, Staines Rd., Hounslow.*

## Twenty-four Enquiries.

The last time I advertised in your paper was a few weeks ago. It was a machine belonging to my brother. I had about twenty letters and four telegrams in reply, and sold the machine to one of the applicants.

*R.J.H., Kettering.*

## Some Real Good Offers.

Last week I advertised in "The Motor Cycle" for a 1915 combination. I thought I should manage to get suited by so doing. I should like you to know the result.

I received over fifty letters, besides several postcards, and some were real good offers. Needless to say, I was very soon suited.

*G. J. McKay, 183, Battersea Park  
Road, London, S.W.*

## Twenty-one Replies.

I had ten replies to my advertisement in your paper of a 1914 Triumph and sidecar, also five offers of exchange and four callers and two wires.

*R. F. Meredith, Bedford.*

## Plenty of Applications.

Mr. ——— was the first to answer my advertisement, and he wanted to know if I was willing to send on cover if he deposited money with you, and I agreed. I had about twenty other applications, some of whom sent on cash.

*F. A. Vallis, Somerset Rd., Frome.*

## Swamped out with Replies.

Please, oh please, stop my advertisement. Simply swamped out with callers, letters, and postcards. Many pounds returned.

The above are absolute facts. Sold the same day as advertised.

*W. Winward, 342, Gt. Clowes St.,  
Higher Broughton, Manchester.*

## A Satisfied Buyer Every Time.

We might say we have had several advertisements with you now, as you know, and each time we have met with a satisfied client.

*Clark & Son, Motor Engineers,  
Long Melford.*

## Sold in Half an Hour.

Will you please insert the overleaf advertisement in your excellent paper "The Motor Cycle," of which I am a regular subscriber. I thought I would just tell you I inserted an advertisement a little while ago re L.M.C. After appearing in your issue I received a telegram, and upon taking machine in reply I sold it within half an hour to a very satisfied customer.

*C. Jennings, Barum House,  
Sampford Peverill, Tiverton.*

Address advertisements to  
"The Motor Cycle," 20,  
Tudor St., London, E.C. (or  
Hertford St., Coventry).

Copy must be posted to  
arrive by FIRST POST  
ON FRIDAY.



For rates see Miscellaneous  
Advertisement pages.





# HUNTS, Ltd., Motor Factors, 117, LONG ACRE, LONDON, W.C.

Specialists in Motor Cyclists' Clothing.

## THE HUNT "ALL-WEATHER" SUIT.

The HUNT North Road  
Trousers Overall Leggings.A Reliable  
Outfit at a  
Popular  
Price.

Manufactured in double texture fawn waterproof material. Coat, double-breasted, wind and rain cuffs, storm collar, throat tab, ventilated under arms, two side pockets with flaps. Leggings manufactured of the same material to match, with straps for attaching to brace buttons, spat feet. Stock sizes: Coat, length 36in., chest 40, 42, 44in. (size taken over coat). Leggings, full length 34in., length inside leg 29in. Price of suit complete, **£1 7 6**

Coat only .. £1 0 0  
Leggings only 8 6  
Postage 6d.



Front View. Back View.

Manufactured of double texture waterproof Paramatta. Worn over the ordinary trousers, fastened round waist with leather strap and buckle. Being manufactured in one piece, they are a great protection to the stomach. Impossible for rain, wind, and dirt to drive in on to the rider's trousers as with the ordinary leggings. Strengthened at fork, spat feet, fastening at side with patent clips. Stocked in three sizes, i.e.—

No. 1. Men's length over all 43in., inside leg 31in.  
No. 2. Men's length over all 45in., inside leg 33in.  
No. 3. Men's length over all 47in., inside leg 35in.  
Price, quality A1, **18/6** per pair. Postage 6d.  
Ditto, without seat, **16/6** per pair.

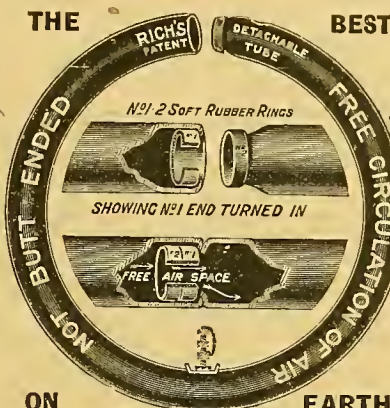
## THE HUNT NEWBURY COAT.

New design. Fitted with strap, which can be buckled at front or back (see illustrations).

Manufactured of double texture fawn Paramatta, double-breasted, storm collar, throat tab, storm sleeves, two outside pockets with flaps, ventilated under arms; proofing guaranteed. Stock sizes: Coat, length 36in., chest 40, 42, 44in. (size taken over coat). Price of coat, quality A1, **£1 7 6** Postage 6d.



## THE BEST



ON

EARTH

GUARANTEED AIR-TIGHT, with Free Air Passage.

PRICES:

	24in. or 26in.	28in.
1 1/2 in. ....	8/-	9/-
2 in. ....	11/-	12/-
2 1/2 in. ....	12/-	13/6
2 3/4 in. ....	13/-	14/6
2 1/2 in., 650 x 65	14/6	16/6
3 in. ....	20/-	23/-
3 1/2 in. ....	26/-	30/-

PEDAL CYCLE, 26 or 28in., 1 1/2, 1 3/4, 1 1/2, 6/-.

Not sold under the above prices.

Cyclists' own tubes fitted with Detachable Joint. 1 1/2, 2/3; 2, 5/-; 2 1/2, 5/-; 2 3/4, 6/-; 3, 7/-; 3 1/2, 8/-.

Pedal Cycle, 1/6.

Always send size of Cover.

Write for Booklet.

The Thames Rubber & Leather Co.  
199, Upper Thames St., London, E.C.

RELIABILITY  
of the

## RICH DETACHABLE Tubes & Covers

4,500 miles on a RICH Tube without using the pump. This absolutely unsolicited testimonial can be seen with a thousand others, at our office; also hundreds of ends of all other makes—British and Foreign—with the opinion of the riders.

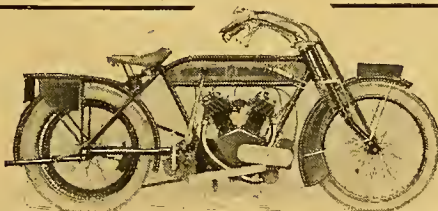
## Testimonial.

Gentlemen, Highgate. Please send me a Rich Tube. I must mention the one I tried and have in use since 1911 is still acting splendidly, and I am now transferring the present one to the front, and fitting a new one to the back. They are a boon.

# OVER-

Ideal for Touring and Commercial Work at home and abroad.

STURDY—RELIABLE—POWERFUL.

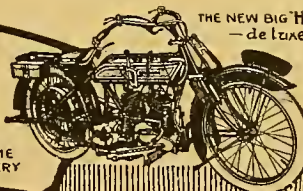


# SEAS

3 1/2 h.p. Single-cylinder.  
6 h.p. Twin-cylinder.  
Countershaft 3-sp. or models  
Art. Last Free from  
OVERSEAS MOTOR CO., Ltd.  
JOHNSTONE STREET, BIRMINGHAM.

**Hazlewoods** LTD COVENTRY. Being engaged in munitions of war ask the indulgence of their agents & the Motor Cycle public in the matter of deliveries

MEANWHILE WRITE &amp; HAVE YOUR NAME BOOKED FOR EARLIEST POSSIBLE DELIVERY



THE NEW BIG H—deluxe

**Velocette**  
A REAL MOTORCYCLE IN MINIATURE

F.W.W.

## RELIABILITY.

"I have now just completed 10,000 MILES IN TWELVE MONTHS. I am still using the same chains and sprockets." (Rider's initials) Rev. R.C.O.

VELOCE, LIMITED, BIRMINGHAM.

In answering these advertisements it is desirable to mention "The Motor Cycle."



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application. Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **Iliffe & Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

- A J.S. 4hp. Combination; £93/17.—Attwood's Garage, Ecclestone, Staffs. [7682]  
 A J.S. 2½hp. 3-speed; £58.—Attwood's Garage, Ecclestone, Staffs. [7683]  
 A J.S. 4hp. new, with sidecar, in stock.—Pickering, Mardol, Shrewsbury. [X3189]  
 A J.S. 2½hp. 2-speed, new, in stock; £55.—Pickering, Mardol, Shrewsbury. [X3188]  
 A J.S. New 1916 6hp. Combination, and 2½hp. sporting models here waiting.—Moss, Wem. [X3233]  
 A J.S. 2½hp. 3-speed, 1,700 miles use; £48.—Turpins, 22-29, Preston Rd., Brighton. [0716]  
 A J.S. 1913, 2½hp. 2-speed, free, clutch, kick, good condition, all on; £25/10.—J., 2, Kendall Av., Sanderstead, Surrey. [7616]  
 1916 A.J.S. beautiful combination, 4hp., recently delivered; expert examination; accept £10 off list price; Military Act.—4, Warwick Rd., Blackpool. [X3119]  
 A J.S. 1914 6hp. Combination, 3 speeds, countershaft, hand clutch, kick starter, Mills-Tulford coachbuilt sidecar; sacrifice £60.—139, St. Michael's Hill, Bristol. [7864]  
 A J.S. 1914, 2½hp., 3 speeds, kick start, enclosed chain drive, speedometer, new tyre, spare tyre, tube, valves, etc., just overhauled; £40.—Sladdin, Bradford Rd., Brighouse. [7630]

## VALUE TALL AND PRICES QUITE SMALL.

These are points that make it worth your while to call and see Britain's largest and best stock of Motor Cycle Bargains now on show at

# WAUCHOPE'S

All Best Makes, new and second-hand, fully guaranteed, ready to ride, at unapproachable low prices for cash or easy terms. Before you decide, get our to-day's big list of

## CLEARANCE OFFERS.

Here are a few selections:

No.	h.p.		
10466.	3½	1915 RUDGE Multi	£45 0
10477.	2½	1912 2-sp. SINGER	£20 0
10478.	2½	1911 single-speed DOUGLAS	£17 10
10479.	8	1914 2-sp. WILLIAMSON and 2-seater Sidecar	£55 0
10482.	3½	1916 3-sp. BROUGH	£59 0
10485.	4	single-speed BRADBURY	£23 10
10492.	2½	1911 ROYAL ENFIELD	£24 0
10494.	2½	1913 2-sp. T.T. DOUGLAS	£27 10
10498.	3½	1916 3-sp. NORTON	£57 10
10495.	5	INDIAN and Sidecar	£65 0
10502.	6	REX and Sidecar, 2-speed	£18 0
10504.	2½	1915 2-sp. REVERE	£38 0
10505.	4½	1913 2-sp. B.S.A. and Sidecar	£45 0
10430.	2	1911 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10435.	6	1912 REX-J.A.P. and Sidecar	£27 10
10445.	3½	1914 3-sp. B.S.A.	£57 10
10453.	3½	1915 SUNBEAM and Sidecar	£73 10
10454.	2½	1915 2-sp. CALTHORPE-J.A.P.	£25 0
10458.	2½	1914 2-sp. 2-stroke GLYNO	£25 10
10459.	3½	1915 ROVER, Gradua pulley	£40 0
10462.	5-6	1913 2-sp. N.S.U.	40 gns.
10465.	3½	1915 T.T. I.O.M. Multi RUDGE	£55 0
10419.	2½	1915 CALTHORPE-J.A.P.	£33 10
10421.	7-9	Sporting MORGAN-M.A.G.	£65 0
10427.	3½	1912 3-sp. ROVER and Sidecar	£32 10
10384.	2½	1914 2-speed 2-stroke ALLON	£32 10
10390.	2½	1915 2-speed WOLF-J.A.P.	£30 0
10393.	1½	1916 AUTO-WHEEL	£11 10
10396.	3½	2-speed FAFNIR	£12 10
10402.	4½	1915 GRANDEX	£37 10
10372.	6	1912 MATCHLESS and Sidecar	£40 0
10373.	7-9	1913 2-sp. INDIAN and Sidecar	£50 0
10342.	1½	1914 AUTO-WHEEL	£10 10
10354.	4	1914 2-sp. BRADBURY	£20 0
10325.	2½	1911 2-sp. DOUGLAS	£25 0
10323.	3½	Single-speed CENTAUR	£12 10
10332.	3½	Single-speed BROWN	£15 0
10333.	3½	1908 2-sp. TRIUMPH and 2-seater	£32 10
10335.	4-5	1915 2-sp. BAT	£47 10
10301.	8	1913 BAYARD Light Car	£125 0
10271.	2½	1915 2-sp. LEVIS	£37 10
10205.	3½	2-sp. N.S.U.	£37 10
10142.	3½	1913 3-sp. SINGER	£32 10
10109.	3½	1909 F.E. TRIUMPH	£25 0
10070.	6	1914 2-sp. ENFIELD Combin	£65 0
10068.	3½	1912 QUADRANT, var'ble gear	£20 0
10021.	3½	1912 SWIFT	£20 0
9867.	4	1911 2-sp. ENFIELD	£22 10
9847.	4	1915 3-sp. QUADRANT	£42 10
9839.	3½	1907 TRIUMPH and Sidecar	£22 10
9772.	3½	1914 w-cooled 3-sp. HUMBER	£35 0

**WAUCHOPE'S, 9, SHOE LANE, FLEETST., LONDON**

'Phone: 5777 Holborn. Wires: "Opifcer, London."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A J.S. 6hp. Combination, Lucas lamps and hood, screen, and spare wheel, late 1914 model, just thoroughly overhauled, in perfect condition; who offers?—Dent's Stonegate, York. [76]

A J.S. and Millford Sidecar, 1914, 6hp., 3 speed lamp, horn, speedometer, hood, screen, headlight, in perfect order; nearest £55.—Write, Cook & Co., Bullhouse Camp, Bisle. [76]

A J.S. Combination, 6hp., 3-speed countershaft & box, hand-operated clutch, kick starter, fit with detachable and interchangeable wheels, with a heavy 650x65 tyres, spare wheel and new tyre, 10 dynamo lighting set and 3 lamps, adjustable wind screen, large hood, luggage carrier, large pan saddle, Stey mechanical horn, and full kit of tools; bought new 1915, has done less than 500 miles, and condition practically as new; price £115; deferred payments arrange 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7]

### Alldays.

1916 Allon, 2½hp., lamps, horn, mileage 500; £30 9, Wiltshire Rd., Brixton. [X3]

1916 Allon 2-speed; 32 gns.—Troward, 78, High Hampstead, 'Phone: 5392. [7]

COLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Allon. [10]

NEW 1916 Allon, 2-speed; £38, or offer; exchange combination.—95, Tufnell Park Rd., Holton London. [7]

ALLON, 2½hp., 2-stroke, as new; owner gone; France; sacrifice £27/10.—Holloway, 53; Lya Rd., Acton. [X3]

ALLON, 2½hp., 2-stroke, 2-speed model, splendid condition; £50; guaranteed.—Vauchope's, Shoe Lane, London. [7]

ALLDAYS Allon, 2-speed, new; special bargain £38/17 cash; gradual payments 2%—Referee Co., 332, High Holborn. [10]

ALLDAYS-MATCHLESS, 1915, 2½hp., 2-stroke splendid condition, good climber; £22.—200, James's Rd., South Bermondsey. [7]

ALLONS, single speed £56, 2-speed £42, 2-speed £45; actually in stock; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, B. Rd., Wood Green. [7]

### Antoine.

ANTOINE, 2½hp., mag. B.B., just overhauled; on—Jones, 95, Vernet Rd., Rotherhithe. [7]

ANTOINE 6hp. Combination, just overhauled, gift, £17; exchange good lightweight.—Murray, Chart Rd., Folkestone. [10]

### Ariel.

ARIEL, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [7]

COLMORE Depot, 31, Colmore Row, Birmingham have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [10]

### Auto-Wheels.

AUTO-WHEEL, fitted to lady-bag tandem; 18" bargain.—Otway, 113, King's Rd., Kings Surrey. [7]

AUTO-WHEEL, 1915, with 3-speed cycle, another 1914, £7.—A. C. Walker, 90a, Elai Rd., Forest Hill. [7]



# MOTOR CYCLES FOR SALE.

## Auto-Wheels.

14 Auto-Wheel, good condition, £7/7; pay cash for recent 4-h.p. combination.—Newham, 223, Wernersmith Rd., W. [7747]

OTO-WHEEL, 1914, complete, little used, single lever control; £8/10.—Murray, 37a, Charles St., on Garden, Holboro. [X3266]

## Bat.

p. 1912 Bat, single speed; £23.—Harvey, Hndson, South Woodford. [X3140]

15 Bat-Jap, 3-speed, and sidecar, £60; A.C. Socible, £35; exchange.—79, Dnby St., Peck [7631]

AT, 2hp, twin J.A.P., 1914, overhead, T.T., in nice order, round tank; £28.—Warren's, 6, Warren London. [7821]

ATS in stock, latest 4-5h.p., 2-speed, also second-hand 1914 model, same power, £35.—P. J. Evans & Co., Bright St., Broughtham. [X3185]

14 Bat-Jap, 5-6h.p., 3 speeds, clutch, new coach-built sidecar, lamps, horn, speeds, splendid condition; £48.—Westrop, Ashwell. [7807]

p. Bat-Jap Combination, 3 speeds, luxurious Bramble sidecar, as new; any trial; sacrifice.—Lyford, Sutton, Langport, Somerset. [7611]

AT and C.B. Sidecar, 5h.p., 3 speeds, clutch, 1915, 2 front and electric rear lamps, kick starter, spare speedometer, horn, in first-class order; £50, or large Indian combination, cash adjustment.—28, Ham Rd., Tooting. [7563]

## Blackburne.

LACKBURNE, 3½h.p., 3-speed, clutch, hub, under 2,000, perfect order; nearest £40.—Andrew's, Garskeard, Cornwall. [7715]

LACKBURNE, 3½h.p., 3-speed, handle-bar clutch, 1914, re-enamelled; 37 gns.—Toward, 78, High Hampstead. Phone: 5392. [7786]

## Bradbury.

RADBURY, 3½h.p., 1912, N.S.U. 2 speeds, in good order; £20.—Warren's, 6, Warren St., London. [7818]

14 3½h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Swansea. [0822]

12 Bradbury, 4h.p., wicker sidecar, N.S.U. 2-speed gear, accessories, Jones speedometer; £25.—88, Hand St., Southport. [X3222]

RADBURY Combination, 4h.p., 2-speed, free engine, perfect order; £18, or exchange lightweight.—ton, 1, Meadows, Springfield Rd., Chelmsford. [X3269]

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1.h.p. Brough, 1916 open frame model, 3-speed 2 Sturmey-Archer countershaft gear, horizontal line, fast machine, 60 miles per hour road, 70 miles ck; 60 gns.—Wauchope's, 9, Shoe Lane, London. [7764]

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BROWN, 1912, overhauled by makers, re-enamelled; £16.—Toward, 78, High St., Hampstead. Phone: 5392. [7782]

2.—Brown, 3½h.p., T.T., like new, fully equipped.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [7734]

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## B.S.A.

S.A. 4½h.p. Models; £62 and £64.—Attwood's Garage, Eccleshall, Staffs. [7686]

OLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

S.A., 1915, 3-speed countershaft, and coachbuilt sidecar; £55, no offers.—Hancox, The Orchard, Belper. [X3003]

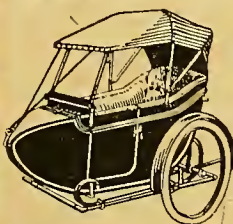
S.A., 1915 model K, No. 2 sidecar, with hood and wind screen. £55.—83, Riversdale Rd., Erith, Kent. [X3288]

S.A., 1915 Chain Drive Combination, perfect, bargain, £55.—Milton, Camp, Chilworth, Guildford. [7665]

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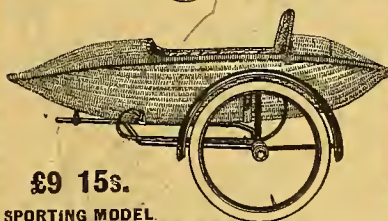
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B.S.A. 4½h.p. Machines from stock, chain and chain-cum-belt drive; £64 and £62 respectively.—Wauchope's, 9, Shoe Lane, London. [7774]

B.S.A., 1915, model K, 4h.p., 3-speed, chain-cum-belt, one of the hard-to-get machines; £43, bargain.—Layton's Garage, Leicester, Oxon. [X3237]

B.S.A., 3½h.p., clutch model, 1913, wicker sidecar, new Kempshall, Michelin, and Zilla belt, good order; £33.—Hinson, Builder, Bourne. [7605]

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## Burford.

BURFORD-VILLIERS 2-stroke Motor Cycle, 1915, as new; bargain, £23.—Bastone's, 228, Pentonville Rd., King's Cross, London, N. [7217]

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1914 Calthorpe Lightweight, beautiful order; exchange higher power, not earlier 1912.—Davies, Alma Cottage, Maesgwyn Rd., Wrexham. [X3232]

CALTHORPE-J.A.P., 2½h.p., 2-speed, late 1915 model, speedometer, only ridden 1,200, perfect; £29/10 cash.—White, High St., Banbury. [X3064]

1916 Calthorpe-Jap, Enfield 2-speed, done 100 miles, or exchange with cash for recent Triumph.—Barton, Claremont, Potheringham Rd., Enfield. [7672]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

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CALTHORPE, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7593]

CALTHORPE-J.A.P., 1916, latest model, 2½h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7592]

CALTHORPE Motor Cycles, 1916 models.—Just arrived: 2-stroke 2-speed 31 gns., J.A.P. 2½h.p. 2-speed 36 gns.; easy terms arranged.—Storey's, 118, Gt. Portland St., W. [0777]

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CALTHORPE-J.A.P., 1915, Enfield 2-speed gear, dip feed lubrication, Dunlop belt, Lucas horn, head and tail lamps; £25/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7623]

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S.P.K., 3½ h.p., 3-speed countershaft	£24 10
REX, 1910, 5-6 h.p., 2-speed, F.E.	£22 10
REX, 1909, 5-6 h.p., 2-speed, F.E.	£18 10
REX, 3½ h.p., magneto, spring forks	£11 15
DOUGLAS, 2½ h.p., magneto, spring forks	£14 10
DOUGLAS, 2½ h.p., 2-speed, wants attention	£18 10
TRIUMPH, 3½ h.p., clutch model	£21 10

## SIDECAR COMBINATIONS.

1916 5-6 h.p. 3-speed COVENTRY EAGLE and Sidecar	£72 13
1914-15 (new) REX 2-speed Sidette	£71 0
1914 6 h.p. ARIEL, chain drive, and Sidecar	£45 0
1914 6 h.p. REX Sidette, almost as new	£53 10
1913 6 h.p. REX Sidette, very smart	£43 10
1913 7-h.p. QUADRANT and Sidecar	£49 10
1912 6 h.p. 2-speed REX and Sidecar	£32 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1910 3½ h.p. 2-speed REX and Sidecar	£24 10
3½ h.p. 2-speed P. & M. and Sidecar	£19 19
REX, 5½ h.p., 2-speed, and Sidecar	£22 10

## MISCELLANEOUS.

1914-15 Grand Prix MORGAN and accessories	£98 10
MORGAN, 1913, lamps, horn, screen, etc.	£57 10
ROVER 8 h.p. 4-seater, all on, bargain	£39 10
RENO 15 h.p. 4-cylinder Touring Car	£65 0
PREMIER 7-9 h.p. 2-seater Light Car	£67 10
1913 FORD 20 h.p. 2-seater Car	£60 0
New Mechanical Horns	17/6
New Acetylene Tail Lamp, post free	1/4
Ar Mudscreen, cost 21/-, take	10/6
P. & H. Separate Generator Lamp	17/6
Miller's late type Lamp Set	£1 4
REX, 6 h.p., twin engine, magneto and carb.	£9 10
M.M.C. 8 h.p. W.C. Engine, fine condition	£4 10
5½ h.p. W.C. Engine, 2-speed, clutch	£5 10
3-wheel Cycle Car Chassis, 26 × 2½ wheels	£3 15
Brooks B150 large size Pan Seat	18/6

Cash Offers Solicited.

WANTED.—Second-hand 1913-1914 DOUGLAS, for Cash.

## MOTOR CYCLES FOR SALE.

### Douglas.

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 1915, 2½ h.p., 2-speed, T.T., done 500 miles, unsoiled, complete; £60 May, 1916, take £46.—60, Kenwood Rd., Edmonton, N. [7725]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [1189]

1915 2½ h.p. 2-speed T.T. Douglas and accessories, in perfect condition; £44/10: seen any time.—Bound's Garage, 225, High Rd., Kilburn. [7660]

1912 2-speed Douglas, footboards, Lucas lamps, and new Brooks saddle, splendid condition; bargain, £19/10.—Maddocks, Tattenhall, near Chester. [X3264]

DOUGLAS, 1913, 2½ h.p., 2-speed, splendid machine, fast, lamps, all accessories, spares, semi-T.T. handle-bars; £32.—Gornall, West Cliffe, Lytham. [7815]

1915 4 h.p. 3-speed Douglas, sporting coachbuilt sidecar, and accessories, all in good condition; seen any time; £55.—Bound's Garage, High Rd., Kilburn. [7669]

1915 (November) Douglas, 2½ h.p., 3-speed, clutch, kick starter, T.T. and touring bars, Lucas accessories, like new; £45.—Empson, Gamlingsay, Sandy, Beds. [7720]

1912 2½ h.p. T.T. Douglas, perfect condition, new tyres, F.R.S. lamp set, 25/- mechanical horn, fast; £23.—Merton, Grange Farm, Gamlingsay, Sandy. [7721]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

1915 Douglas, 2½ h.p., T.T., 2-speed, with special long exhaust, semi-T.T. bars, very fast, in excellent condition; £42.—Robinson's Garage, Green St., Cambridge. [7700]

DOUGLAS, 2½ h.p., late 1914 model, T.T., Stewart speedometer, Klaxon horn, Lucas lamps, in new condition, including tools, and many spares; £45.—Dent's, Stonegate, York. [7804]

DOUGLAS Motor Bicycles.—2½ h.p. models. We have one or two brand new latest pattern machines in stock for immediate delivery. The number is very limited, and further supplies are almost impossible to obtain. We therefore suggest you order from us at once and obtain instant delivery.—Douglas Specialists, Robinson's Garage, Green St., Cambridge. Tel.: 588. Telegrams: Bicycles. [7700]

### Edmund.

EDMUND, adjustable spring frame motor cycles; price £46/4; early delivery. Some are financed by others, in our case, it is unnecessary; we garage motor cycles for 1/- per week.—Messrs. Green, Taxis, Villier St. Garage, Chering Cross, London. [6639]

### Enfield.

ENFIELD New 1916 6 h.p. Combination actually in stock; no waiting.—Moss, Wem. [X3234]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ENFIELD, 5 h.p., 1914, 2-speed, chain drive, perfect condition; bargain, £28.—Hayes, Aylesbury. [7582]

ENFIELD, 1915, 5 h.p., 2-speed, in excellent condition; £56.—Stour Cycle Depot, Stourbridge. [X3164]

ENFIELD Combination, 1914, fully equipped, in lovely condition; £65.—12, Myddleton Rd., Bowes Park. [7624]

1916 8 h.p. Enfields actually in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [7894]

TWIN Enfield, 2½ h.p., chain drive, 2 speeds, excellent condition; £20, lowest.—R. Mawer, Holton Becking, Wragby. [X3078]

ENFIELD 6 h.p. Combination, new, latest 1916 model, actually in stock; price 85 gns.—The Morris Garages, Oxford. [0811]

1913 Enfield, 6 h.p., 1916 coach sidecar (unused); 49 gns., perfect.—Troward, 78, High St., Hampstead. 'Phone: 5392. [7788]

ENFIELD 1915 6 h.p. Combination, actually in stock; £69/5; exchange entertained.—Eagles and Co., High St., Acton. [X3220]

ENFIELD, 1913-14, 3 h.p., 2 speeds, clutch, and kick starter, speedometer, etc.; £52.—P. J. Evans, John Bright St., Birmingham. [X3184]

1914 6 h.p. Enfield Combination, speedometer, P. and H. lamps, splendid condition; any severe trial; 60 gns.—280, Gamberwell Rd., S.E. [7335]

ENFIELD 1916 6 h.p. Combination, latest model, just arrived from works; £89/5.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7590]

1915 2½ h.p. Enfield 2-stroke, 2-speed, 2 lamps, horn, engine just overhauled, condition perfect; £27/10.—Robinson's Garage, Green St., Cambridge. [7706]

ENFIELD Combination, 6 h.p., only run 1,500 miles, just overhauled, for sale, all accessories, complete; £50.—Apply, H. Pegg, 695, Atherton Rd., Leigh, Lancs. [X3004]

ENFIELDS actually in stock for immediate delivery, 6 h.p. combinations, 3 h.p. and 2½ h.p. models, ready to drive away.—P. J. Evans, John Bright St., Birmingham. [X3178]

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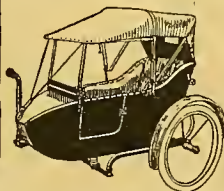
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Hood ..... £2 4

Screen ..... £1 0



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1916 6 h.p. ENFIELD Combination	90 gns.
1916 6 h.p. J.H. Combination	90 gns.
1916 2½ h.p. NEW HUDSON, 2-sp., 2-stroke	£38 0
1916 2½ h.p. OMEGA-J.A.P., 2-speed	38 gns.
1916 5-6 h.p. British EXCELSIOR, Sturmer countershaft 3-speed gear	68 gns.
1916 4½ h.p. British EXCELSIOR, Sturmer countershaft 3-speed gear	64 gns.
1916 FORD Touring Car, 20 h.p.	£135 0
1916 FORD Chassis, 20 h.p.	£115 0
1916 FORD Van, 20 h.p.	£130 0
1916 20 h.p. FORD Ambulance	£135 0
1915 12 h.p. TRUMBULL Cycle Car, 4-cyl., water-cooled, detachable wheels, all on	£120 0

## CASH OFFERS WANTED.

1916 3½ h.p. PREMIER, 3-speed countershaft model, and Coronet Sidecar to match, only done 500 miles	£55 0
4 h.p. BRADBURY, 2-speed, kick starter	£20 0
1914 6 h.p. NEW HUDSON Combination, countershaft drive, 3 speeds, kick starter, fine turnout	£44 0
1911 P. & M., 2-speeds, very smart	£22 0
3½ h.p. HUMBER, 2 speeds, fine goer	£20 0
4 h.p. BRADBURY and rigid Sidecar	£18 0
1913 SCOTT, lamp, speedometer, etc.	£30 0
1915 WOLF, lightweight, 3-speed	£25 0
2-stroke OMEGA, Druid forks	£16 0
1914 DOUGLAS, 2-speed, fine machine	£36 0
3½ h.p. 1908 TRIUMPH, fine goer	£17 0
3½ h.p. 1909 REX de Luxe, 2-speed, handle starting	£19 0
18-22 h.p. SIDDELEY Lorry, 4 speeds, chain drive, 2 ignitions	£50 0

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Lukin Cycle Car Carburettor, 8 h.p. size	15/-
Latest Mechanical Horns, black and nickel	£1 0
Canolet Sidecar, very fine	£8 0
8 h.p. Precision Water-cooled Engine, new	£15 0
6 h.p. Twin Antoine Engine, water-cooled	£6 0
5-6 h.p. Sareola Twin Engine	£4 10
F.R.S. Lamp Set, 500ft. beam, shop-soiled	35/-
F.R.S. Lamp Set, 1,000ft. beam, shop-soiled	45/-
New Clincher Clearance Covers, de Luxe, "heavy," rubber-studded, 26 × 2½, 26 × 2½, and 26 × 2½	each £1 0

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## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD, 1916; immediate delivery of latest 6h.p. combination, now in stock: £89/5; make sure of this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7591]

ENFIELD, 6h.p. combination, 1915, done under 3,000; speedometer, Lucas horn, sidecar screen, head lamp, spare tube, lots of spares: £69/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7598]

LATE 1914 2½h.p. Enfield, kick start, 2-speed, speedometer, lamps, horn, excellent condition; nearest £32; exchanges considered.—Walton's, Dawson St., Burnley. [X3088]

ENFIELD Late 1913 6h.p. Combination, new tyres, speedometer, lamps, etc., in first-class condition: £46, or near offer; any trial.—3, Carson Rd., W. Dulwich. [7779]

ROYAL Enfield Combinations, 6 and 8h.p., free delivery from stock; 85 gns. and £91 respectively; easy payments, or exchange.—Wauchope's, 9, Shoe Lane, London. [7760]

ENFIELD Combination, new last Friday, ridden from London only, quite new, lamps, Lucas horn, etc.; £84, will sell £10 less than list.—Bruce Wood, Horn Park, Lee, S.E. [7778]

ENFIELD 1916 6h.p. Combination, delivery at once from stock; 85 gns.; exchanges or extended terms arranged.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480]

ENFIELD 6h.p., £89/5, 3h.p. £52/10; actually here; also 8h.p., just overhauled, £91/7; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7652]

ENFIELD Motor Cycles in stock; 6h.p. combinations, with or without Lucas electric lighting set; 3h.p. twin, 2-speed; also 2-stroke model; cash or exchange.—Stour Cycle Depot, Stourbridge. [X3165]

ENFIELD 1915½, 6h.p. Combination, used 4 summer months only, Jones, 3in. Palmer cord, everything complete, spares; nearest 69 gns.; any trial; appointment.—Motorist, Bayview, Esplanade, Weymouth. [X3148]

1915½ 1916 Royal Enfield 6h.p. Combination, speedometer, Stewart horn, lamps, full kit tools, tyres like new; £65; call with cash, after 12 o'clock; no letters.—Alfred Symons, 75, High Rd., Wood Green. [7606]

ENFIELD, 3h.p., 1916, latest model, just arrived from works; immediate delivery; make sure of this now; £52/10. We are Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7594]

ROYAL Enfield 6h.p. Coachbuilt Sidecar Combination, cost £103 July, 1915, Lucas electric lighting set, speedometer, powerful and silent machine, latest condition; £70.—E., 26, Cuddington Rd., Cricklewood, N.W. [7681]

1912 6h.p. Enfield Coachbuilt Combination, in very good running order, with new 26x3in. back tyre, and complete with speedometer, lamps, horn, etc.; a bargain, £38.—The Premier Motor Co., Aston Rd., Birmingham. [7866]

ROYAL Enfield 2½h.p. Twin, just been overhauled by makers, re-plated and re-enamelled (khaki), new belt and tyres, Dunlop studded, new lamps and horn, complete: £30, bargain.—W. Stevens, Lovell Cycle Works, Ripley, Derbyshire. [7570]

## Excelsior.

1916 British Excelsior, 4½h.p., 3-speed, chain-cum-belt, and Bramble sidecar; cost £85 two months ago, offers wanted.—Shayle, Great Aine, Alcester. [X3282]

## F.N.

F.N., 2½h.p., Bosch mag.; £29/10.—Halford, Billington Rd., Leighton Buzzard. [7646]

1910 F.N., 4-cyl., running order; seen Durham; bargain, £12.—Box 584, c/o The Motor Cycle. [X3202]

F.N., 5-6h.p., new gears and tyre, fully equipped; offers.—White, Rosewarne, Bicknacre, Chelmsford, Essex. [7696]

1913 2½h.p. 2-speed F.N., h.b. clutch control, excellent condition; best offer secures.—Dark, Culverland, Hulsworthy. [X3104]

F.N., low frame, B. and B., good condition, and perfect order, cane sidecar; bargain, £15.—R.H., Fishmongers, 162, Heath Rd., Twickenham. [7713]

1914 F.N., 5-6h.p., special cylinders, B. and B., 2-speed, clutch, accessories, and spares, mileage 5,000, tyres as new, with sidecar; £40.—Stone, 114, Palace Gates Rd., Wood Green. [X3111]

## Harley-Davidson.

BRAND New Harley-Davidsons.—See below.

MODEL F, 7-9h.p., 3-speed; £68.—The Premier Motor Co.

MODEL J, 7-9h.p., 3-speed, with dynamo electric lighting outfit; £75.—The Premier Motor Co.

THE Above are guaranteed brand new; standard specification and standard equipment.—The Premier Motor Co., Birmingham.

SPECIAL Gloria Sidecars, to match; 19 and 25 gns. You save £17 by purchasing your new combination direct from the recognised H.D. experts. Delivery carriage paid to any address.—The Premier Motor Co., Aston Rd., Birmingham. [7238]

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## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

1915 Harley-Davidson, 11J, with Mills-Fulford sidecar, new 1916; £70.—Askwith, 49, Downs Rd., Clapton, N.E. [X2999]

HARLEY-DAVIDSON, 1915-16, 11J, mileage 500, in perfect condition.—Dennis, South Darenth, near Dartford, Kent. £65. [X2875]

HARLEY-DAVIDSON, 1915 (August), 11J, and Coronet sidecar, little used, in perfect order; bargain, 63 gns. Cooper, Baker, Windsor. [7621]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

HARLEY-DAVIDSON, late 1915, 7-9h.p., Bosch mag., Bluestreak tyres, not been on road; accept £60.—Cartwright, Photographer, Ystradgynlais, Breconshire. [X3084]

1915 Harley-Davidson Combination, electrically equipped, all extras, spare new cover and tube; £70, or exchange Morgan runabout.—Apply, Dawson, 3, Shirley Villas, Shirley Rd., Hayes, Middlesex. [X3116]

HARLEY-DAVIDSON Electric Model £89, standard and £80/15; delivered from stock; also sidecars to suit; deferred payments to suit customers' individual requirements.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7654]

1915 Model 11F 7-9h.p. Harley-Davidson, 3-speed, with special Canoelet coachbuilt sidecar, enamelled to match, overhauled and guaranteed in good running order; £65.—The Premier Motor Co., Aston Rd., Birmingham. [7867]

1916 Latest Harley-Davidson, just delivered from works, complete combination, fitted with £21 sidecar, with lighting set and hooter; immediate delivery from stock; £105/19 cash; extended payments or exchange.—Wauchope's, 9, Shoe Lane, London. [7767]

HARLEY-DAVIDSON, the silent grey, 1916 models, immediate delivery from stock, with Gloria, Millford, or Canoelet sidecars; two only 1915 electrically equipped models at pre-Budget price, £76/13. Write or call.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

1915 Model 11F 7-9h.p. Harley-Davidson, 3-speed, only used for a few hundred miles and equal to new in every respect, Stewart speedometer, Lucas lamps and horn, fitted with brand new 20 in. Gloria coachbuilt sidecar, a very fine combination; £80.—The Premier Motor Co., Aston Rd., Birmingham. [7868]

HARLEY-DAVIDSON, 1916, and handsome coachbuilt sidecar with apron, 3-speed countershaft gear box, clutch kick starter, electric head and rear lamps, electric horn, Smith speedometer, Goodrich tyres 28x3, used as demonstration model only, and done under 50 miles, absolutely like new, price £104, a bargain; deferred payments arranged, 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7219]

## Hazelwood.

1914 5-6h.p. Hazelwood, Bramble sidecar; accessories; £45, bargain.—Chester, 13, Welbury Drive, Bradford. [X3057]

## Henderson.

HENDERSON, 1915 model, bought late 1915, in perfect condition, Millford coachbuilt sidecar; £85.—Box 578, c/o The Motor Cycle. [X3047]

## Hobart.

HOBART-VILLIERS, 2½h.p., 1915, sturdy little machine, extra good engine, overhauled; £21, or near offer.—Layton's Garage, Bicester, Oxon. [X3238]

HOBART, latest 1916 2½h.p. 2-speed 2-strokes Villiers engine, countershaft gear, controlled from handlebars, 36 gns.; all-black finish, delivery from stock; exchanges or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

## Humber.

HUMBER, 1913, 3½h.p., coach sidecar, 2-speed, handle starter; £36.—84, Francis Rd., Leyton. [7847]

HUMBER Lightweight; bargain, £12/10; exchanges considered.—Barroughs, 71, Church St., Camberwell. [X3077]

HUMBER, 1911-12, 3½h.p., 2-speed, handle start; bargain, £27; sidecar £3.—Box 575, c/o The Motor Cycle. [X3005]

HUMBER 1913 3½h.p. Combination, 2-speed, handle starter, very reliable; £36.—85, Lavender Grove, Dalston. [7846]

HUMBER, 3½h.p., 2 speeds, F.E., perfect order; £30, or offer; no dealers.—58, North Side, Wandsworth Common. [7648]

3½h.p. Humber, 1911, 2-speed, recently overhauled, good running order; £14.—Brown, 40, Hawstead Rd., Catford. [7566]

1914 (new May, 1915) Humber, 3½h.p., sidecar, Sturmesy-Archer 3-speed; £42.—Twails, 5, Bristol Rd., Forest Gate, E. [7562]

HUMBER, 3-speed S.A. gear, 1915, only soiled, sidecar, Pillion seat, all accessories; £50.—Leighton's, opposite Wood Green Station, N. [7638]

HUMBER 1912 3½h.p. Coachbuilt Combination, 2 speeds, clutch, and handle start, good condition; £25, complete.—P. J. Evans, John Bright St., Birmingham. [X3176]



## MOTOR CYCLES FOR SALE.

## Humber.

**HUMBER**, 1913, 3½ h.p., coach sidecar, 2-speed, free engine, handle starter, nice condition; £34.-50, Church Rd., Southgate Rd., London, N. [7836]

**1914 Humber Lightweight**, T.T. bars, 3-speed, speedometer, lamp, horn, etc., overhauled by makers, splendid condition; £18/10.-31, Charlton Rd., Blackheath. [X3059]

**1913 Humber**, 2½ h.p., B. and B. carburettor, Bosch mag., 3-speed, free engine, Hutchinson heavy, Stuart speedometer, accessories; £17, quick sale.—15, Sumnerhill Rd., Hartford, Kent. [7810]

## Indian.

**INDIANS**, 1916 models, 5 h.p. and Powerplus model. —Attwood's Garage, Eccleshall, Staffs. [7685]

**1914 7 h.p. Indian Combination**, spring frame, etc.; must sell; 47 gns.—30, Talbot St., Burnley. [X2872]

**INDIAN**, 7 h.p., 1914, 2-speed, Canoelet sidecar, good condition; £55.—Barkston, 244, Earl's Court Rd., S.W. [7839]

**1914 Hendee Combination**, splendid condition; £50, near offer.—Richardson, 9, Redcliffe Mews, S. Kensington. [7626]

**SCOTLAND.—7 h.p. Indian**, 1913½, with sidecar and accessories, perfect order; £48.—Walls, House Agent, Dunfermline. [X3187]

**INDIAN**, 1913, 7 h.p., sidecar, overhauled, parts renewed; £45, or near offer.—Wilkins, Simpson, 11, Hammersmith Rd., W. [7609]

**1914 Indian**, 7 h.p., spring frame, 2 speeds, clutch, kick start, perfect; 39 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [7787]

**1914 7 h.p. Indian Combination**, spring frame, etc.; 50 gns., or exchange for lightweight and cash.—Myrtle Cottage, Ormerod Rd., Burnley. [X2873]

**INDIAN**, 7 h.p., T.T., 900 miles only, new December, quite equal showroom machine, lamp, horn, speedometer; sacrifice £45.—Cooper, Baker, Windsor. [7622]

**1912 7 h.p. Indian**, 2-speed and clutch, Binks carburettor, and nearly new £17/17 Gloria coach-built sidecar; £33.—Wilkin, Hunter's Bar, Sheffield. [X3206]

**INDIAN Combination**, sporting, 1912, 3½ h.p., 2-speed, clutch, electric lamps and horn, spares; £28.—Messenger, Albany Cottage, Cul de Sac Rd., East Molesey, Surrey. [X3211]

**1915 Indian Combination**, 7 h.p., 3-speed, spring frame, electric light and horn, kick start, clutch, T.T. and touring bars; £65.—Gulbraith, 10, Pinfield St., Glasgow. [X3196]

**INDIAN**, 1916, 7 h.p., T.T., indistinguishable from new, £58; Indian, 1916, 3½ h.p. twin, 3 speeds, T.T., indistinguishable from new, £48.—Warren's, 6, Warren St., London. [7819]

**1914 7 h.p. 2-speed Indian Coachbuilt Combination**, electric equipment, new tyre back wheel and sidecar, all in first-class order; £60.—Moseley, 70, St. Ann's Rd., Harrow. [7569]

**INDIAN**, July, 1914, 7 h.p., electric equipment, De Luxe sidecar, 2-speed, clutch, speedometer, excellent condition; £45, or exchange.—Webster, Stanley Kilburn Colly, Derby. [X2879]

**1914 Indian**, 7 h.p., with coachbuilt sidecar, ridden 3,000 miles, new back tyre, and perfect condition, numerous spares; sacrifice £48/10.—Tamplin and Makovski, Ltd., Bell St., Reigate. [X3247]

**1913½ 7 h.p. Indian and Swao sidecar**, spring frame, T.T. bars, 2 speeds, clutch, speedometer, lamp, and accessories, good condition; bargain, £45.—C. Stevens, 183, Desborough Rd., High Wycombe. [7580]

**INDIAN**, 1916, latest Powerplus Model F, in stock, 7 h.p., 3-speed, spring frame; £83; your present machine can be taken as part payment.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491]

**1915 Indian Combination**, 7 h.p., 3-speed, T.T. and touring bars, electrically equipped, wind screen, spare tyre and tube, spare chains, etc.; £73; would take good solo machine and cash.—47, Cambridge Rd., E. [7698]

**1913½ Indian**, road racing model, T.T. bars, free engine, clutch, 7 h.p., new tyres, speedometer, lamps, toolbox and back seat combined, newly enamelled, little used, £38.—Wilson, 7, Duke's Terrace, R.A.M.C. Depot, Aldershot. [7808]

**2-STROKE 1916 Indian**, 3-speed, clutch, kick start, just delivered to owner, who has been called up, splendid hill-climber, fast, and flexible, only used 30 miles, absolutely new condition; £46, no offers.—Hutchinson, 98, Merchmont Rd., Edinburgh. [7607]

**BARGAIN Seldom Met With**—Twin red Indian and sporting sidecar, 2 speeds, clutch, tyres, gears, and engine guaranteed perfect; quick sale £35 the lot, worth £50; any trial or expert examination welcomed.—Brown, Gloucester Rd., Chesterfield. [X3201]

**INDIANS in Stock**—Latest models, Powerplus combinations, sporting Powerplus 3 speeds models, standard 7 h.p. overhead inlet combinations, with lighting set, the famous 5 h.p. 3-speed double-purpose mount, and 7 h.p. clutch model road racer.—P. J. Evans, John Bright St., Birmingham. [X3177]

## James.

**COLMORE Depot**, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

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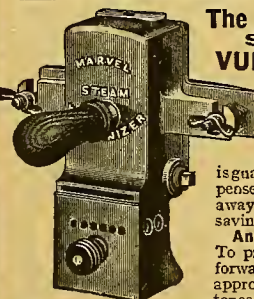
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## MOTOR CYCLES FOR SALE.

## James.

**JAMES** 4½ h.p. Combination, Canoelet, wind screen, 3-speed countershaft; £50.—20, Burlington Place, Eastbourne. [7805]

**1915 James**, 3½ h.p. twin, 3-speed gear box, handlebar clutch, kick start, as new; 33 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [7793]

**JAMES**, 1913, 4 h.p., single-cyl., countershaft gear, chain drive, kick-start, condition as new; £30, or with sporting wicker sidecar £35.—The Premier Motor Co., Aston Rd., Birmingham. [7863]

## J.A.P.

**J.A.P.**, 3½ h.p., racing model, very fast, just thoroughly overhauled, new back tyre and new belt, winner several racing competitions; owner abroad; £27/10.—Particulars, Small, Morlington Rd., Uxley. [X3002]

## J.E.S.

**SPECIALLY BUILT 1915 J.E.S. Lightweight**, speedometer, lamps, spares, tools, mechanically perfect, enamel plating uns scratched, absolutely as new; trial, appointment; £15, cost £27.—57, Chester Terrace, Brighton. [7577]

## Kerry.

**KERRY-ABINGDON**, 1912, 3½ h.p., T.T., all accessories, perfect condition; £17.—Morgan, 6, Dodington Grove, Kennington. [X2877]

## Levis.

**LEVIS**, 1915, Popular, 2½ h.p., brand new; £22/10.—Crompton, 4, Fild St., Bolton. [X3125]

**1916 2½ h.p. Popular Levis**, delivery from stock; £32.—Wilkin, Hunter's Bar, Sheffield. [X3207]

**LEVIS Popular**, 1916; £32; in stock.—Williams, A.J.S. Agent, Chapel Ash Depot, Wolverhampton. [X3252]

**1916 2½ h.p. 2-speed Chain-drive Model E Levis**; £47/10.—Wilkin, Hunter's Bar, Sheffield. [X3208]

**LEVIS**, 2½ h.p., 1915 Popular model, condition as new; £23, guaranteed.—Wauchope's, 9, Shoe Lane, London. [7770]

**COLMORE Depots**, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**LEVIS 1916 Popular Models** from stock; £32 cash, or gradual payments.—Wauchope's, 9, Shoe Lane, London. [7757]

**LEVIS**, 2-speed, 2½ h.p., 1915 model, 30 gns.; 26in wheels, tools, etc., guaranteed.—Wauchope's, 9, Shoe Lane, London. [7771]

**LEVIS**, 1914 (late), 2½ h.p., complete, Lucas accessories, excellent condition; £25.—P. J. Evans, John Bright St., Birmingham. [X3174]

**LEVIS 1916 Popular Model**, 2½ h.p.; £32; in stock; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7595]

**LEVIS Popular**, new; special bargain; cannot repeat: £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

**1916 2½ h.p. 2-speed Chain-drive Model E Levis**, not done 300 miles, scarcely soiled; £40.—Wilkin, Hunter's Bar, Sheffield. [X3209]

**LEVIS**, 1914, 2½ h.p., 2-speed gear, in splendid condition, and in sound order throughout; £28.—Turner, Alexandra Rd., Hounslow. [X3158]

**LEVIS**, 1916, Popular models.—We are sole Oxfordshire agents, and can deliver correctly tuned Popular models at once.—Layton's Garage, Bicester, Oxon. [X3242]

**LEVIS Populars**, with Enfield gears, £47/10; actually in stock; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7651]

**LEVIS 2-stroke Motor Cycles**, latest 1916 models.—Sole London and district agents. Cars and Motor Sundries Ltd., 175-177, Shaftesbury Av., London, W.O. Phone: 1432 Regent. [0711]

## Martin.

**MARTIN**, 5-h.p., brand new, never ridden; cost £56, take £30; must realise this week.—65a, Rosedale Rd., Dulwich. [7742]

## Matchless.

**8 h.p. T.T. Model Matchless-Jap**, overhead valves, very fast; £32.—82, Caledonian Rd. [7728]

**MATCHLESS**, 1915, 6 h.p. clutch model, and accessories; £45.—Riley, South Av., Stourbridge. [X3163]

**MATCHLESS**, 6 h.p., late 1912, with No. 4 Gloria sidecar, splendid condition; £50.—425, Smithdown Rd., Liverpool. [X3257]

**MATCHLESS**, 1915, 8 h.p., beautifully fitted up, and in fine order; £73/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7656]

**MATCHLESS**, 1914, 5-h.p., 3-speed, free engine, kick start, good tyres and belt, fast and powerful; 33 gns., or exchange lower power. Phone: 2180.—E.H. Silverdale, 12, Thrale Rd., Streatham, S.W. [7842]

**MATCHLESS**, 1913, twin J.A.P., 2-speed, with Danhill coachbuilt 2-seat sidecar, fine passenger outfit, recently overhauled; worth easily £50, accept £42.—Layton's Garage, Bicester, Oxon. [X3245]



## MOTOR CYCLES FOR SALE.

## Matchless.

**MATCHLESS** Combination, 1915 (October), 8B, mag., Lucas dynamo lighting set, Cowey speedometer, Stewart mechanical horn; cost £115, new condition, £93.—Bruce Wood, Horn Park, Lee, S.E. [7777]

**MATCHLESS**, 1914, 8h.p., J.A.P., 2-speed, chain drive, kick start, large Lucas head light, electric rear, Cowey and Binks, good tyres, comfortable sidcar, luggage carrier; £57.—A. Nowell, Heaton House, Handforth, Cheshire. [X3230]

**3 1/2 h.p.** Twin Matchless Motor Cycle, 3 speeds, free engine clutch, kick starter, countershaft, new tyres, lamps and horn, in excellent condition, very fast and flexible; price £38.—John C. Beadle, Ltd., Motor Engineers, Dartford. [10827]

**MATCHLESS** Combination, 1914, 1915 M.A.G. engine, 3-speed countershaft, 700x60 Palmer covers, almost new, lamps, electric horn, screen, and luggage carrier, the combination is in excellent condition, and the Rolls-Royce of motor cycles; 65 gns.; another machine considered in part.—Longman Bros., King St., Acton. Phone: 1578 Chiswick. [7751]

## Minerva.

**MINERVA**, 2 3/4 h.p., new back tyre, less belt; £41/10.—55, Hercules Rd., S.E. [7602]

**MINERVA** Motor Cycle, 2 3/4 h.p., m.e.v., Amac; £6.—George, 300, Portobello Rd., Kensington. [7567]

**3 1/2 h.p.** Minerva, B. and B., good tyres, new piston; bargain, £25.—Colby, Charsley Rd., Cufford. [X3287]

**3 1/2 h.p.** Minerva, Bosch mag., B. and B., Druid spring forks, adjustable pulley, Stewart speedometer, overhauled, re-bushed, £14; exchange higher power, any condition.—52, Chaucery St., Lower Edmonton, N. [7641]

## Motosacoche.

**MOTOSACOCHE** 1913 Twin, 3 1/2 h.p. M.A.G., Enfield gear; 27 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [7783]

**MOTOSACOCHE**, 3 1/2 h.p., perfect order, enamel and plating unmarked, M.A.G. engine, Enfield 2-speed, kick-starter, Bosch waterlight, P. and H. head lamp, accessories; £39.—14, Doddbrooke Rd., West Norwood. [7886]

## New Hudson.

**1914** New Hudson, 6h.p., 3 speeds, lamp, etc.; £35.—10, Norwood Crescent, Southport. [X3193]

**NEW** Hudson, 2 3/4 h.p., 3-speed, and clutch, excellent condition; £25.—Newton, Rhinonich, Ross-on-Wye. [7587]

**1914** New Hudson-Jap, 4h.p., 3-speed, all in good condition, and fast; £35.—The Bangalore, Billingsley, near Bridgnorth, Salop. [X3161]

**1913** 3 1/2 h.p. 3-speed New Hudson and sidcar, in very good order; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [7893]

**1915** 3 1/2 h.p. New Hudson, coachbuilt sidcar, 3-speed gear box, new condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [10821]

**NEW** Hudson, 2 1/4 h.p., 2-stroke, 2-speed, latest model, only ridden 200 miles, lamps, horn, tools, etc.; sacrifice (military reasons), £32/10.—Dargue, 15, Mayfield Av., Halifax. [X3076]

## New Imperial.

**NEW** Imperial-Jap, 1916 models, in stock; £38 and £44/8.—Crow Bros., Guildford. [6450]

**NEW** Imperial, 1915, 2-speed; 24 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [7784]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [10805]

**IMPERIAL** J.A.P., 1916, latest model, 2-speed, in stock; £38.—Layton's Garage, Bicester, Oxon. [X3241]

**NEW** Imperial, 1916, 2 3/4 h.p., light tourist, 2 speeds, hardly used; £55.—P. J. Evans, John Bright St., Birmingham. [X3173]

**NEW** Imperial, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%—Referee Cycle Co., 332, High Holborn. [10765]

**NEW** Imperial, 2 1/2 h.p., 2-speed, 1914, running order but not smart; £22, or nearest offer.—Layton's Garage, Bicester, Oxon. [X3244]

**NEW** Imperials, latest models in stock; 2-speed, also kick-starter hand-controlled clutch models.—P. J. Evans, John Bright St., Birmingham. [X3172]

**1916** New Imperial-Jap, 2 3/4 h.p., 2-speed, free, all accessories, ridden 300 miles; £30; owner in France.—112, Burnt Ash Rd., Lee, S.E. [7673]

**NEW** Imperial-Jap, 1915, 2 1/2 h.p., 2 speeds, speedometer, Stewart horn, new spare belt, case, etc., overhauled, fast and powerful; £27.—Kent, Oliver's Hydro, Buxton. [X3126]

**1916** New Imperial-Jap's, 2-speed models, from stock, £38; also clutch and kick start models, £44/8.—Wanchope's, 9, Shoe Lane, Fleet St., London. [7759]

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## N.L.G.

**1914** N.L.G.-J.A.P. 6h.p. Combination, C.B. sidcar, accessories; seen after 5 p.m.; best offer over £50 secures same.—Driscoll, 58, Woodfield Rd., Ealing. [7793]

## Norton.

**NORTON**, 3 1/2 h.p., good condition; £30; may be seen by appointment in Blackheath.—Reply to A. Branch, 15, Edmunds Place, Aldersgate St., E.C. [7850]

**OCTOBER** (1915), 3 1/2 h.p. Norton, 3-speed hub model; owner going to the Front; £50, or nearest offer.—Seldoa, 3rd Batta, Gloucester Regt., Milsted Camp, near Sittingbourne. [X3085]

**1915-16** Norton, T.T., practically brand new, special machine, Philipson, Klaxon, F.R.S., hardly used, powerful; write for particulars; £45.—Motor, 23, Douglas Av., Wembley, Middlesex. [7800]

**1916** Norton, countershaft gear, chain-cum-belt transmission, speedometer, lamps, horn, tools, new condition throughout; price £59, guaranteed.—Wanchope's, 9, Shoe Lane, London. [7769]

## N.S.U.

**N.S.U.** Combination, 2 speeds, 4h.p., free engine, Bosch, overhauled; £20.—46, Chipstead St., Harson's Green, S.W. [X3260]

**N.S.U.**, 3 1/2 h.p., mag., B. and B., new tyre, lamps, horn, perfect condition, low; £11, or nearest offer.—Matthews, 23, Maitland Park Villas, Hampstead, London. [X3115]

## Moto-Reve.

**2 3/4 h.p.** Moto-Reve, 1914, T.T., Dunlops, B. and B., 24 variable pulley, spares; expert examination; £20.—Glenfield House, Bingley Rd., Steke, Coventry. [X3100]

**A** SNIP.—Late 2 3/4 h.p. twin Moto-Reve, beautiful engine, guaranteed perfect, adjustable pulley, magneto, stand, carrier, etc., very fast; must sell instantly, £9 to clear, worth double.—Webb, Jeweller, Chesterfield. [X3199]

## Motosacoche.

**MOTOSACOCHE**, 2 1/2 h.p., engine perfect, Dunlops, Bosch mag.; £7/10.—Mrs. Kipps, Ebury, Kent. [X3102]

## O.K.

**O.K.** Junior, 1915, 2-speed, as new; £25.—65a, Rosendale Rd., Dulwich. [7741]

## Omega.

**OMEGA**, 3h.p., Oct., 1915, 2-stroke, 2 speeds, run 300 miles, lamps, etc., condition as new; £28, or near offer.—3, Carson Rd., W. Dulwich. [7780]

## P. and M.

**P** and **M.** Combination, splendid condition; 50 gns.—E., 642, Holloway Rd., N. [7699]

**P** and **M.**, 3 1/2 h.p., wicker sidcar, splendid running order; £30; trial.—Williams, Harrage, Romsey. [7608]

**1913** 3 1/2 h.p. P. and M. and Coachbuilt Sidcar, just renovated.—Wilkin, Hunter's Bar, Sheffield. [X3203]

**P** and **M.**, 3 1/2 h.p., 2-speed, free engine, 2 spare tyres and accessories; must sell; bargain, £17, or nearest.—1, Wastdale Rd., Forest Hill. [7860]

**P** and **M.**, 2-speed, 1911, splendid order, C.B. under slung sidcar, Cowey, P. and H.; nearest £28.—Clonette, 44, Kilmartin Av., Norbury. [7288]

**1914** 3 1/2 h.p. P. and M., 2-speed, wicker sidcar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [10721]

**1913** 3 1/2 h.p. P. and M., 2 speeds, free, torpedo sidcar, speedometer, tyres perfect, spares, 100 m.p.g., perfect condition; any trial; £36.—4, Doddington Place, Kennington, S.E. [7680]

**1914** 3 1/2 h.p. Phelon and Moore, 2-speed gear, kick start, chain drive, Lucas lamp set, 1 gn. horn, Cowie speedometer, excellent tyres, engine guaranteed perfect; £42/10.—Robinson's Garage, Green St., Cambridge. [7705]

## Peugeot.

**PEUGEOT** and Sidcar, 5.6h.p., 2-speed, handle starter, just been thoroughly overhauled, spares, tyres very good; £28, or near offer.—O'Neill, 2, The Retreat, Mortlake, Surrey. [X3147]

**A** REAL Bargain for Quick Sale.—5.6h.p. Peugeot and sidcar, B. and B., Bosch w.p. mag., Chatter-Lea frame, Druid forks, Zenith pattern tank, new Mabon clutch, speedometer (trip), P. and H. head lamp, etc., engine and tyres as new, low and fast; £28.—293, Portland Rd., S. Norwood. [7897]

## Poole.

**POPE**, late 1915, 4h.p., 2-speed gear, all in new condition, with new 1916 sidcar, complete, ready for the road; £42.—S.R., 136, Gt. Dover St., S.E. [7710]

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**1914** 3 1/2 h.p. Precision, 2-speed, clutch, kick starting, lamps, generator, horn, pump, condition, order as new; bargain £28/10.—24, Tudor Gardens, Barnes, S.W. [7832]



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## Premier.

32 1 h.p. Premier, 3 speeds, speedometer, lamp; nearest £25.—Hayter, 12, High St., Westminster. [7804]

19 11 Clutch Model Premier, in good condition; £17; seen any time.—Bound's Garage, High Rd., Kilburn. [7661]

PREMIER, 1913, 3½ h.p., N.S.U. gear, good condition; £22/10.—Burkston, 244, Earl's Court Rd., S.W. [7838]

PREMIER, 1914, must be sold; offers wanted; appointment only.—66, Greyhound Lane, Streatham, S.W. [7862]

31 h.p. Premier, F.E., and sidecar, Gradua gear, fine condition; £25.—Leighton's, opposite Wood Green Station, N. [7639]

19 14 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 1914, 2½ h.p., 3-speed; £25; thoroughly overhauled by, and on view at, Premier Showrooms, 20, Holborn Viaduct, London. [X3122]

PREMIER, 1914, 7-9 h.p., 2-speed countershaft, lamps, speedometer, 2-seated Mills-Fulford sidecar, splendid condition; £65.—32, Norfolk Rd., Gravesend. [X3216]

PREMIER, 1913, 3½ h.p., 2-speed countershaft, under-slung art cane sidecar, Stewart speedometer, Bosch, perfect condition; £37/10.—61, Mayfair Av., Hford. [7615]

PREMIER, 1913½, Watsonian coachbuilt sidecar, Armstrong 3-speed, tools, spares, lamp, and overalls; £34, suit officer.—Lee, 7, Tivoli Rd., West Norwood, S.E. [7576]

19 13 Premier, 3½ h.p., clutch, 3-speed, horn, lamps, speedometer, tyres nearly new, splendid condition, recently overhauled; £32.—Quartermaster, Military Hospital, Codford, Wilts. [X3155]

PREMIER, 1912, 3½ h.p., 3-speed, an unusually fine sample, almost as new, maintained extravagantly by late owner, good mechanically and almost new in all other details, complete; £26, great bargain.—Layton's Garage, Bicester, Oxon. [X3239]

19 13 Premier, twin-cyl., 3½ h.p., new N.S.U. 2-speed, smart cane sidecar, excellent running order, exceptionally good condition throughout, complete with lamps, etc.; bargain, 29 gns.; take lightweight.—Newham, 223, Hammersmith Rd., W. [7748]

PREMIER, 3½ h.p., 3-speed, and coachbuilt sidecar, wind screen, luggage carrier, lamp, horn, good kit of tools, the whole turnout as new, and in splendid condition; bargain, £35; will ride any reasonable distance.—67, Rane St., Birmingham. [X3255]

## Quadrant.

QUADRANT, 3 h.p., very low, running order, B. and B. carburettor; £7/15; London.—Box L1710, c/o The Motor Cycle. [7667]

## Radco.

RADCO, 2½ h.p., perfect order, practically new; bargain, £20.—14, Dordbrooke Rd., West Dulwich. [7885]

RADCO, 1915, fully equipped, reduced to £21.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [7732]

19 15 Radco, 2½ h.p., 2-stroke, top-hole condition; owner being called up; £18.—Cohn, 15, Bridge Lane, Beak St., Regent St., W. [7669]

## Revere.

REVERE, 1915, 2½ h.p., 2-stroke, in perfect condition; £22.—51, Gilpin Av., East Sheen, S.W. [X3170]

## Rex.

REX, 5-6 h.p. twin, 1913, 2-speed, free engine; £30.—73, Church St., Camberwell. [7879]

3 h.p. Rex, variable C.A.V. mag., B. and R., good order; £6.—120, Carolsgate, Retford. [7712]

REX 5 h.p. Combination, good, dry battery; £12, offer.—Mrs. Cock, Limes, Wormley, Herts. [X3145]

REX, 1911, 7-9 h.p., T.T., very fast, good condition; £20, or exchange.—Toms, Catherine St., Leicester. [7738]

LATE 1912 5-6 h.p. Rex Twin, coachbuilt sidecar; £32/10; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0824]

REX, 3½ h.p., spring forks, Simms, B.B., good working order; £10, or nearest offer.—17, St. Catherine's, Wimborne, Dorset. [7632]

REX 6 h.p. 2-speed Motor Cycle, with sidecar, good condition—first £22 secure.—Dowdell, 98, Bedwas Rd., Caerphilly, S. Wales. [X3229]

REX, 3½ h.p., free engine, m.o.v., spring forks, low leather belt, nearly new ood-skid, 26×2½, Kerri tyre, new carburettor, fast, powerful, perfect order, all accessories, wicker sidecar, complete outfit; trial run; bargain, £10.—Dixon, 17, Bedford Sq., Eotland St., Stepney. [X3231]

6 h.p. Late 1914 Rex Sidette, 3-speed countershaft gear box, hand-operated clutch, kick starter, drip feed lubricator, large pan saddle, special toolbox and carrier, B. and H. lamp set, rear lamp, horn, Lucas mirror, Continental tyres 26×2½, in nice condition and good going order; price £52/10; deferred payments arranged, 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7221]

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REX 6 h.p. Twin Combination, handle stirring, very low, just recovered throughout; £25; exchange lightweight and cash.—H.S., 33, St. Stephen's Rd., Bow, E. [7628]

## Rex-Jap.

19 13 Rex-Jap, 6 h.p., Roc 2 speeds, lamp, etc.; £25.—10, Norwood Crescent, Southport. [X3192]

REX-JAP, 6 h.p. De Luxe Combination, splendid condition, as new, accessories £42, or exchange good solo mount.—Rezell, Christchurch Crescent, Radlett, Herts. [7855]

19 13 6 h.p. 2-speed Rex-Jap Coachbuilt Combination, new extra heavy Dunlop tyre, complete with all accessories, machine overhauled by makers, necessary new parts fitted, and guaranteed perfect, very good appearance; £45.—The Premier Motor Co., Aston Rd., Birmingham. [7870]

5-6 h.p. Rex-Jap and cane side-entrance sidecar, 2 speeds, handle starter, large acetylene head light, sidecar and rear lamps, large A.L. Popular generator, new spare tyre, in good going order, and cheap at £39/10; deferred payments arranged, 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7220]

## Rover.

ROVER, 1913, 3½ h.p. free engine, in nice condition; £24.—Warren's, 6, Warren St., London. [7820]

ROVER Coachbuilt Sidecar and Fittings, very little used; seen any time, £7/10.—31a, Broomfield Rd., Chelmsford. [X3271]

ROVER, 1914, 3½ h.p., 3 speeds, Sturmer-Archer, excellent condition; £38.—P. J. Evans, John Bright St., Birmingham. [X3182]

ROVER, 1914, late, 3½ h.p., 3-speed clutch model, in excellent condition, lamps, etc.; 36 gns.—Longman Bros., King St., Acton. [7752]

19 15 Rover, 3-speed countershaft, perfect condition throughout, lamps, speedometer, horn.—Each, 24, Cowper Rd., Berkhamstead, Herts. [X3261]

ROVERS.—Latest models in stock; combinations, T.T. racers, semi-sporting models, with Phillips, etc.—P. J. Evans, John Bright St., Birmingham. [X3175]

ROVER, 1915, T.T. model, fitted with Phillips's Grade Multi pulley, handsome machine, all accessories, complete; 40 gns.—Vauchope's, 9, Shoe Lane, London. [7758]

ROVER, 1916, 3½ h.p., 3-speed countershaft gear; delivery from stock, with coach sidecar, £84/7; exchanges or extended terms.—Elee and Co., 151-16, Bishopsgate Av., Cannonville St., E.C. [0552]

ROVER, 1914, 3½ h.p., 3 speeds, free engine, and Supreme coachbuilt sidecar (as new), perfect order and condition, tyres nearly new; been very carefully used, complete with lamps, horn, etc.; £48/10, bargain.—Elt, Sharnbles, Worcester. [X3146]

## Royal Ruby.

ROYAL Ruby, 2½ h.p., 2-stroke, 1915, £18, or nearest offer.—Miller, Ermelo, Clarence Rd., Fleet, Hants. [X3246]

ROYAL Ruby, 2½ h.p., 2-speed, equipped; cost £42 January, 1916, bargain. 28 gns.—Walls, Outfitter, Dartmouth. [7837]

## Rudge.

RUDGE Multi, 1914, almost new, speedometer; £35.—Warren's, 6, Warren St., London. [7817]

19 12 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

3½ h.p. T.T. Isle of Man Rudge Multi, fast machine, £32 fitted with all accessories; £55.—Wauchope's, 9, Shoe Lane, London. [7762]

RUDGE Multi and sidecar, late 1914, in perfect condition; any trial; £38.—Kelly, 22, Bushey Rd., Harlington, Middlesex. [7601]

3½ h.p. Rudge Multi, one month old, not done 500 miles; £50; with coachbuilt sidecar £55.—Titt, Westminster Rd., Coventry. [X3284]

RUDGE and Sidecar, 2-speed gear, in first-class condition; price £30, or offer.—Address, 1, Belvoir Terrace, Saeleton, Nottingham. [X3045]

19 15 Rudge Multi, 3½ h.p., delivered August, done 600 miles, Millers' lamp and horn complete, unpunctured; nearest £46.—The Garage, Whitland, S. Wales. [7753]

19 14 3½ h.p. Rudge Multi, C.B. Mills-Fulford sidecar, splendid order, complete accessories; £40; seen and tried by appointment.—H., 304, Eglis Av., London, W. [7588]

LATE 1915 5-6 h.p. Rudge Multi, complete with Rudge coachbuilt sidecar, hood, wind screen, speedometer, horn, and lamps, grand condition, mileage 2,000; £55; part exchange cycle car.—Gayford, 205, Anerley Rd., Anerley. [7853]

RUDGE Multi, 1913, fitted 1915 cylinder and piston, with sporting cane sidecar, perfect order, speedometer, lamps, horn, and spares, complete; £37/10; by appointment only.—Lieut. Williams, Stratford Lodge, Otlands Park, Weybridge. [7644]

## Scott.

COLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

SCOTT Canoelet Combination, in splendid condition; £32/10 a bargain.—Shilcock, 100, High Rd., New Southgate, N. [X2882]



## MOTOR CYCLES FOR SALE.

## Scott.

1914 Scott Combination, aluminium torpedo body, one of the smartest turnouts on the road; 44 gns.; would separate.—Allan, The Glen, North Rd., Hayes End, Middlesex. [7668]

SCOTT, 1914 model, fitted with new Mills-Fulford sidecar, complete with all accessories, runs slow and fast, a nice, superior combination; £55.—Wauchope's, 9, Shoe Lane, London. [7765]

1913 Scott and Gloria Sidecar, speedometer, full equipment, fine condition; any reasonable trial given; £35/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [6660]

SCOTT Motor Cycle, completely re-built in 1915; owner gone abroad, tyres almost new, speedometer, horn, lamps, and generator, tools, etc., also sidecar; £38, complete.—Rev. G. Sumner, Earnbank, Wormit, Fifehire. [7612]

THE Plum of the Week.—3½ h.p. Scott, 2 speeds, kick-starter, Binks carburetter, 1915, drip feed, and improvements, engine, gears, etc., perfect, thoroughly overhauled cost of £3; owner abroad; £26/10, lowest; with sidecar £30 for spot cash.—London House, Dinnington, Rotherham. [X3198]

## Sparkbrook.

SPARKBROOK Lightweights in stock; £40.—Attwood's Garage, Eccleshall, Staffs. [7688]

## Sun.

SUN-V.T.S. Lightweights in stock; £31 and £37.—Attwood's Garage, Eccleshall, Staffs. [7689]

COLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [0807]

SUN 2-strokes, 1916 models, single and 2-speeds; delivery from stock.—Jackson Wright, 10, Pudding Chare, Newcastle-on-Tyne. [6611]

1915 Sun-Villiers 2-stroke, lately overhauled, rear tyre new, U.H. horn, Sencap, footboards, horn, no lamps; £17.—T. 73, Wilton Rd., Salisbury. [X3169]

1916 Sun, 2½ h.p. V.T.S. engine, 2-stroke, 2-speed; original net price £37, not ridden 50 miles, genuinely new as list; £31/10.—Robinson's Garage, Green St., Cambridge. [7701]

SUN V.T.S., 2½ h.p., 2-stroke, late 1915, in excellent condition, good hull-chamber; reason for selling, owner requires sidecar combination; £26.—W. Matthews, Plant Farm, Flitwick, Beds. [7640]

1914 2½ h.p. Single-cyl. Sun-Precision Lightweight, free engine clutch, 26×2in. Clincher Dreadnought tyres, a reliable machine, in good condition; £17.—The Premier Motor Co., Aston Rd., Birmingham. [7871]

## Sunbeam.

SUNBEAM 3½ h.p. Models; £73/10.—Attwood's Garage, Eccleshall, Staffs. [7687]

SUNBEAM, new 1916 3½ h.p. standard model actually in stock.—Moss, Wem. [X3235]

1915 3½ h.p. Sunbeam, perfect order; 50 gns.—A. L. Pitts, Redditch. Tel.: 91. [X3290]

2½ h.p. Sunbeam, 1914 model, 2-speed gear and chain drive; £32/10.—Wauchope's, 9, Shoe Lane, London. [7763]

3½ h.p. Sunbeam, new, accessories optional; owner no time to ride.—Coates, 12, Laburnum Grove, Beeston, Notts. [X3159]

SUNBEAM, 1914, 2½ h.p., 2-speed, h.h. clutch, good condition; £35.—Smith, 39, Gloucester Rd., Finsbury Park, N. [X3058]

1914 6 h.p. Sunbeam and sporting Fitsu coachbuilt sidecar, 2 head lamps, etc., magnificent outfit, in fine condition; £69/10.—Crow Bros., Guildford. [7114]

SUNBEAM, 3½ h.p., new March, 1916, P. and H. head lamp, generator, and tail, A.K. knee-grips, electric horn, speedometer, etc., in perfect condition; owner bought car; £70.—Box 576, c/o The Motor Cycle. [X3001]

3½ h.p. Sunbeam, latest pattern, black and gold finish, with Mills-Fulford coach Skiff sidecar, apron and mat, Lucas black lamp set, Lucas rear lamp set and 1 gn. horn, ridden 100 miles only; £87.—Robinson's Garage, Green St., Cambridge. [7704]

1916 3½ h.p. Sunbeam, absolutely latest pattern, black and gold, with Lucas lamp, horn, speedometer, watch, etc., and nearly new coach Millford sidecar, the whole turnout in beautiful order, 500 miles only; £86.—Capt. Mallam, 26, Trinity St., Cambridge. [7707]

## Triumph.

3½ h.p. Triumph, 1912, splendid condition; £23.—193, High St., Tonbridge. [X3256]

3½ h.p. F.E. Triumph; £20, guaranteed.—Wauchope's, 9, Shoe Lane, London. [7768]

1911 Triumph, F.E., with accessories; £21.—Harvey, Hudson, South Woodford. [X3139]

1913 Triumph, 3-speed, tyres as new; £34.—Bull, St. Giles' Sq., Northampton. [X3283]

TRIUMPH, 1916 model, 4 h.p., countershaft, new.—Attwood's Garage, Eccleshall, Staffs. [7684]

JUNIOR Triumph, 1915, nicely equipped, and in splendid tune; £33.—Bunting, Harrow. [7840]

1915 2-stroke Triumph, splendid order; £36/10.—F. J. Bull, St. Giles' Sq., Northampton. [X3282]

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## MOTOR CYCLES FOR SALE.

## Triumph.

TRIUMPH, 1910, Brampton variable gear, wicker torpedo sidecar; £21.—Toms, Catherine St., Leicester. [7739]

1914 Triumph, 4 h.p., Gloria sidecar, 3 speeds, perfect; what offers?—47, Newland Av., Hull. [X3262]

1913 3½ h.p. 3-speed Triumph and Sidecar, like new; £38.—Wilkie, Hunter's Bar, Sheffield. [X3205]

TRIUMPH, 3½ h.p., 1914, T.T. racer, perfect condition; £30, or nearest.—90, Allerton Rd., Liverpool. [X3168]

1913 3½ h.p. 2-speed Triumph and Sidecar, perfect condition; £35.—Wilkie, Hunter's Bar, Sheffield. [X3204]

1915 Triumph and Millford Sidecar, complete Lucas lamps, etc.; £58.—Cross, Evingham Sq., Rotherham. [X3225]

3-SPEED Triumph and Gloria Sidecar, splendid condition; £45.—Leighton's, opposite Wood Green Station, N. [7636]

TRIUMPH, 1909, late, new tyres; £15, or exchange lightweight.—A. C. Walker, 90a, Elsinore Rd., Forest Hill. [7679]

TRIUMPH, 1910 clutch model, good condition, £20; also 1912 clutch model, £25.—Stour Cycle Depot, Stourbridge. [X3166]

TRIUMPH Baby, 2-stroke model, 2 speeds, excellent condition; £35.—P. J. Evans, John Bright St., Birmingham. [X3183]

3-SPEED Triumph and Sidecar, 1914 model, all accessories; any trial; £47.—Harford and Co., Station Rd., Canterbury. [6988]

TRIUMPH, T.T. (1913 engine), perfect, fast, with accessories.—£26/10.—Leighton's, opposite Wood Green Station, N. [7635]

TRIUMPH and Cane Sidecar, N.S.U. 2-speed gear fitted, just overhauled; what offers?—Dent's, Stonegate, York. [7806]

1913 Triumph, 3-speed, lamps, and Lucas horn, and sidecar, in good condition; £42.—Bull, St. Giles' Sq., Northampton. [X2282a]

TRIUMPH, 1910, perfect running order; accept £15 for immediate sale.—4, New River Crescent, Palmer's Green, London. [7578]

1914 Triumph, 4 h.p., 3-speed, and coachbuilt sidecar, like new; 50 gns., or near offer.—13, Shildon Rd., Blaydon-on-Tyne. [X3197]

TRIUMPH, T.T., renovated, and new tyres; bargain, £20.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [7735]

3-SPEED Triumph and Sidecar, screen, lamps, and speedometer, spares, etc.; £40.—Leighton's, opposite Wood Green Station, N. [7637]

TRIUMPH, 1914, 3-speed, and C.B. sidecar, host of accessories and spares, first-class order, little used; £50.—Pettit, Newport Pagnell. [X2874]

1912 Triumph, free engine, Philipsons pulley, Jones speedometer, engine re-bushed last year; £28.—12, George St., Richmond, Surrey. [7695]

TRIUMPH, 3½ h.p., 3-speed Sturmer-Archer gear, with cane sidecar, lamps, etc.; first cheque £27/10.—Greenwood, Market St., Barnsley. [7848]

TRIUMPH Junior, an exceedingly fine sample, overhauled and guaranteed sound, Lucas lamp, etc.; £32/10.—Layton's Garage, Bicester, Oxon. [X3240]

TRIUMPH, 3½ h.p., 2-speed, free engine, splendid condition; first offer of £18 accepted for quick sale.—76, Summerley St., Earlsfield, S.W. [7796]

TRIUMPH, 1914, 4 h.p., 3-speed, horn, lighting set, first-rate condition and appearance; privately owned; £37.—31a, Broomfield Rd., Chelmsford. [X3270]

T.T. Triumph, 1911, 3½ h.p., thoroughly overhauled, enamelled and plated, perfect condition; £25.—Doraston, 37, Orford St., Wavertree, Liverpool. [X2361]

1914 T.T. Roadster Triumph, P. and H. set, Lucas horn, rear drive Watford, all tools, condition like new; £42.—Harvey, Hudson, South Woodford. [X3142]

3½ h.p. Triumph, 1911, free engine, in perfect condition, lamp, generator, Cowey's speedometer, all accessories; £30.—E. Maling, Blackwell Hall, Dartington. [X3110]

1914½ Triumph, 4 h.p., 3 speeds, coachbuilt sidecar, magnificent condition, not done 1,500, spares, including tyres, Badoeck's by-pass; £48.—Southwood, 4, Francis Rd., Watford. [X3079]

1913 3½ h.p. Triumph and Gloria wicker sidecar, 3-speed, thoroughly overhauled, new rims and tyres recently fitted all wheels, good condition; £40.—Daniels, Lightpill, Stroud, Glos. [7617]

1913 Triumph, 3½ h.p., 3 speeds, Sturmer-Archer gear, with coachbuilt Gloria sidecar, spring wheel, in perfect condition; 40 gns.—Proud, 9, Pemberton Gardens, Upper Holloway, N. [X3249]

TRIUMPH, 1913, and coachbuilt sidecar, 3 speeds, clutch, 3 lamps, horn, Stewart speedometer, not done 4,000 miles, runs over 80 m.p.g.; £48.—68, Shepherd's Lane, Dartford, Kent. [7692]

## Trump.

TRUMP-J.A.P., 5-6 h.p., 3-speed, Bosch watertight, and Canoelet sidecar, new tyres, speedometer, lamps, and full equipment; £30.—14, Dodbrooke Rd., West Norwood. [7888]



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## The Central Office for Motor Cyclist Recruits.

SIX months ago we recorded the fact that 6,000 prospective recruits had made application to us, and had received advice to the best of our ability as to the most suitable section for them to join. Last week the total reached 10,000—quite a little army in itself. At the outset it was patent that readers of this journal, being naturally interested in things mechanical—quite apart from the thousands of readers who are skilled engineers and mechanics of all classes—were destined to play an important part in this world war, and consequently we early made it our duty, in response to continuous applications, to direct men of experience to the different specialised sections for which they were most suited.

Obviously, a skilled man in the right place is far more valuable to his country. On this point, however, it may clear the air if it is stated that a condition of enlistment being "general service," the War Office may, when exigency demands, transfer or adapt recruits to any depot or regiment, *i.e.*, a motor cyclist despatch rider may one day find himself in a line regiment with a rifle and bayonet, or a food lorry driver allotted to an armoured car. The figure of 10,000 named represents the number of individual applications we have personally handled—naturally we have no record of the thousands of readers who have made direct application to one or other of the numerous depots whose requirements have been readily announced in our pages for the benefit of readers. We may be forgiven for stating, in order to clear any misconception, that our personal efforts, as well as the page regularly devoted to recruiting matters, have been entirely without pay. Our sufficient reward is in the knowledge that this journal—essentially one appealing to the peace-loving mind—has been able to prove itself a national asset in the time of the country's need. The late Lord Kitchener, the War Office

authorities, as well as commanding officers of different motor sections, have been good enough to express their appreciation of our work.

## Two-strokes v. Four-strokes.

A SHORT time ago the relative positions of two-strokes and four-strokes were discussed on this page. As is generally recognised, there is a good deal of healthy rivalry existing between makers of these two types of engines, and we expressed the view that, instead of the rivalry decreasing as was generally supposed, due to the rapid advance of the two-stroke, the future trend of design might reasonably show that the miniature four-stroke engine was by no means eclipsed for all time. The development of the simple two-stroke, however, seemed after a while to reach a stage after which little or no progress could be discerned. Even now there are certain faults common to a two-stroke engine which are not present in the four-stroke. Our opinions of the past were based mainly on the extravagance of a two-stroke engine in the matter of petrol consumption when compared with a four-stroke. At the time the opinions were expressed, petrol was just half the price that it is now. How much stronger, therefore, is this all-important point of economy in favour of the four-stroke engine? We need not go over old ground in detail, but it is worth, perhaps, mentioning once again that in the early days tiny four-stroke engines failed by reason of their rapid deterioration. Latter-day developments, however, have produced a most efficient engine, almost everlasting valves, and an engine that will remain cool even after prolonged non-stop runs. These improvements, which were originally effected in the 500 c.c. four-stroke engine after extended racing experience, have gradually been reflected in the lightweight engine, and the present four-stroke lightweight cannot be compared with the machines on which many motor cyclists served their novitiate. The race for supremacy between the two and the four-stroke will be interesting and instructive.



## SIDECAR BODY DESIGN.

HOW THE GENERAL APPEARANCE MAY BE IMPROVED.

**T**HIS article is an attempt not only to improve upon the beauty that can with a little thought be introduced in building the body of a sidecar, but also the comfort. For instance, in fig. 1, which can be specified as a family sidecar, the lines lend to the body a sense of floating lightness only to be seen in a yacht that has been dry docked. The judicious handling of colour (in this model, black, grey, and silver) lends a certain distinction and originality that

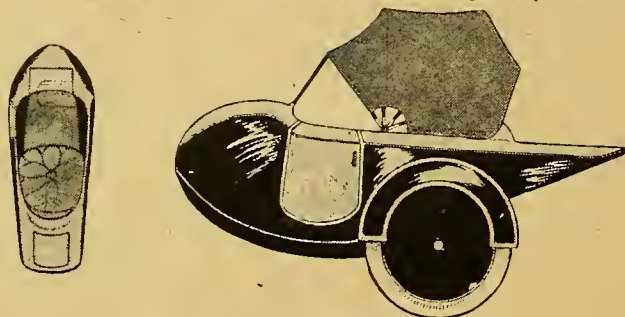


Fig. 1.—A yacht-shaped family sidecar.

pleases, as it is out of the ordinary. On most sidecars too little attention is paid to the design of the hood. Nothing can so upset an otherwise attractive design than a cumbersome and ill-shaped hood. The hood illustrated looks as if it were part and parcel of the design, and this is as it should be.

Leaving the beauty part of the design for a moment, let us consider the comfort. The principle followed is streamline, but with this difference: the stern of the car is upswept and flat, thereby effectually preventing the clouds of dust from settling in the fair occupant's hair. The seating accommodation is larger than that of most sidecars, and, necessarily, the sidecar itself is wider, but this width is hidden in the rounded shape. The seating is built upon the same proportions as an ordinary armchair, and to sit in it is a revelation after many sidecars, which often seem to us to be too narrow.

The locker-under-the-seat idea is done away with in this design, the whole of this space being taken up with canvas webbing and coil springs, as in armchair practice. It makes running over pot-holes no account as far as the passenger is concerned.

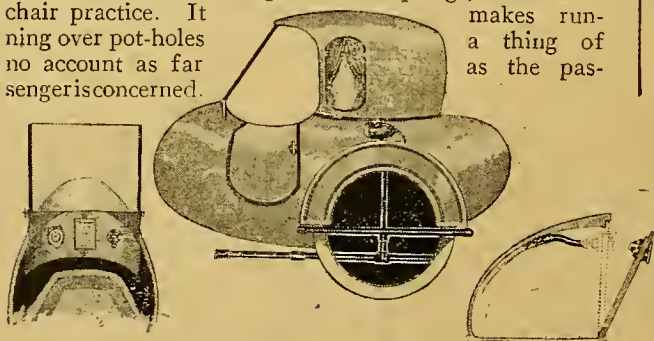


Fig. 2.—A doctor's coupé.

The locker is situated in the flat stern, with access to it through a hatch-shaped cover. A child's seat is hinged to the off-side of the body, which lets down as shown in the illustration, the width of the

body giving plenty of room for both occupants; beside which the windscreen is movable forward and the front deck of the sidecar lets down, so as to give greater length when required. The upholstery is in grey with a nickel beading. The hood is of a dark grey colour, held by black supports with nickel fittings, the same fittings being on the sidecar.

### Suitable for a Doctor.

Fig. 2 is a doctor's sidecar, and has been designed on an economy basis. It is an undoubted fact that a sidecar outfit can be run very much more cheaply than any car, and a coupé sidecar well designed will just about suit the doctor who now finds his car too expensive a method of propulsion.

The car is designed on the same comfortable lines as No. 1, the enhanced comfort of the springing taking away all fears of upsetting a doctor's hand for a delicate case or for operations. In the sketch can be seen the dashboard of a sidecar containing an appointment card, a watch, and a speedometer, the speedometer in all the models illustrated being fitted to the sidecar wheel, and placed so as to be easily read from both the motor cycle and also the sidecar.

The locker is lined with plush or some other suitable material, and is behind the dashboard, the drive of the speedometer being so arranged that on closing the locker door the drive is connected automatically to the dial. The

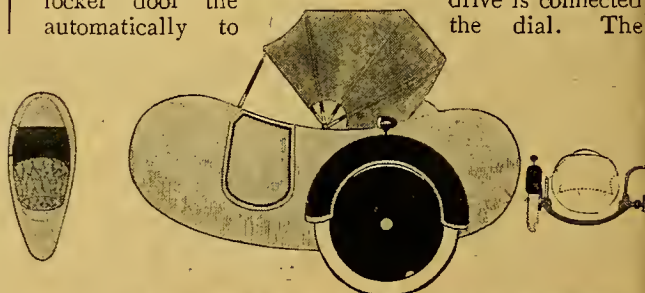


Fig. 3.—The Harley-Davidson body. Plan on the left and section on the right.

small sketch shows how this can be done. The locker is large and roomy enough to contain all that a doctor requires, and, being placed in the front of the body, is well away from all dust. This model, of course, would be also suitable for a lady.

### A Harley-Davidson Model.

Fig. 3 is a sidecar designed especially by the writer for the Harley-Davidson Co. It is well known that beauty in sidecar design is either a perfect match between sidecar and machine or in a charming contrast. In this model we have decided on a match. The whole body is designed after the manner of the Harley-Davidson tank, the sides being curves as well as the upper and lower portions. The same roomy comfort is found in this model, and the arm rests are recessed as in the sectional sketch. The hood is in keeping with the general design, the colour scheme being Harley-Davidson grey, black mudguard and disc, together with nickel fittings.

The first of these sidecars is now being built, and is intended for Sir Hugo de Bathe, an enthusiastic sidecarist.

H.M.



Occasional  
Comments**Even Oiling on Flat Twins.**

I have received a variety of letters dealing with the relative lubrication of front and back cylinders on horizontally opposed twins. A Douglas enthusiast writes from France to say that, when his machine was new, the oiling was certainly very unequal, but, on taking his engine down for the first time, he discovered that the paper cylinder washer had shifted during the tightening of the bolts by the assembler, and that it covered the oil hole designed to convey an additional supply to the skirt of the front piston. In making his new washer, he cut a much larger hole in the washer, and has since enjoyed even oiling. Other riders of horizontal twins support my contention that few engines of this type (and of the V type) distribute the oil fairly.

**Multi-cylinder Oiling and Two-strokes.**

I expect the difficulty of assuring even lubrication is one of the factors which has delayed the development of two-stroke twins. Those of us who have wrestled with the four-stroking problem on more engines than one will realise that a two-stroke twin with a tendency to over oil one cylinder would be a holy terror. Imagine a twin which is two-stroking regularly on one cylinder and four-stroking on the other! Certain factory testers must have spent some humorous and tragic hours wrestling with such conditions; but they can be dealt with, and two-stroke practice should then react on four-stroke practice, and uneven oiling become a bad dream of bygone days.

**Rigid and Flexible Drives.**

Increasing experience has led me to modify my old opinions on the three commoner types of transmission. Taking the average of all the machines I know, I should still say that nothing is quite so uniformly sweet as the direct belt drive; but that, allowing for wet weather, sidecar work, and the tendency of evolution in variable gears, the chain-cum-belt drive is obviously superior. I would even go further, and add that I think the chain may ultimately oust the chain-cum-belt. A badly designed chain drive on either a single-cylinder or a V twin can still cause the maximum amount of vibration and trouble; and inferior chain drives are far commoner than they ought to be. There are still many machines which have crude cushioning devices, awkward or unreliable adjustments, and chain cases fit only for the scrap heap. There are also a strictly limited number of machines equipped with such perfect chain drives that the keenest belt enthusiast need have no hesitation in buying such a mount. The first essential is a first-class engine. In addition to such an engine, the machine really requires two separate cushioning devices, one for the fore chain, and one for

the rear; and a few of the spring drives on the market effect their object so efficiently that it is really difficult to mark any harshness in the drive, even when one cylinder is missing, or pulling in a weak and half-hearted fashion.

**Naked or Uncased Chains.**

Very possibly the battle between the chain-cum-belt and the two-chain drive may be fought out on the point of encasing the rear chain satisfactorily. It is an easy matter to enclose the fore chain in a neat, rattleless, and get-at-able casing of cast aluminium; the back chain is the real problem. Its case is almost bound to spoil the appearance of the machine, though appearance is a minor point. It is a very thorny problem to manufacture a light, accessible, and rattleproof rear chain case, especially when the necessity of back wheel withdrawals and chain adjustments are taken into consideration. Many makers have abandoned experiments in favour of a mere chain guard which is really quite efficient. Then the rear chain must be readjusted whenever the comparatively quick wearing front chain needs resetting, whereas the rear belt seldom needs tightening when the gear box is shifted back a trifle. I must say that the chain-cum-belt drive is the better of the two for the time being, in my opinion; but I dare not prophesy as confidently as once I did that it is the ultimate survivor. We have still to reckon with the shaft drive. If the once harsh chain drive can be smoothed down till it is tolerable on a single-cylinder, and—at its best—delicious on a horizontal twin, we must not assume too readily that the shaft can only make good on four cylinders.

**Long-stroke Engines.**

Mr. Norton claims that reduction of pressure on the bushes, and consequent slowness of wear, is a great merit of the long-stroke engines so particularly connected with his name in the motor cycling world. Will some leading designer of short-stroke engines please weigh in with a letter explaining why the bulk of our designers plump for the "square" type of engine? We can hardly expect Mr. Norton to state the arguments which weigh against his choice; and quite a number of our readers are wondering why so pleasant a design as the Norton is comparatively uncommon. I wonder if it is remarkably difficult to obtain the Norton quality of balance on a long-stroke single-cylinder? Not long ago a firm lent me a long-stroke single which it was intending to launch with a great flourish of trumpets, but it was ultimately withdrawn, by no means to my surprise; it developed an astounding kick, but the vibration at nearly all engine speeds was the veritable limit.



## A SPECIAL 8 h.p. CAMPION.

8 h.p. J.A.P. Engine, Sturmey-Archer Three-speed Countershaft Gear, Chain Transmission.

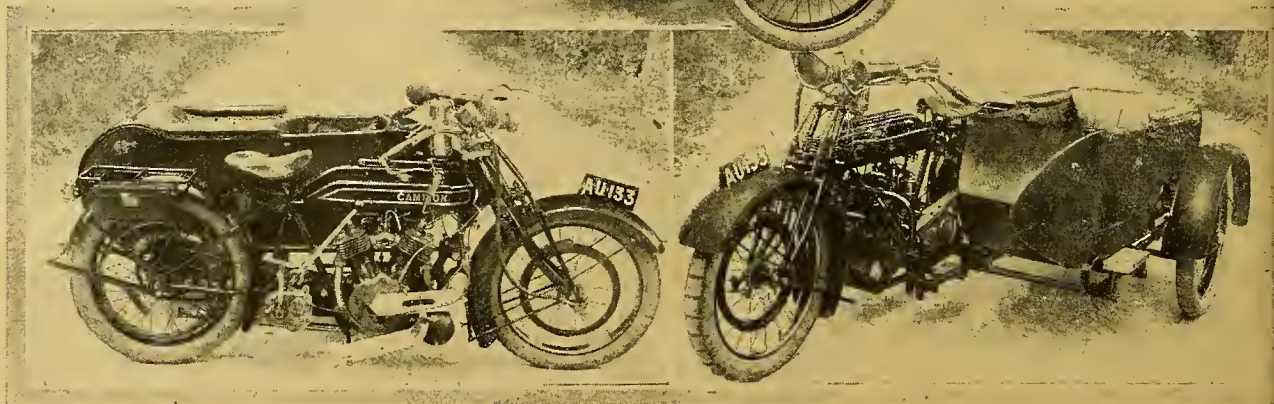
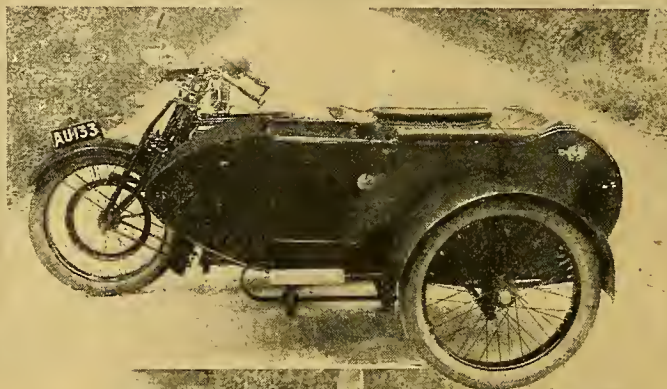
**T**HE CAMPION CYCLE CO., of Nottingham, has just produced a special 8 h.p. J.A.P.-engined sidecar mount, which possesses many points of real interest. In general design it is precisely the same as the 1916 model, which we described in our issue of November 4th last (page 442), the departures being mainly in connection with the fittings.

First of all the engine is one of the latest 8 h.p. J.A.P.'s, having exhaust valve caps with cooling fins, whilst it also has the new lubrication system adopted by Messrs. J. A. Prestwich and Co. The gear is a Sturmey-Archer countershaft three-speed type adapted to all-chain

room for an adult passenger in addition. The rear portion is hinged, and inside the compartment a tin of petrol, oil, tools, and a small amount of luggage may be carried, and so overcoming the usual trouble of cramping the passenger.

Sturmey-Archer gear with chain and chain-cum-belt transmission, should particularly appeal to the Overseas rider. Though in general design the Overseas model is a duplicate of the British model a different type of frame, giving an extra 1½ in. ground clearance, is used. The tyres are 650 x 65 mm. On the latest products an internal expanding band brake is used at the rear, and a rim brake on the front wheel.

A number of machines of this type were shipped to Denmark a few weeks ago, but in this case the Licensing Committee of the Board of Trade stipulated, as usual, that the machines should be despatched minus tyres.

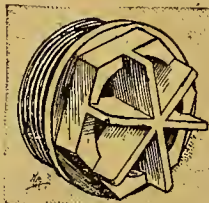


Latest model 8 h.p. Campion passenger outfit. The engine is a J.A.P., the gear a three-speed countershaft Sturmey-Archer, and the drive is by chain throughout. A good sidecar is fitted with a capacious back compartment.

drive, the front chain being enclosed in an aluminium case, and the rear one protected on its upper edge. The carburettor fitted is an Amac, on which is provided a pipe and tap in the induction pipe taking hot air direct from the front cylinder. The owner of this special machine finds that this results in a saving of fuel, and estimates that an extra speed of five miles per hour is obtainable. The substantial width of the mudguards will be noted. They are all 8 in. wide, with side extensions to the front guard, whilst the sidecar guard has an inside covering practically enclosing half the wheel, and so preventing any splashes of mud reaching the sidecar. The back mudguard and carrier are hinged, and may be quickly removed for ease of repair in the case of a puncture. Tyre troubles, however, should be practically non-existent, seeing that in this particular machine 700 x 80 mm. Dunlop car tyres are fitted. Mark II. pattern-Druid heavy forks absorb the road shocks.

The sidecar, it will be agreed, is of very taking appearance. It has a small seat in front for a child, and gives ample

The Campion illustrated represents the first occasion upon which all-chain drive has been applied to a Sturmey-Archer gear. A shock absorbing device is fitted in the back hub, although on the standard Campion this is dispensed with. After eight hundred miles of road testing the owner of the mount illustrated is delighted with its performances.



The latest radiated valve cap of the J.A.P. engine.

### The Overseas Model.

Whilst at the Campion Works we were able to inspect part of a batch of machines to fulfil an order from Dunedin, New Zealand.

These machines are bound to create a good impression on account of their solid construction and absence of fittings, which have not proved themselves in constant road usage. The 8 h.p. J.A.P.-engined model, fitted with a

### MORE SUNSHINE FOR WOUNDED SOLDIERS.

**W**HAT has become known, from preliminary notices, as the Thornton Heath sidecar outing for wounded soldiers took place on Wednesday of last week. The run was favoured with glorious weather with the exception of a passing thunderstorm, and the men thoroughly enjoyed themselves.

The leading light in the enterprise was Mr. Alfred Taylor, of Thornton Heath, and he was assisted by a large number of sidecarists, the total number of machines present being fifty-two. Of these, twenty-seven were Enfields, and there were two ladies among the drivers. The men were taken from the Crescent Hospital, Croydon, and the destination was the Leith Hill Hotel, where tea was served in the garden. Each driver paid for his passenger's tea, and the Enfield Cycle Co. presented each man with a box of cigarettes.

Photographs taken at different stages of the run will be found in this issue.



## CLOTHING AND CLEANLINESS.

### How the Use of a Motor Cycle can be Extended.

IT has always been the aim of this journal to foster development in motor cycle design to the fullest extent. Since the introduction of the practicable mount we have endeavoured to develop to the best of our ability every item which promised real progress in design. So far development has resulted in perfect reliability; in the future, therefore, attention has to be given to refinements. First must come cleanliness, and then comfort; better still, both should be evolved together. Now that so few machines are being made, designers should consider how best to add refinements to their productions, and then incorporate them as soon as they are ready for manufacture. Up to the present cleanliness has been studied only from the point of view of keeping the rider's garments free from mud, and the Great War, which is turning out to be the greatest reliability trial ever held, will render the post-war models of the W.D. pattern better than ever in this respect. Mud that clogs bearings and working parts must be excluded, so the result is that not only the machines but the rider as well are protected. It does not matter if oil flies about, as the D.R. need not be too particular about his overalls, but if oil gets on the clothes of the private owner, he is, or ought to be, considerably annoyed. The idea that one cannot ride a motor bicycle without getting filthy has, unfortunately, some foundation. It is a most important matter, and needs the most careful attention.

If the motor bicycle is to become even more popular than it is at present, it must be a cleaner machine than it is now. The engine is



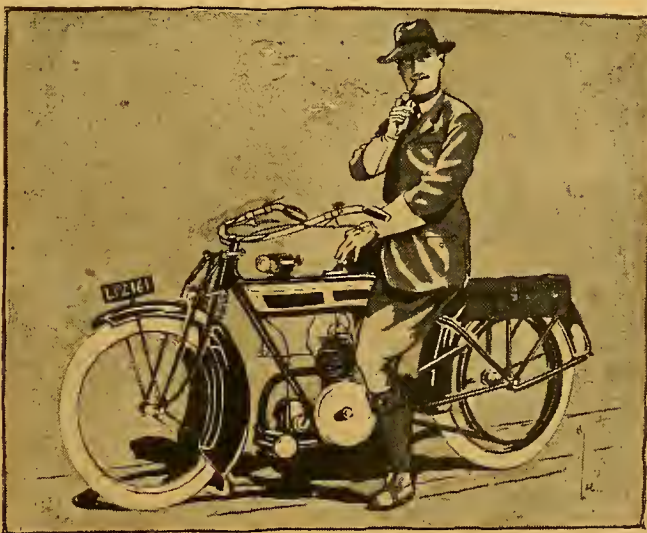
With present-day mud-guarding, motor cyclists are obliged to present the appearance depicted above, even in fine weather.

necessarily exposed, and any oil which it exudes may be caught by the rider's clothes. Dust and mud can be brushed off, but oil cannot be cleaned by petrol from mackintoshes without destroying their waterproof qualities.

### The Importance of Cleanliness.

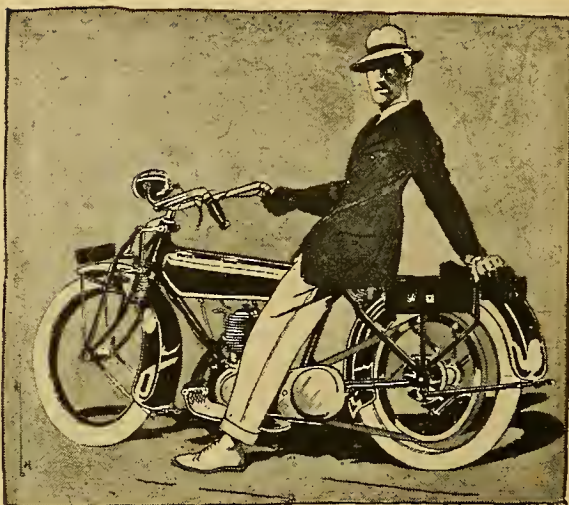
Now what we want to aim at is freedom from oil, which is not an easy matter when the engine is always, and the transmission usually, in an exposed position. To add to these difficulties, a motor cycle engine—sometimes unkindly but quite accurately called an oil-cooled motor—is always thirsty for lubricant. Oil will therefore leak from crank case and timing gear case joints, tappet guides, and release valves, while it is flung in all directions by exposed chains. Next we have the lubrication systems to consider. The petroil system so prevalent on two-strokes is mechanically good and delightfully simple, but deserving of the strongest censure on account of its extreme messiness. Fuel can never be taken aboard unless oil is taken in at the same time.

And no one can draw oil out of a slow dripping tap, measure it off, and pour it into the tank without getting his hands or his gloves dirty. The "mixture" exudes from the filler cap and the carburetter. From the top of the tank it runs down the sides just where the rider grips with his knees. If he be wise and wear a long coat the front of this gets into a horrible condition as the petrol part of the mixture rapidly evaporates and the oil is left behind. Drops of the golden fluid fly off the carburetter and alight on his trouser overalls, and after a hundred miles he is not



Thus attired one should be able to ride a motor cycle in summer weather.





A machine should be so guarded that tennis or cricket players can ride to the grounds if they are five or twenty miles away from home.

fit to be seen. The system, therefore, can hardly appeal to anyone who takes any pride in his personal appearance. The drip system to the inlet pipe in

two-stroke engines and in four strokes oil-tight tappet guides, perfect crank case joints, and adequate relief valve exits, are the solutions, while doubtless considerable improvement could be obtained by the adoption of a mechanical lubrication system which guarantees direct delivery of oil to all moving parts, without an excess of lubricant in the crank case, and naturally the transmission should be enclosed.

Now it should be perfectly possible for a man to ride a motor bicycle in the height of summer for a considerable distance without overalls, and it should also be possible to ride in flannels to the river, the tennis court, or the cricket ground, but few machines even of 1916 pattern will allow this to be done. The rendering of an engine practically oiltight can be accomplished, but all that can be done at the present time is to keep the speed down and use as little oil as possible if one desires to keep particularly clean on a short run. When times are again normal and trials are held once more the Auto Cycle Union, at the end of the next six days trial, should arrange for the machines to finish up at Brooklands, undergo a short speed test, then see that the riders are garbed in clean holland overalls, set a minimum speed of thirty miles an hour, send them round the track for, say, ten laps, and give a prize to the cleanest man and machine at the end of the test.

## The Increasing Output of British-made Magnetos.

IT is extremely gratifying to see how the British magneto industry has taken advantage of the demand for British magnetos which has been caused by the war stopping supplies from foreign sources. It has always been a source of dissatisfaction to the patriotic Britisher to have his favourite mount decorated with a foreign magneto. Now, however, we are pleased to see there is no need for this state of affairs to exist, for we have a large number of British-made magnetos, equal in every respect, and in many ways superior, to the German-made article of pre-war days. Not only have we ample supplies for home use, but the outputs are now so large that we look forward in the future to see England one of the chief exporting centres for magnetos, instead of, as of old, importing practically every machine used.

The Electric Ignition Co., Ltd., of Birmingham, were one of the first firms to realise this demand, and have, by perfected organisation and the concentration of their energies on one model, succeeded in producing one of the finest instruments ever manufactured, in addition to having probably one of the largest outputs of British-made magnetos.

Although the company wish it to be understood that they have no intention of placing any additional models on the market until more settled times arrive, we are given to understand that they are experimenting with many new models, and have already produced a two-cylinder

motor cycle magneto which on test has proved most satisfactory.

The single-cylinder model at present made is constructed on sound and well-proved lines, all the parts being very strong and substantial.

The accompanying illustrations show how easy it is to adjust the platinum contacts. Having removed the central holding down screw with the small spanner supplied and taken off the contact breaker, first loosen the screws A and B (fig. 1), next turn on one side the spring clip C (fig. 2), when the rocker arm can be lifted carefully off its bearing (as shown in fig. 3) with the fingers. Then when exposed (as in fig. 4) the points can be cleaned and trimmed up with a small file. The adjustment should be carried out when the contact breaker has been replaced.

We have received an extremely neat booklet of instructions on the care and management of the E.I.C. magneto. This contains many most useful hints and tips, in addition to a guarantee for one year for any E.I.C. magneto against faulty workmanship or material. It is most interesting to note that this guarantee is retrospective, and covers practically every magneto the firm have manufactured. Owing to their increasing export business, they have found it desirable to have this booklet also printed in Russian.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

Removal of rocker arm from contact breaker.

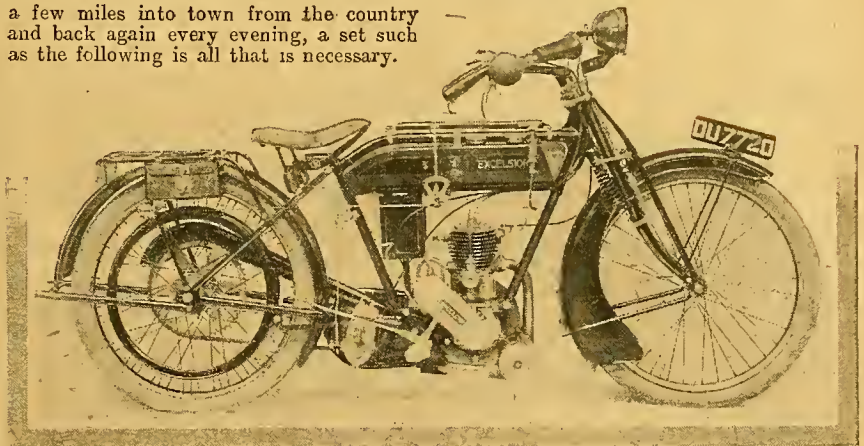


## Electric Lighting for Lightweights.

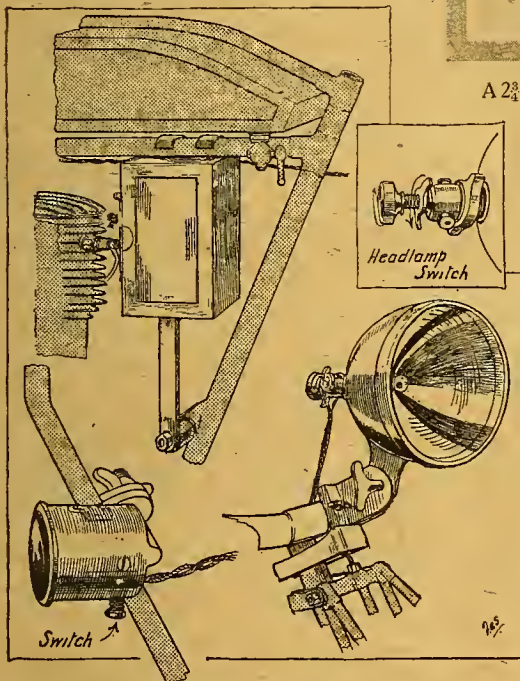
### The Claims of the Storage Battery System.

**A**FTER the war there will be a great rush for electrically illuminated motor cycles. As it is, many of the few 1916 British-built sidecar outfits are equipped with dynamo lighting sets, and it has already been mentioned in *The Motor Cycle* that some firms with spare moments on hand in the making of munitions are adapting this form of lighting for solo machines. At the same time, the claims of the simple storage battery lighting system for certain types of machines and certain classes of work must not be overlooked. It is cheaper, less weighty, and simpler than a dynamo set, and hence it is eminently suited for lightweights. For a man who uses his machine, whatever its power, for running

a few miles into town from the country and back again every evening, a set such as the following is all that is necessary.



A 2½ h.p. two-stroke Coventry Excelsior machine fitted with storage battery electric lighting.



Electric lighting direct from storage battery, as fitted to a 2½ h.p. two-stroke Excelsior.

The equipment illustrated and described herewith is one standardised, after successful trial, by Bayliss, Thomas and Co., makers of the Coventry Excelsior, and is shown fitted to one of their 2½ h.p. two-stroke machines recently delivered to a local client.

A metal case for the accumulator is carried under the tank and behind the engine, being attached to the tube below the tank by two metal straps and steadied by a flat bar carried down to a joint of the gear box bracket. The case is enamelled and lined to match the tank in the usual Excelsior colours. A pair of four volt twenty ampère hour accumulators are carried side by side, one in use and one in reserve. Simple wiring is connected to the lamp.

The H.H. head light is provided with a very efficient reflector and metal filament lamp giving low consumption,

and a neat switch is provided at the back of the lamp, which can be reached from the saddle.

The rear light is fitted on the carrier, and is controlled by a separate switch. Hunt lamps, with all black finish, are used.

Recharging of the accumulators is the only expense entailed, and as each cell is said to give fifteen hours continuous light the necessity to recharge will not occur often. The whole set complete with carrying case, one accumulator, lamps, and wiring sells at £3 10s. net, a spare lamp bulb in a safe carrying case being included.

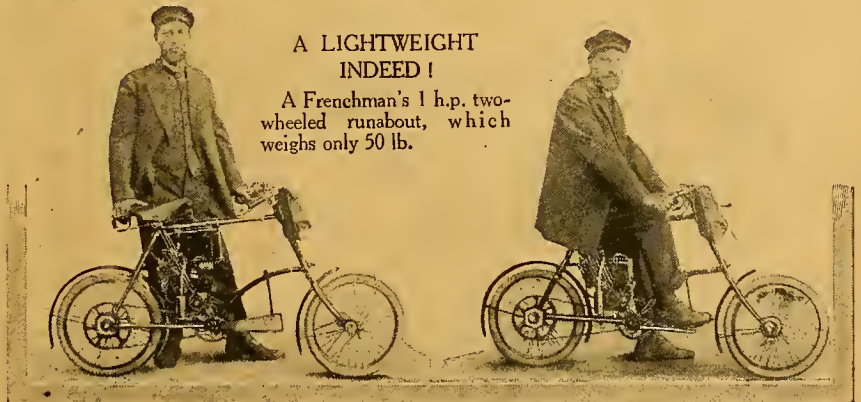
The machine to which this lighting set is fitted has a particularly smart appearance, and a short trial run served to show that it has a considerable reserve of power. Speeds up to 30 m.p.h. were easily obtained on about half throttle; no doubt it would exceed 40 m.p.h. if necessary, and should do most of its climbing on top gear. It is chain-driven throughout, yet it was difficult to notice any difference from belt drive. A two-speed gear with substantial control levers, together with a handle-bar operated clutch, make it extremely easy to handle.

### THE LIMIT IN LIGHTWEIGHTS.

**T**HE photographs on this page of a novel lightweight motor bicycle have been forwarded to us by M. H. Duvauchelle, an enthusiastic French reader of *The Motor Cycle*. He is a clever amateur mechanic and a pilot working on the Seine Estuary, and up that river as far as Rouen. The machine has been made specially light so that it can be easily taken ashore from his steam tug. The weight is 50 lb., 20in. wheels are employed, and a 1 h.p. four-stroke 50 mm. x 55 mm. engine, which develops its power at 2,450 r.p.m., is fitted. The engine has an outside flywheel. The machine's maximum speed is 19 m.p.h., and last month, we are told, it travelled 500 miles. The transmission is by chain, and spring forks are used.

#### A LIGHTWEIGHT INDEED!

A Frenchman's 1 h.p. two-wheeled runabout, which weighs only 50 lb.







"GASOLINE CAVALRY," or, in plain English, United States infantry on Harley-Davidson sidecars used for the protection of Mexican border towns against raids

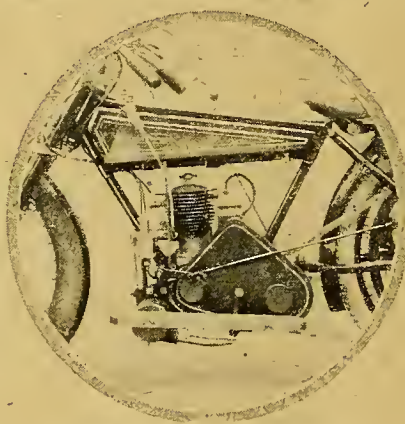
## A New Lightweight Grandex.

2½ h.p. Two-stroke Engine, 55 mm. × 70 mm. = 232 c.c.; Two-speed Countershaft Gear.

WE recently had an opportunity of examining the new 2½ h.p. two-stroke Grandex. As will be seen from the illustration, this is a most attractive looking little machine. The frame is symmetrical in design, having a sloping top tube and a tapered tank holding just over a gallon of petrol. The forward portion is devoted to lubricating oil, which is fed through a Best and Lloyd semi-automatic drip feed lubricator to the induction port. The engine is the well-known 2½ h.p. Precision two-stroke, and it is interesting to note that the 2½ h.p. four-stroke J.A.P. engine can be fitted into the existing frame without alteration. Great care has been exercised in rendering this engine oil-tight, the bearings being most efficiently packed with this end in view. Care has also been taken to render the machine adequately silent, the silencer being of ample dimensions and of great thickness so as to deaden all noise. The exhaust from the relief valve does not pass into the open air, but through a special pipe is transferred into the exhaust outlet.

### A Three-sprocket Chain Drive.

A noteworthy feature is the three-point drive, by means of which the magneto is driven by the same chain, which also conveys the power from the engine to the countershaft, and this



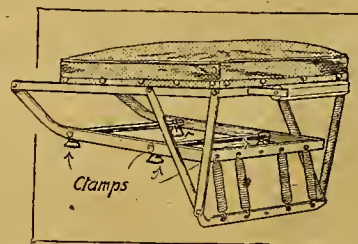
Grandex power unit from the transmission side, showing unusual arrangement of single chain drive for magneto and transmission.

chain, it will be noticed, is adequately protected. The gear box is a two-speed Albion. A feature of the frame construction is that the chain stays form a single piece with the bottom frame member, which greatly adds to the strength. All parts, such as mudguards, luggage carrier, and stand, are most sub-

stantial, and, though the machine is a lightweight, strength has not in any single case been sacrificed to lightness. It will be noticed that comfortable foot-boards are provided. Points of convenience have been carefully studied, and a drain tap is fitted to the rear of the tank, so that petrol can always be obtained for cleaning purposes if desired. A very excellent foot brake is fitted, which acts on the inside of the belt rim. The brake shoe is of V section and is lined with Ferodo.

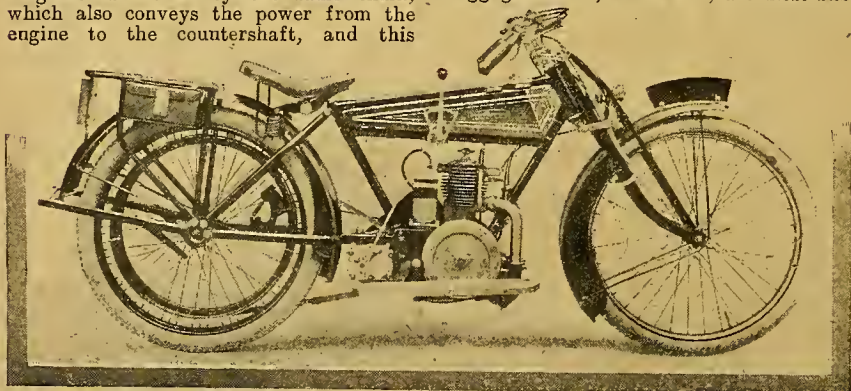
### TAN-SAD PILLION SEAT.

WHATEVER may be said against the practice of pillion riding, it will always be indulged in by many persons. No doubt some accidents occur through the passenger being jolted from the rough and ready seat usually mounted on an unsprung carrier. This danger is entirely obviated by a new form of pillion



The Tan-Sad pillion seat.

seat known as the Tan-Sad. It consists of a strong metal frame provided with a set of clamps for attachment to the ordinary carrier. This is done by turning the two bars between the clamps with a small punch or rod and drawing in the clamps till they grip the carrier tightly. Pivoted at the front end of this frame is another frame carrying an upholstered leather seat; the back connection is made with four coil springs, thus providing a well sprung seat which effectively absorbs road shocks. Additional springs may be added if necessary. It can be obtained from the Tan-Sad Works, 5a, Parker Street, Edgbaston, Birmingham.



The new 2½ h.p. two-stroke Grandex. A sloping tank and Albion two-speed countershaft gear are features.



# IRISH 24 HOURS RELIABILITY TRIAL,

23rd and 24th June, 1916.

## THE REAL FACTS.

WE ENTERED NO MACHINES, BUT PRIVATE OWNERS OF

# Indian

Motocycles

WHO ENTERED SECURED THE

## RUDGE-WHITWORTH CUP FOR BEST PERFORMANCE.

ALSO

## The Special Lightweight Prize.

## Three Gold Medals and Three Silver Medals.

Mr. W. H. Freeman, a private owner, has secured the special prize in this Trial for the past three years.



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In answering this advertisement it is desirable to mention "The Motor Cycle."



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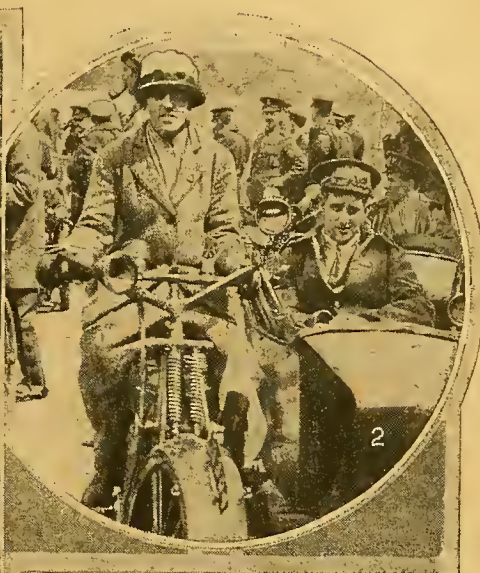
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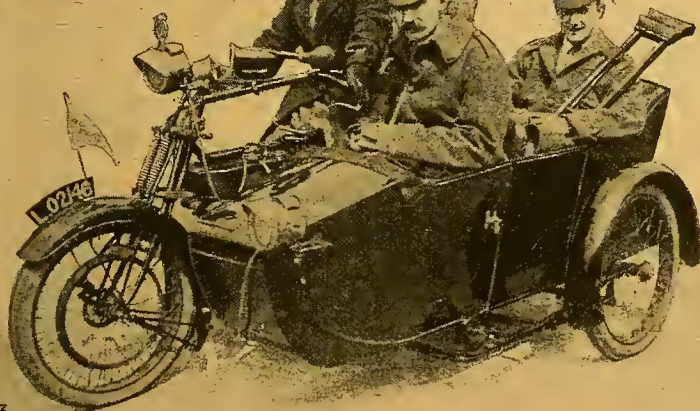
# ANOTHER SIDECAR TRIP FOR THE WOUNDED.



## GROWING POPULARITY OF SIDECAR RUNS FOR WOUNDED SOLDIERS.

PHOTOGRAPHS TAKEN AT THE  
THORNTON HEATH OUTING ON  
JULY 5TH, AND REFERRED TO ON  
PAGE 28 OF THIS ISSUE.

- (1.) Scenes in the grounds of the Crescent Hospital, where the men were picked up
- (2.) A lady motor cyclist (Mrs. Robins) who participated in the run.
- (3.) Mrs. Richardson with a big load—a good test for the 6 h.p. Enfield.
- (4.) Near Leatherhead on the Epsom road.
- (5.) The road was dusty between Dorking and Leith hill.



3





# "THE MOTOR CYCLE" RECRUITING SECTION.

Latest Recruits in the M.M.G S. This Week's Vacancies.

**F**URTHER instructions for recruits for the Motor Machine Gun Service have been received from the commanding officer of this section, Lt.-Col. R. J. Colson, and applications from experienced motor cyclists and car drivers are invited on the same terms as previously. Inspections have been arranged as follows:

LONDON.—Saturday, July 15th, at *The Motor Cycle* Offices, 20, Tudor Street, London, E.C., from 2 to 4 p.m.

COVENTRY.—Tuesday, July 18th, Recruiting Office, Little Park Street, from 12 to 4.30 p.m.

Readers conforming to the conditions of enlistment who may be ready for immediate service may attend at Coventry without previous notification. It would, however, be wise for all applicants to be examined before the Medical Board at the headquarters of their respective places of attestation previously.

The conditions of enlistment in the Motor Machine Gun Service are repeated below:

AGE.—19 to 40.

ENLISTMENT.—For duration of the war.

MEDICALLY FIT.—For general service abroad or for garrison duty abroad.

PAY.—1s. 2½d. per day, all found; the usual separation or dependant's allowance.

Last week inspections of recruits were held in Coventry (on Tuesday) and Not-

## Central Office for Motor Machine Gun Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

tingham (on Wednesday), when the following candidates were accepted:

Addy, J. F., Boston, Lincs.  
Allott, R. A., Netherfield.  
Baker, C. J., Heckington.  
Boydall, L. A., Nottingham.  
Core, F., Coventry.  
Dakin, E., Clay Cross.  
Donaldson, L., Mansfield-Woodhouse.  
Dunston, G., Wells, Som.  
Fielder, A., Freshwater, I.O.W.  
Flower, J., Derby.  
Forman, T. R., Newcastle-on-Tyne.  
Horner, A., Beeston, Leeds.  
Jones, J. O., Wellingborough.  
King, G. H., Eggleston.  
Lambert, C. E. B., Witham, Bath.  
Mann, G. B., Mirfield.  
Manning, A., South Molton.  
Melhuish, F., Harborne, Birmingham.  
Moore, J., Birmingham.  
Myers, S., Calverley.  
Nash, O., Coventry.  
Ogden, F., Little Aston, Staffs.  
Petts, J. W., Clay Cross.  
Pogmore, W. T., Mansfield-Woodhouse.  
Preston, J., Nelson.  
Raymond, A., Coventry.  
Robinson, J. W., Darlington.  
Stretton, F., Much Wenlock.  
Thompson, J. T., Coventry.  
Turner, D., Coventry.  
Wagstaff, E. H., Leicester.  
Watson, A., Burnley.  
Wilkins, W., Wells, Som.  
Wood, S., Luddley, Huddersfield.

We frequently receive applications from men of eighteen years of age who desire to enlist in the Motor Machine Gun

Service. For future guidance, it should be noted that the present minimum age is 18½.

## New Age Limits for Despatch Riders.

It should be noted by prospective despatch riders in the Royal Engineers' Signal Section that a new rule fixes the age limits between eighteen years and nine months and thirty-five.

## R.E. Inland Water Transport Section.

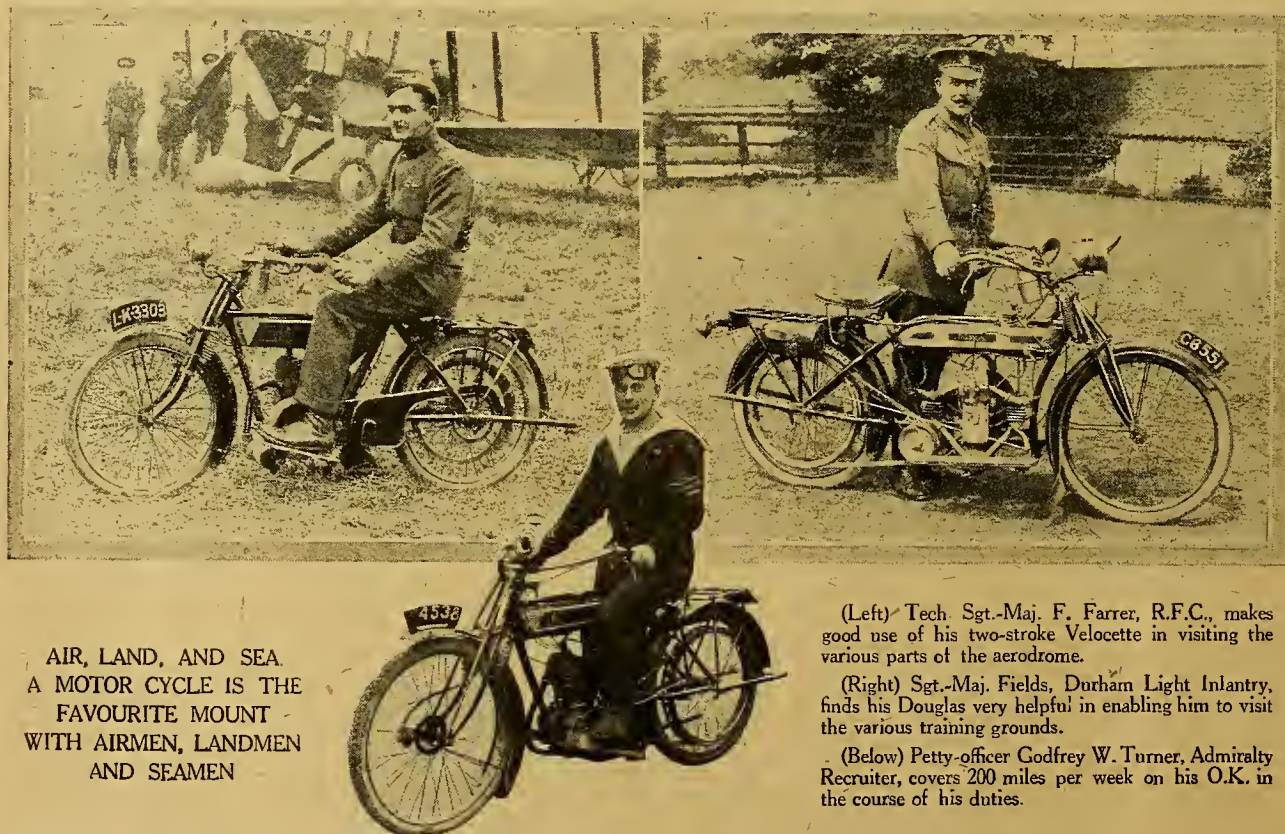
Recruits are required for the above Section for service abroad, steam tugs, steam barges, and canal barges. A certain number of men with a complete knowledge of internal combustion engines are wanted. Age limits, nineteen to forty.

## Royal Flying Corps.

From July 17th to 22nd a trade testing party will be in attendance at the Recruiting Office, High Street, Stockton-on-Tees, in order to test men of the different R.F.C. trades.

## A Keen Youngster.

An enthusiastic youth of eighteen, having failed to secure local enlistment in the Royal Flying Corps, communicated with the headquarters at Farnborough, Mr. Pemberton Billing, and finally His Majesty the King, but all with no success. He enquires if we can assist him!



(Left) Tech. Sgt.-Maj. F. Farrer, R.F.C., makes good use of his two-stroke Velocette in visiting the various parts of the aerodrome.

(Right) Sgt.-Maj. Fields, Durham Light Infantry, finds his Douglas very helpful in enabling him to visit the various training grounds.

(Below) Petty-officer Godfrey W. Turner, Admiralty Recruiter, covers 200 miles per week on his O.K. in the course of his duties.



## MILITARY AND NAVAL NOTES.

## EXCITING TIMES WITH AN A.S.C. DESPATCH RIDER.

NEWS of the experiences of motor cyclists attached to the A.S.C. is not so common as that of the R.E. despatch riders; hence the following extracts from a letter from a man in the former will be welcome. The writer is J. Scott Anderson, an old member of the Glasgow M.C.C., who has been in France for twelve months. He is an A.S.C.

motor cyclist with a siege battery, R.G.A., and from the following it will be gathered that, though on the whole the risks run by military motor cyclists are not great, there are occasions when England would be considered distinctly safer!

"The other day I had to take one of our officers up to an 'O. Pip' (observation post), and during the time I was waiting for him a bullet whizzed through the front of the sidecar.

"Last week after returning with an officer from the O.P. with our sidecar the chain broke. The officer naturally left me, and walked to the nearest battery

to obtain a motor bicycle to take him home. At the same time he 'phoned to H.Q. for one of my chums to come and assist me. All I had to do the job with was a small 'King Dick' and a screwdriver (tool-kits are very difficult to get nowadays), so his assistance was very useful. We were only about 700 yards from the Bosche, and before we had been at it very long over came their shrapnel, whizzbangs, and all manner of things; it was a matter of jumping in and out of the ditch until they quietened down.

"This is only one of the many experiences I have had of this kind, and although we are in the A.S.C. we have to be prepared to take on dangerous jobs quite as often as any R.E. rider. The latter's work consists chiefly of carrying despatches (mostly secret) from and to their brigades H.Q., which are usually three or four miles behind the lines. Our work consists of carrying despatches from the Group Headquarters to the various batteries, the latter being sometimes quite close to the trenches. Riding down a road which is being shelled is quite an ordinary occurrence.

## IN INDIA WITH THE M.M.G.S.

THERE are now batteries of the Motor Machine Gun Section in various parts of the world, though we hear more of the doings of those in France than elsewhere. For this reason a letter

from a man with a battery in India is all the more welcome. It is from Sgt. A. Fielder, and it gives a good impression of the life men of this particular battery are leading out there. The following are extracts from Fielder's letter:

"We are very comfortable here, and, although rather hot, are getting used to it. We have just returned from a thousand mile patrol duty, and a brief description might interest you. We started from Pindi on April 5th for Nowshera, a distance of eighty miles, passing Fort Attock, near Hindus, and Kabul on the way, and had a decent journey, except for the dust, which was awful. We stopped at Nowshera on the 6th. On the 7th we left for Chakdara Fort, up on the frontier, passing Mardan Malakan Forts, etc.; distance sixty miles. As this is up on the Himalaya Mountains, it was a fairly stiff climb. On the 8th we went field firing. The object of this was to put the fear of God into the native chief and tribesmen, which we fairly succeeded in doing, returning afterwards to Mardan; distance fifty miles. In the evening we went to see an Indian war dance, which is a very impressive sort of affair.

## Through Heavy Rain.

"The 9th, being Sunday, we spent tuning up our cycles. On the 10th we left for Peshawar in the pouring rain, and arrived covered with mud, etc.; distance forty-five miles. On the 11th we went to Landikotal Fort, through the Khyber Pass, returning to Peshawar the same day; distance seventy-five miles. The road was very dangerous, being twisty and right at the edge of the cliffs. On the 12th we were inspected by the Chief Commissioner, who was very satisfied with our work. On the 13th we went to Chubbudda for field firing (this was where a big 'scrap' took place last August), returning afterwards to Peshawar; distance fifty miles. The 14th (day of rest) was spent overhauling the machines. On the 15th we were inspected

by the General in Command before leaving for Kohat; distance forty miles. On the 17th we left Kohat for Thall, a nice journey; distance sixty-one miles. On the 18th we left for Parachina, right up on the hills, where it was very cold at night, snow being on the hills just above; distance fifty-nine miles. On the 19th we went field firing on the Afghan frontier, afterwards returning to Thall; distance eighty miles. Here the natives held sports in our honour, and some of the performances were very good, especially their horsemanship.

## An Inspection.

"On the 20th we left for Kohat, where we were inspected by the General in Command, afterwards going field firing; distance seventy miles. On the 22nd we left for Bannu, a good journey, crossing several fords two feet deep; distance seventy-nine miles. On the 24th we left for Mirenshaw, over most awful roads; distance forty miles. One of the biggest frontier 'scraps' have occurred here. Quite a pleasant place to spend Bank Holiday in. On the 25th we left for Bannu, a distance of forty miles, tuned up machines, etc. On the 26th we went field firing, and afterwards had a lecture by General Fane. On the 27th we returned to Kohat, a good journey; distance seventy-nine miles. On the 29th we returned to Peshawar, the hardest climb in the whole journey. On May 1st we left Peshawar for Pindi, a distance of 117 miles, in the pouring rain, and so ended a month's hard travelling. "Being the sergeant-mechanic in charge, I had a fairly busy time of it."

We are told that some sixty members of the Cape Peninsula M.C.C. are now on active service.

Capt. Stenson Cooke, in civilian life secretary of the A.A. and M.U., has been promoted to major on the Headquarters Staff at the War Office.



SERGEANTS OF A M.M.G.S. BATTERY NOW IN INDIA. The names are, from left to right—Kellett, Fielder, Ward, Whitfield, and Barton. All are on Triumphs, which, Sgt. Fielder informs us, are giving every satisfaction.





## TIME TO LIGHT LAMPS

"SUMMER" TIME.

July 13th	...	...	9.41 p.m.
" 15th	...	...	9.40 "
" 17th	...	...	9.38 "
" 19th	...	...	9.36 "

### Ten Thousand Recruits.

The ten thousand mark was passed last week in our official work of recruiting for the M.M.C.S., Heavy Section, M.G.C., and R.E. Signal Service.

### Trading with Enemy Firms.

We congratulate the Daimler Co. on its ultimate victory in its recent case against the Continental Tyre Co. (a German concern). At last law and justice are in agreement.

### Small Demands Satisfied.

A discharged Army man, who last week returned from a motor cycle tour extending from the East Coast to Wales and then to London, reports that he had no difficulty in purchasing petrol at one and all his replenishing stations. Perhaps it was because a motor cycle requires but a gallon or so to "fill up."

### Petrol Imports.

No less than 19,820,337 gallons of motor spirit were imported during the last month and 69,478,569 gallons during the half-year. Duty was paid on upwards of nine millions and fifty-five millions respectively. Upwards of seven million gallons more petrol were imported during the past month than in June, 1915.

### Sidecar Runs for Wounded Soldiers.

A motor cyclist, Cpl. E. J. Langley, who is now convalescent at the Military Hospital, Lewisham, would be grateful to any sidecar driver who would take him for an occasional run. On Thursday, Friday, and Saturday he is free from 1 to 6.30 p.m. Langley has served at the Dardanelles, and was invalided home in the spring.

### Light Cars and Wounded Soldiers.

The many parts played by light cars in restoring to health wounded soldiers are brought out in a striking manner in the issue of *The Light Car*, published yesterday (Wednesday). It is a special Red Cross number, and there are many articles dealing with this subject, set forth in the attractive manner that has become such an appreciated feature of our contemporary. An article by B. Alan Hill, a well-known motor cyclist and light car owner, entitled "A Day in the Life of an Ambulance Driver," is sure to interest readers. Some months ago Mr. Hill was invalided out of the Red Cross service.

## SPECIAL FEATURES

SIDECAR BODY DESIGN.

THE SAILORS' SIDECAR OUTING.

ELECTRIC LIGHTING FOR LIGHTWEIGHTS.

### A Warning.

Motor cyclists are advised to exercise special caution in the neighbourhood of Magul (on the road from Liverpool to Southport), and to see that their brakes and lamps conform to the law.

### No Decline in Prices.

Second-hand machines still maintain their high values. Many a motor cyclist who bought a motor cycle, new or second-hand, during the "doubtful" autumn and winter seasons of 1914-15, can still get at least as much as he paid. And there is no sign of a decline yet.

### The Motor Cycle to the Rescue.

An exciting story was told at the Kingston Court last week, when a woman was charged with stealing clothing. The girl shop assistant, who took the goods on approval, started to chase the woman on foot, and finally enlisted the services of a motor cyclist, who took her on the carrier of his machine and then fetched a policeman.

### Petrol Estimates.

Estimates of petrol requirements having been on the high side, practically everybody, including business houses, so it is said, will have to be satisfied with a reduced allotment.

The R.A.C., a day or so before the cards were officially due, warned motorists against overstatements of their requirements.

### Boosting Sidecarriers.

We wish gratefully to acknowledge many letters of appreciation we have received as a result of our special Economy and Utility Number of *The Motor Cycle*, and at the same time to thank those readers who handed over their copies of the paper to tradesmen.

### Oldham Motor Club's Wounded Soldiers' Outing.

The third motor outing for wounded soldiers organised by the Oldham and District Motor Club was held on Sunday, the 2nd inst. Of the ninety motor vehicles used sixty were motor cycles and sidecars. After collecting the men they proceeded to Scammonden, where tea was taken, after which a concert was given. The return journey was commenced at about 7 p.m., and all voted the outing a great success.

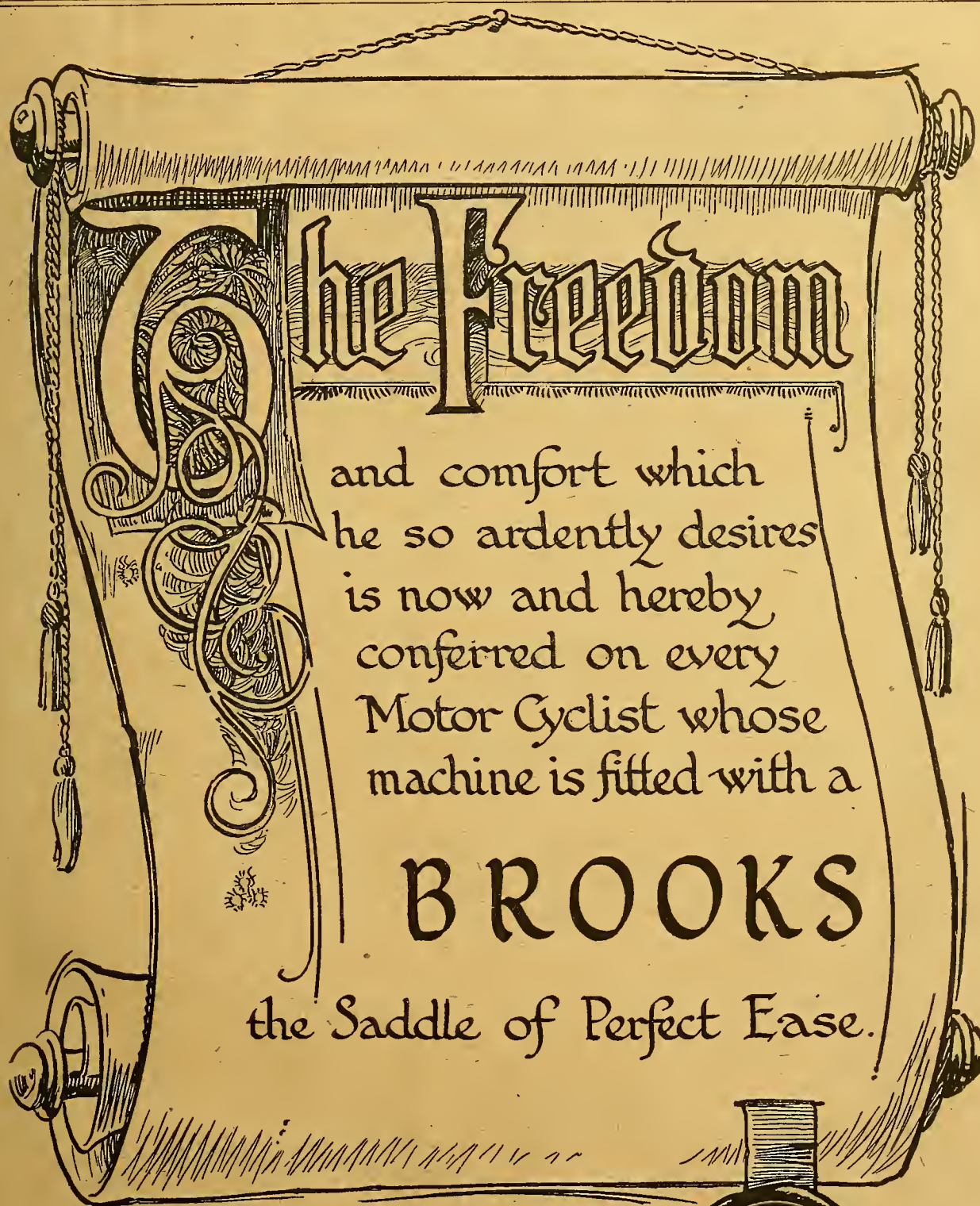
### The Petrol Census.

Up to the present particulars relating to at least 300,000 motor vehicles have been received by the Petrol Control Committee, and in a few days this body will be in possession of the complete statistics of the recent petrol census. There is little doubt but that considerable restrictions in the consumption of spirit will have to be enforced in the near future, as it is stated that the estimated scarcity is serious. No action is to take place till after the Finance Bill has passed through Parliament.

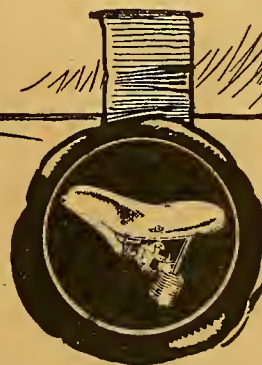


The start of the sailors' sidecar outing from the Palace Yard, Westminster Abbey, to which point the Jutland Battle heroes had been brought from Greenwich Hospital on motor 'buses.





BROOKS BOOK POST FREE  
From J. B. BROOKS & CO LTD  
49, Criterion Works, Birmingham.



*In answering this advertisement it is desirable to mention "The Motor Cycle."*



"The Choice of  
those who want The Best."

# NEW HUDSON

UTILITY — DEPENDABILITY — ECONOMY  
were never so perfectly welded as in the  
**BIG SIX COMBINATION.**

The luxury of a car with the economy of a Motor Cycle, affording the cheapest form of motoring.

The Big Six Motor gives a steady flow of power and speed, only limited by your desire; its flexibility is such that it is easily restrained to a walking pace, even on the top gear, picking up instantly.

Those who had the good fortune to secure a 1916 model, the delivery of which has been restricted by Government's requirements, are loud in praise of its impressive appearance, advanced design, workmanlike construction; its vigorous yet silky running, together with the serviceability of its fitments for all weathers.

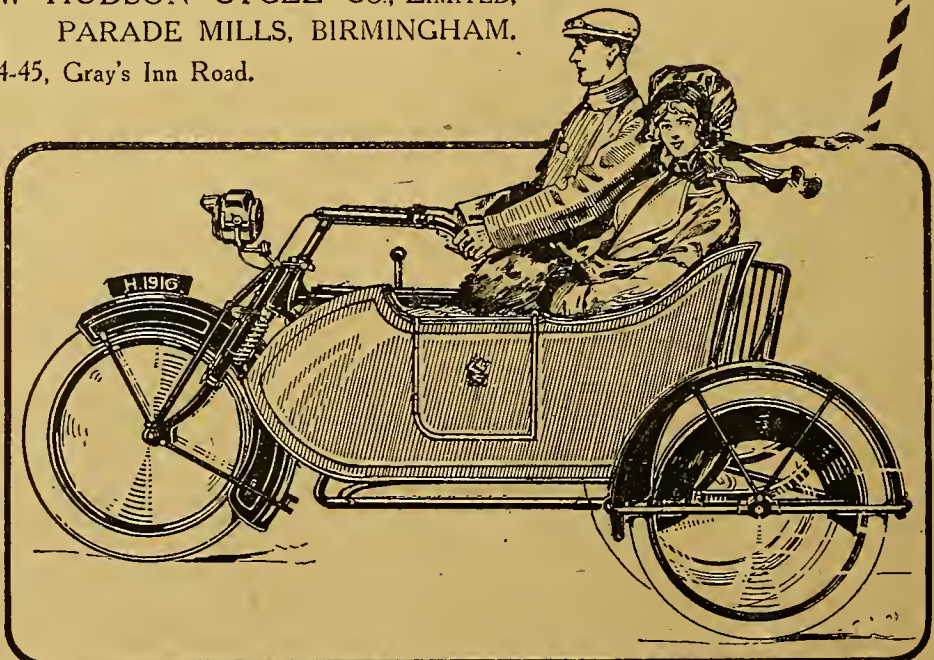
All these desirable features, however, are eclipsed in value by its dependable service and inbuilt endurance qualities; combined they have earned for this model the title of

*The Incomparable Twin.*

THE NEW HUDSON CYCLE Co., LIMITED,  
PARADE MILLS, BIRMINGHAM.

LONDON: 44-45, Gray's Inn Road.

WRITE  
FOR  
CATALOGUE.





### THE NEW PETROL DUTY.

We understand that the motor spirit licence duty will come into operation on August 1st.

### The National War Funds.

At the week-end the principal relief funds stood as follow:

The Prince of Wales's Fund ..	£5,918,210	0	0
Fund for the Sick and Wounded ..	4,044,450	0	0
Tobacco Fund ..	109,952	15	0
The Queen's Work for Women Fund ..	170,001	0	0

### Week-end Doings in "The Motor Cycle."

The wounded sailors' sidecar outing to Lord Northcliffe's estate, held on Saturday last, the 8th inst., is described in this issue. *The Motor Cycle* regularly includes all the week-end news in the succeeding issue.

### Estimated Petrol Requirements.

It would be interesting to know, now that the Petrol Committee of the Board of Trade have had an opportunity of investigating the demands as shown by the petrol forms supplied by motorists, whether they tally in any manner with the estimate of requirements announced in the House a fortnight ago. One wonders why the returns were not examined first, and the figures afterwards issued from concrete evidence.

### New Owners and Petrol.

Judging by letters received, an official pronouncement by the Petrol Committee would be welcomed on the position of purchasers of motor vehicles since the taking of the petrol census. Some readers who have acquired motor cycles during the past fortnight are anxious about obtaining petrol if and when any restrictions are in force. The only thing to do is to fill in a petrol census card without delay, and state clearly the reason for not having sent it in to the Control Committee by the date of the census.

### The Imports and Exports of Motor Cycles.

In view of the prohibition of imports, it is not surprising that the number of motor cycles which entered this country is far less for the past month than in June, 1915, the numbers being as follow:

1914. ...	1915. ...	1916.
400 ...	822 ...	57

and the value with parts—

1914. ...	1915. ...	1916.
£23,409 ...	£65,671 ...	£15,192

The exports may be considered very satisfactory, the number of motor cycles exported in June being practically the same as last year, and the total for the half-year considerably larger.

Number of motor cycles exported in June:

1914. ...	1915. ...	1916.
1,958 ...	1,020 ...	1,016

Number exported in the half-year:

1914. ...	1915. ...	1916.
10,818 ...	4,734 ...	5,599

The value of the exported motor cycles and parts is as follows:

June—1914. ...	1915. ...	1916.
£119,934 ...	£68,162 ...	£71,187

Half-year—

1914. ...	1915. ...	1916.
£648,206 ...	£343,649 ...	£435,611

### Reception to American Trade Visitors.

Yesterday (Wednesday) evening the London board of directors of the Harley-Davidson Motor Co., Ltd., gave a reception and dinner to the Milwaukee directors, Mr. Walter Davidson (president of the company) and his colleague, Mr. J. A. Stone, who are on a visit to this country. They attended the sailors' sidecar outing last Saturday.

### Goods of Enemy Origin.

The Management Committee of the A.C.U. considers that the Union should put on record its opinion that no motor cycle sold as of British manufacture should contain any part of enemy origin, and it invites the co-operation of the C. and M.C.M. and T.U. in achieving this result.

### Climbing Applecross on a Lightweight.

A Ross-shire doctor writes to the effect that he has climbed Applecross, from both sides, on the same afternoon, his machine being a 1915 model 2½ h.p. O.K. Junior. It is a standard machine, we are told, with standard gears, and no special tuning was made, the climbs being done during the course of professional visits in the district. The rider stopped once on each side to let his engine cool, and then climbed the remainder without trouble. It was a warm day, but, nevertheless, there was snow on the summit, which is 2,054ft above sea level.

### The R.F.C. Motor Cycle.

As is fairly generally known, the P. and M. is the standard motor cycle adopted by the R.F.C., but owing to the enormous and rapid growth of this corps colossal demands were made upon the P. and M. Co. some weeks ago for the supply of motor cycles and spare parts for the different depots. Temporarily, the company were unable fully to meet these demands, and consequently a small number of machines of other makes were borrowed from the C.I.M.T. for the use of squadrons in training in England. Latterly, however, Messrs. Phelon and Moore, Ltd., have been able to effect a greatly increased output, which will enable them to meet all demands of the R.F.C., so that very shortly the P. and M. will once more reign supreme, and gradually machines of other makes will be withdrawn.

### S.O.S.

Extract from a letter from a reader seeking advice on the running of his machine: "Should I ... fit a longer wire from the magneto to the plugs, so that the spark will occur later?"

### Unusual Speed Limit Orders

The Automobile Association has been unformed of Orders just issued by the Local Government Board, which should be carefully noted by motorists. From half an hour after sunset until half an hour before sunrise motor cars and motor cycles in the borough of Portsmouth must observe a speed limit of ten miles per hour. This Order will be operative for twelve months.

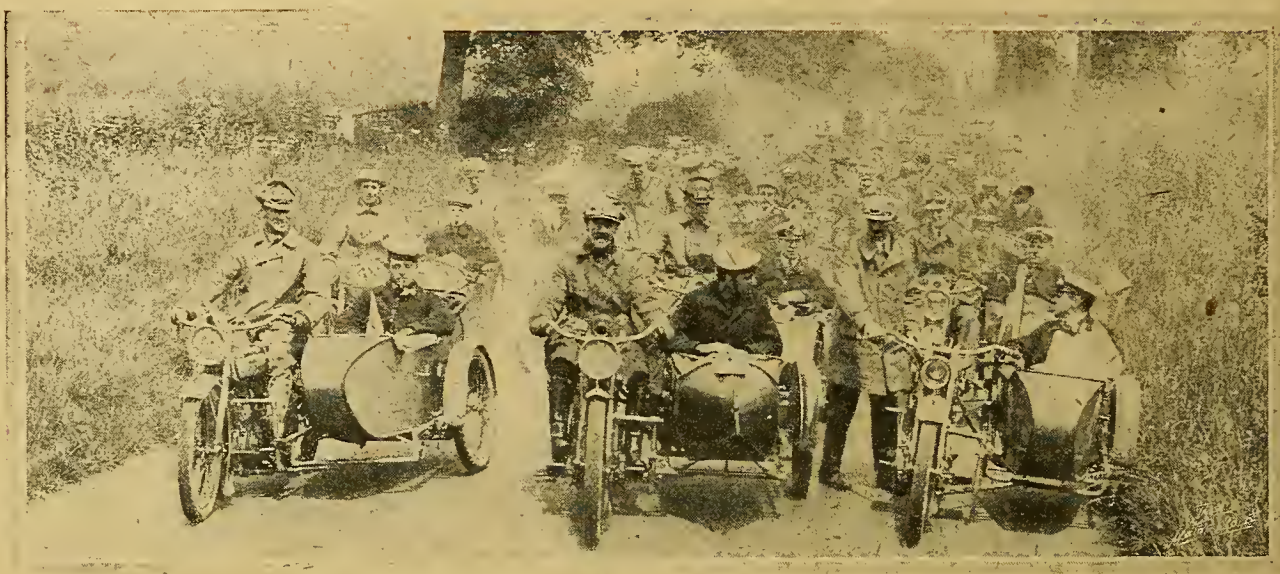
A ten-mile speed limit has also been imposed for a period of twelve months in respect of a portion of the Upper Shoreham Road (from Mill Lane to the Shoreham Golf Club House), which passes through the military camp.

## Average Prices or Second-hand Machines.

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average that appeared is given, if within four weeks.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable	
A.J.S. ....	1915	6	3-sp. sidecar ..	—	£92
" .....	1914	6	3-sp. sidecar ..	£58	—
" .....	1915	2½	3-speed .....	—	£47
Allon .....	1916	2½	2-sp. 2-stroke ..	£34	—
" .....	1915	2½	2-stroke .....	—	£29
Bradbury ..	1914	4	sidecar .....	—	£37
" .....	1913	4	2-sp. sidecar ..	—	£28
B.S.A. ....	1916	4½	3-speed .....	—	£61
" .....	1915	4½	3-sp. sidecar ..	£56	—
" .....	1915	4½	3-speed .....	£47	—
" .....	1914	4½	3-sp. sidecar ..	£50	—
Calthorpe ..	1915	2½	2-speed .....	£28	—
Chater-Lea ..	1915	2½	2-stroke .....	—	£29
Douglas ....	1915	2½	3-speed .....	—	£41
" .....	1915	2½	2-speed .....	—	£40
" .....	1915	2½	2-sp. T.T. ....	£44	—
" .....	1915	4	3-speed .....	—	£55
" .....	1914	2½	2-speed .....	—	£35
" .....	1914	2½	2-sp. T.T. ....	£39	—
" .....	1913	2½	2-speed .....	—	£32
Enfield .....	1916	6	2-sp. sidecar ..	—	£76
" .....	1915	6	2-sp. sidecar ..	£69	—
" .....	1914	6	2-sp. sidecar ..	£64	—
" .....	1913	6	2-sp. sidecar ..	£48	—
" .....	1915	3	2-speed .....	—	£40
" .....	1914	3	2-speed .....	—	£34
H.-Davidson ..	1915	7-9	3-sp. sidecar ..	—	£77
" .....	1915	7-9	3-speed .....	£68	—
Humber .....	1913	2½	2-sp. sidecar ..	—	£18
" .....	1912	3½	2-sp. sidecar ..	—	£28
" .....	1913	3½	2-sp. sidecar ..	£35	—
" .....	1915	3½	3-sp. sidecar ..	£48	—
Indian .....	1915	7	3-sp. sidecar ..	£69	—
" .....	1915	5	3-sp. sidecar ..	—	£62
" .....	1915	5	3-speed .....	—	£48
" .....	1916	Powerplus	sidecar .....	—	£96
" .....	1914	7	2-sp. sidecar ..	£51	—
" .....	1914	T.T. ....	—	—	£36
James .....	1915	4½	3-sp. sidecar ..	—	£62
" .....	1915	3½	3-speed .....	—	£46
Levis .....	1915	Popular	—	—	£23
" .....	1914	2-speed	—	—	£27
Matchless ..	1915	8	3-sp. sidecar ..	—	£72
" .....	1914	8	3-sp. sidecar ..	—	£65
" .....	1913	8	3-sp. sidecar ..	—	£50
New Hudson ..	1915	2½	2-speed .....	—	£30
" .....	1915	4	3-sp. sidecar ..	—	£59
" .....	1914	6	3-sp. sidecar ..	—	£48
New Imperial ..	1916	2½	2-speed .....	£33	—
" .....	1915	2½	2-speed .....	£26	—
New Ryder ..	1915	2-speed	—	—	£27
O.K. ....	1915	2-speed	—	—	£25
" .....	1914	2-speed	—	—	£19
P. & M. ....	1914	3½	2-sp. sidecar ..	£44	—
" .....	1913	3½	2-sp. sidecar ..	—	£31
Premier .....	1912	3½	3-speed .....	—	£23
Radco .....	1914	2-speed	2-stroke ..	£20	—
Rex .....	1914	6	2-sp. sidecar ..	—	£51
" .....	1913	6	2-sp. sidecar ..	—	£40
Rover .....	1915	3½	T.T. ....	—	£43
" .....	1914	3½	3-sp. sidecar ..	—	£43
" .....	1914	3½	3-speed .....	£38	—
" .....	1913	3½	3-speed .....	—	£31
Rudge .....	1914	5-6	multi sidecar ..	—	£40
" .....	1913	3½	multi .....	—	£28
" .....	1913	3½	multi sidecar ..	—	£35
" .....	1915	3½	multi .....	—	£46
" .....	1914	3½	multi sidecar ..	£39	—
Scott .....	1914	3½	2-speed .....	—	£38
" .....	1913	3½	2-sp. sidecar ..	—	£35
" .....	1914	3½	2-sp. sidecar ..	£50	—
Sunbeam .....	1914	6	3-sp. sidecar ..	—	£69
" .....	1914	2½	2-speed .....	£34	—
Triumph .....	1915	2½	2-sp. 2-stroke ..	£35	—
" .....	1914	4	3-speed .....	—	£38
" .....	1914	4	3-sp. sidecar ..	£49	—
" .....	1913	3½	3-speed .....	—	£33
" .....	1913	3½	3-sp. sidecar ..	£42	—
" .....	1913	3½	T.T. ....	—	£28
Williamsou ..	1914	8	2-sp. sidecar ..	—	£58
Zenith .....	1913	6	Gradua sidecar ..	—	£38
" .....	1913	6	Gradua .....	—	£33





THE WOUNDED SAILORS' SIDECAR OUTING. A halt near Guildford.

## THE ARBUTHNOT TROPHY.

### A.C.U. ADOPT "THE MOTOR CYCLE" SUGGESTION.

**A**T a meeting of the General Committee of the Auto Cycle Union, held on the 6th inst., the following resolutions were passed unanimously:

1. That in order to perpetuate the memory of the late Rear-Admiral Sir R. K. Arbuthnot, Bart., C.B., M.V.O., and his association with the motor cycle movement, a challenge trophy, to be known as "The Admiral Arbuthnot Trophy," shall be put up, to be run off annually under the competition rules of the Auto Cycle Union, and to be competed for by any gentleman holding a commission in H.M. Naval Forces.

2. That the first competition shall be organised as soon after the cessation of hostilities as possible, and that the Competitions Committee of the A.C.U. should be instructed to draw up the regulations.

3. That a fund be created for the purchase of a suitable trophy.

It was agreed that the trophy should take the form of a statuette of the late Admiral, and that the regulations should be drawn up as soon as possible, so that

no unnecessary time should be lost between the cessation of hostilities and the holding of the first competition. In the meantime, Mr. T. W. Loughborough, the A.C.U. secretary, will be very glad to receive donations to the fund for the purchase of the trophy, and begs to announce that the following donations have already been promised:

Royal Automobile Club	...	...	£5	5	0
Auto Cycle Union	...	...	5	5	0
Hendee Manufacturing Co.	...	...	5	5	0
Messrs. Iliffe and Sons Ltd. (proprietors of <i>The Motor Cycle</i> )	...	...	5	5	0
Temple Press	...	...	5	5	0
J. R. Nisbet, Esq.	...	...	2	2	0
Otto Thomas, Esq.	...	...	1	1	0
Rev. E. P. Greenhill	...	...	1	1	0
H. P. F. Harding, Esq.	...	...	1	1	0
A. W. Torrington, Esq.	...	...	1	1	0
W. H. Wells, Esq.	...	...	1	1	0
Julian W. Orde, Esq.	...	...	1	1	0



### R.E. DESPATCH RIDERS STATIONED NEAR THE SUEZ CANAL.

All the men shown saw service in Gallipoli. There are five Triumphs and one Colonial Douglas. Names from left to right: Cpls. Middleton (standing), Talbot, Rounds, Gibson, Wrightson (standing), 2nd Lt. W. Murdoch, Cpls. Riley (standing), Jarvie, Taylor, and Webster (standing). We have to thank Lt. Murdoch for the photograph, who, though in the picture, does not belong to the D.R.'s.



## THE SAILORS' SIDECAR OUTING.

Wounded Heroes of the Jutland Battle enjoy a Trip into Surrey.



Crossing Putney Heath.

**A** SULLEN sea and lowering sky. Far out on the horizon the smudges of smoke that betray the presence of the grey sentinels that guard these shores.

Aboard them there is a mighty silence broken only by the sharp ringing of the telephonic controls. The Fleet is going into action. Boom! boom!—long-drawn-out muttering of heavy guns. The enemy has opened the ball. It is at last *Der Tag*.

Around the Fleet fountains of foam spring up as if from a hundred whales that have suddenly spouted.

Men stripped to the waist, bootless, with their wide trousers rolled well up to their knees, handle their mighty weapons. Enclosed in their steel turrets they sail into the fight. Crash goes a 15in. Crash! crash! crash! follow its sisters. Crash, and yet again and again crash and bellow and crash—crescendoes of mighty sound, deafening, terrifying, stupendous spasms of noise, leaping up and up the scale of frightful discord, never-ending hideousness that swells and swells into one great devastating roar.

An appalling crash that leaps into the smoke and stuns even the smashing sound of our own great guns. A shell has burst in the aft barquette. There, there is death, death and hideous appalling wounds, a welter of blood and agony, of wire, steel and twisted framework.

That is one aspect. Now look on this. A quiet and gracious place it is, and lies in the pleasant pastures of wooded Surrey. An old, old place. A building of bygone days set upon fair lawns and

surrounded by stately trees. The voices of fair women and the laughter of little children, intermingled with the deep tones of those brave fellows who took part in the scene first described.

The first scene was in the battle off Jutland, the second in the outing given by the Harley-Davidson Motor Co. to wounded sailors. And now as to the outing itself.

### A Prompt Start.

Starting promptly from the Old Palace Yard at Westminster Abbey, a fleet of fifty Harley-Davidson sidecar combinations weigh anchor at 12.15 p.m. with its sailor passengers for Sutton Place, the residence of Lord Northcliffe, who kindly placed his grounds at the disposal of Messrs. Harley-Davidson for the *fête*.

A delightful run was anticipated, and those anticipations were fulfilled. Nothing could have been more delightful, and the weather was perfect. All too soon the long line of sidecars and their attendant cars passed through the pleasant villages of Esher, Cobham, and Ripley, the sailors receiving many a salute and heartening cheer from the passers-by and inhabitants.

The first stop was made just outside the entrance to Sutton Place, and here the whole *cortège* halted, and was photographed, to the huge delight of the sailor passengers.



Mr. Walter Davidson, one of the American directors of the Harley-Davidson Co. Mr. Davidson and his colleague, Mr. J. A. Stone, are on a special visit to this country.



### The Sailors' Sidecar Outing.—

An amusing incident occurred as the sidecars turned in at the park entrance. A large carthorse, evidently taking it into his head to join in the fun, accelerated down the drive on top speed. "Throw a hawser to him, Bill," shouted one of the sailors.

After lining up, both passengers and drivers adjourned to get rid of "the dust of battle," as one jolly Tar put it, and so on into lunch, which was served in a large marquee. One hundred and twelve people sat down to this, and an excellent lunch it was, and enjoyed to the full by the guests. Gusts of laughter, the popping of corks, and the clatter of knives showed what a trencherman Jack is.

Arbuthnot, who went down with his ship, the *Defence*, in particular. There was to be an Arbuthnot Trophy Cup, which was only to be competed for among the members of His Majesty's Senior Service—the Royal Navy.

He told an amusing incident he had heard coming down. The little son of Fleet-Surgeon Stewart, who was in one of the cars following the sidecars, pointed out to him the stream of sidecars, and said; "It must be very nice to be in one of those little boats, but I should much rather be in this big cruiser."

Sgt. Smethurst, of the Marines, in returning thanks, informed the company in general that the best way, to his thinking, was to give three cheers. When

we had taken our hands from our ears, Sgt. Smethurst had gracefully sat down—all good luck to him.

Fleet-Surgeon Stewart then spoke, and proposed the toast of "The H.D. Co.," who, he said, had spared no trouble in making that a memorable day for the sailors.

### A Medical Opinion.

He stated, with medical authority, that motor runs accelerated the convalescence of the wounded by 25%, and that when the men got back they ought to be ready to be discharged.

Mr. Walter Davidson said that he felt rather chary of taking a sidecar combination down, as the rules of the road were so different in America, but (said he) he had risked it, and had arrived safely and had not caused more wounds.

After lunch a musical entertainment was provided, to the great and unrestrained delight of the guests. This was over all too soon, as Mr. Masters, the organising secretary, informed us that the hospital authorities insisted upon the return of the sailors by 6.15. At 4.15 the order was passed round, "All aboard." "Where's my chauffeur?" was the call, and so, to the music of many bubbling exhausts, the fleet got under way again for home, which was reached safely at 5.30, both sailors and guests cheering to the echo. The last call from those brave boys as they disappeared from our view was, "Are we downhearted?" and our answer was "No!" Well, are we?



Wounded heroes of the Jutland naval battle were entertained on Saturday last to a sidecar outing to Lord Northcliffe's estate. The top view shows the procession passing the Hut Hotel at Wisley.



Centre:  
The cross roads at  
Thames Ditton



- Bottom:  
Passing through  
Esher.

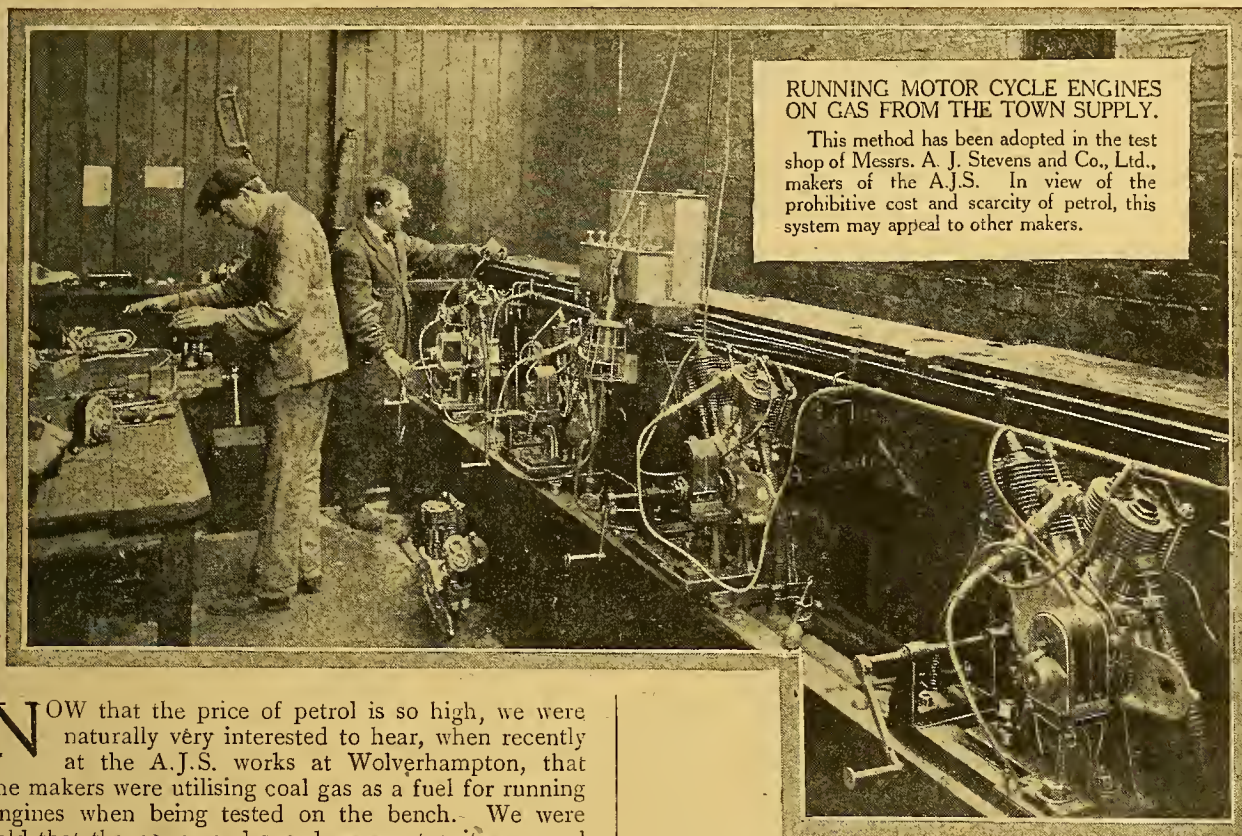
At the lunch were present Mr. Walter Davidson, president of the Harley-Davidson Co., and his colleague, Mr. J. A. Stone; Mr. Duncan Watson, director of the London Board of the Harley-Davidson Co.; Fleet-Surgeon Stewart, R.N., the Admiralty representative; and Mr. Otto Thomas (*The Motor Cycle*), chairman of the A.C.U.

### The Toasts.

The first toast, that of "The King," was proposed by Mr. Duncan Watson, and was drunk after the whole of the guests had sung the National Anthem. Mr. Duncan Watson, in his speech that followed, pointed out that motor cycling had always been associated with the Navy, and with Rear Admiral Sir Robert



## PETROL ECONOMY.



## RUNNING MOTOR CYCLE ENGINES ON GAS FROM THE TOWN SUPPLY.

This method has been adopted in the test shop of Messrs. A. J. Stevens and Co., Ltd., makers of the A.J.S. In view of the prohibitive cost and scarcity of petrol, this system may appeal to other makers.

**N**OW that the price of petrol is so high, we were naturally very interested to hear, when recently at the A.J.S. works at Wolverhampton, that the makers were utilising coal gas as a fuel for running engines when being tested on the bench. We were told that the power and speed were not quite so good as when petrol was used, but the results obtained were quite satisfactory, as the comparative results were much the same, while the saving of trouble and mess was quite considerable.

The method of supplying the gas is simple in the extreme. A large main gas supply pipe runs along the back of the test bench, and small branch pipes are taken off and lead direct to the engines. At the induction pipe entrance a bunsen burner attachment is fitted up, so that the quality of the mixture can be

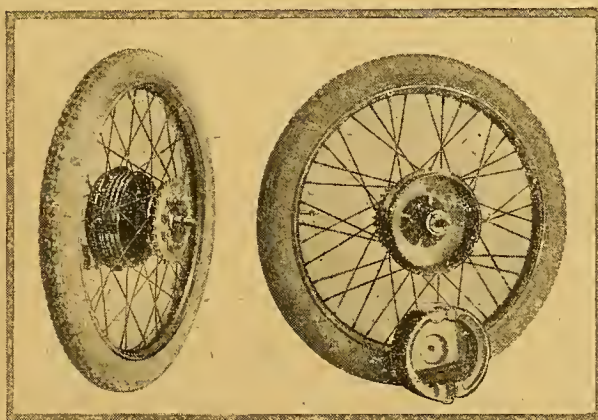
adjusted when necessary, while the speed may be varied by turning on or off the gas supply.

At first the gas was introduced directly into the ordinary carburetter. This worked quite satisfactorily but was not quite so convenient as the present arrangement. The engines show no signs of overheating, and start quite satisfactorily on the gas. We saw two engines running in this manner, one a  $2\frac{3}{4}$  h.p. single, the other a 4 h.p. twin, and both appeared to run with perfect regularity.

## AN A.B.C. IMPROVEMENT.

**F**EW firms are more up-to-date or progressive than A.B.C. Motors, Ltd. They have succeeded in producing one of the most ingenious and original, and at the same time practical, machines at present on the market, and only an excess of Government work prevents their supplying these to the public.

The latest development is the introduction of a new type of hub which contains two internal expanding brakes working independently, one of which is actuated from the handle-bar and the other by the pedal. The brake drum forms part of the hub, and thus the tendency to unscrew that arises with screwed-in brake drums is avoided. The brakes are made of a cast aluminium alloy, lined with Raybestos and provided with hardened steel plates where the cams make contact. It will be noticed that the brake drum is ribbed so as to assist cooling. Another point of interest in connection with this hub is that two separate and distinct transmission shock absorbers are fitted.



A.B.C. brake drum. The left view shows drum and sprocket in position, while that on the right shows the drums detached and the manner of their working side by side.



# THE AUTO CYCLE UNION REPORT.

Useful Work in Connection with Recruiting and Taxes.

**B**ELOW we give extracts from the report of the Management Committee of the Auto Cycle Union, dealing with the work accomplished during the first half of 1916.

## Membership.

Having regard to the unprecedented conditions, the membership, with the exception of that of the Affiliated Clubs, may be considered satisfactory.

## Finance.

As will be gathered from the report on membership the receipts from subscriptions are satisfactory, amounting to over 75% of the estimated income from this source for the year. Receipts from other sources are also up to expectations. On the expenditure side further reductions under every heading, as compared with last year, were made when preparing the 1916 Budget, and it has been found possible to work to these figures. The Insurance Department has also succeeded in paying its way.

## Recruiting.

Up to within the last few weeks the staff has been busily engaged in recruiting for the Motor Cyclist Section, R.E. Mr. Loughborough's scheme of a Central Office to co-ordinate the work of the various local "Reserve Committees" proved invaluable, and gradually became so automatic in working that it was taken over by the military authorities, whilst at the same time the introduction of universal military service eliminated the majority of the difficulties that had faced those who have endeavoured so successfully to find the right men for this special branch of the Army. Since the Central Office was established in January 804 recruits were "finally approved," whilst during this period 1,779 applicants were interviewed, and some 3,400 applications by letter were dealt with. In connection with this matter letters of appreciation and thanks were received from the War Office, and from the Signal Service, R.E.

## Legislation.

The recent proposals, now happily withdrawn, for increased taxation of motor cycles called for energetic action on the part of the Union. Within a few hours of the Chancellor's announcement on April 4th, the Secretary was in consultation with Treasury officials, and for some considerable time thereafter, both independently and in collaboration with the Royal Automobile Club, every effort was made to convince the Government that, particularly as regards motor cycles, the proposed taxes were most unfair. A complete statement of the arguments for and against taxation was submitted to the Government before the end of April, from which the following paragraph is extracted: "The above two methods of gradation are suggested in place of the proposed Treasury Rating Rule, and as more likely to be accepted at the present time than would any scheme of taxation involving a revision of the whole of the 'carriage duties.' The Auto Cycle Union would, however, take this oppor-

tunity of urging the early reconsideration of all such taxes, and would strongly recommend a merely nominal tax—for statistical purposes—on all horse-drawn or mechanically-propelled vehicles without exception, coupled with a tax—for revenue purposes—based on ton-mileage, e.g., a petrol tax or a tyre tax."

This statement was reviewed in the *Westminster Gazette* of May 9th as follows: "The Auto Cycle Union is the only organisation which has had the courage to tell Mr. McKenna the truth about it. In his statement the secretary (Mr. T. W. Loughborough) makes it clear that the formula is not a true measure of horse-power; that it has no relation to the purchase price of either new or second-hand machines; that it is inapplicable for technical reasons, and gives a very unfair comparison of horse-power between cars and motor bicycles; and, further, that it forces manufacturers to adopt one type of engine to the exclusion of other equally meritorious designs."

Furthermore, the services of an M.P. were secured to represent, if necessary, the views of the Union in debate. The following is taken from the Secretary's letter to this gentleman, dated May 25th: "I have been carefully considering the amendment to the Finance Bill which you suggested I should frame, and I have no doubt whatever in my own mind that the proper course the Government should pursue would be to delete Clause 11 in its entirety and to substitute therefor an increased tax on petrol."

It is probable that the action taken by the Auto Cycle Union in this matter directly influenced the Government to abandon the increased licence duties.

## Petrol.

Close touch is being kept with developments of this important question, and the interests of the private motor cyclist are being safeguarded as far as possible.

## Insurance Department.

The business done by this department has naturally been affected by the war, but in spite of the unfavourable conditions a considerable percentage of members continue to take advantage of the recommended policy, whilst over three hundred new members have this year availed themselves of the concession granted to full policy holders.

The particularly valuable arbitration clause in the policy has resulted in three disputes being submitted to the Union for settlement.

## Annual Handbook.

A supplement to the 1915-16 Touring Guide has recently been issued to all members. It was found impracticable to produce a 1916-17 edition of the Handbook on the former comprehensive lines, but the supplement will be

found to contain all essential information not comprised in the 1915-16 volume.

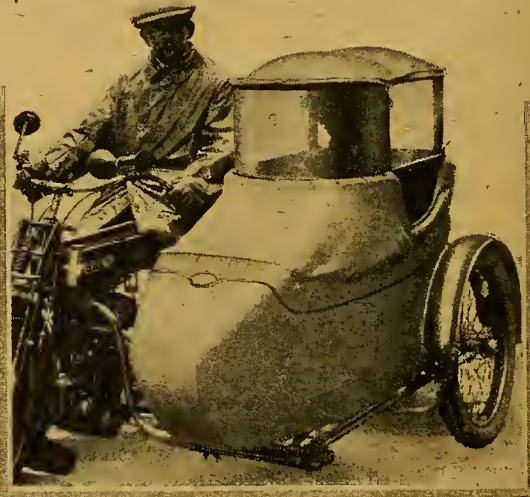
## Touring and Legal Departments.

The work of these departments, conducted for the Union by the Royal Automobile Club, has considerably lessened, particularly that in connection with touring. Approximately three hundred applications for advice as to routes, Customs duties, shipping, etc. (and these largely from members connected with the Services), have been dealt with, whilst there have been handed to the Legal Department about one hundred applications for free legal defence or advice.

## THE EASTING SIDECAR HOOD AND SCREEN.

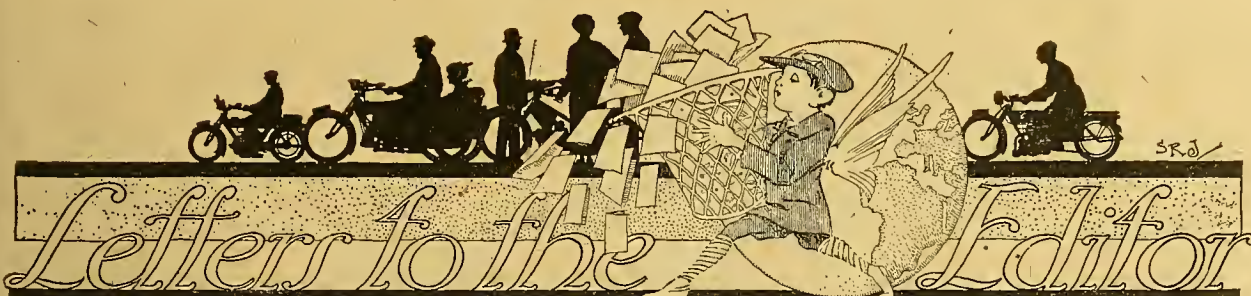
**W**E have now had an opportunity of seeing and trying the Easting sidecar screen and hood in its finished state. A photograph of the screen alone and a sketch of the complete article were reproduced on page 14 of our last issue, but it was not till the middle of last week that Mr. Easting had the complete scheme in being. The front screen is formed slightly concave, and is supported on brackets in such a manner that it may be swung to one side to allow of easy entrance to the sidecar. The screen alone affords excellent protection from the wind, and during our run no difficulty was experienced in lighting a cigarette while travelling at 20 m.p.h.

With the celluloid side panels and waterproof top an absolutely stormproof sidecar is obtained. We found that when entirely closed the body was quite comfortable, though communication with the driver was by no means easy. A good feature is that, if the weather is, not sufficiently bad to warrant the whole cover being fitted, one side panel only can be fitted, so giving protection on whichever side the wind is blowing.



Easting screen and hood for sidecars, which results in a completely enclosed seat for the passenger. The component parts are light and quickly put together.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Steam Motor Cycles.

Sir,—I am at present engaged in designing a steam motor cycle, and, having a large workshop in which I can work, would be glad to hear of anyone interested and willing to experiment with me.

F. BARTHORP.

[Letters addressed to Mr. Barthorp, c/o The Editor, will be forwarded.—Ed.]

#### The Consumption of Automatic Carburettors.

Sir,—I am glad that "Ixion" excepts the Binks three-jet from his remarks about being extravagant, as I use this carburettor on a 1913 Morgan (8 h.p. J.A.P.), and find it very economical.

After careful tuning I can obtain fifty-five miles per gallon, London riding, and can go dead slow on top gear, and also get a violent acceleration.

The jets used are 00, 3, and 6, which might be of some use to the readers of your excellent journal.

B. J. BESWICK.

#### The Cost of Running a Motor Cycle.

Sir,—I beg to submit a statement showing the total cost (running and otherwise) of a 1909  $3\frac{1}{2}$  h.p. motor cycle, which I bought in January, 1914, and sold again in January, 1916.

		Rs.	a.	p.	Cost per Mile in pence.	Mileage 10,000
Cost Price of machine		300	0	0		
Repairs	Bought at date	25	0	0		
New Inner Tube	of purchase of	10	0	0		
New Tyre	machine.	30	0	0		
Spare Parts, Tools, etc.		10	0	0		
Sidecar (for the last nine months only)		50	0	0		
		425	0	0		
Deduct Selling Price		410	0	0		
		15	0	0	0.0240	
Depreciation		87	11	0	0.1403	
Running Repairs (includes reboring cylinder, fitting new piston, bushes, etc.)		26	8	0	0.0424	
One New Tyre		18	0	0	0.0288	
One New Belt		133	6	0	0.2134	
Petrol (118½ gallons), Oil, etc.		34	0	0	0.0544	
Interest on Rs. 425 at 4% per annum		314	5	0	0.5033	
Total Cost						

The actual mileage was 9,957, but as this figure alters the total cost per mile by 0.0022 of a penny only, the mileage of 10,000 was taken for the sake of convenience.

I have included every item I can think of in order to increase the cost per mile to a figure nearer the average (say 3d.), but even then it is only just over a halfpenny. If the depreciation had been nearer the theoretical figure of Rs. 100, the cost would have been increased to 0.6633 pence per mile only.

PHUT-PHUT.

BOMBAY.

#### Prompt Satisfaction.

Sir,—Very often when reading your valued paper, which, by the way, took a great part in making me a motor cyclist, I have been struck by the complaints made in the correspondence columns regarding the treatment of customers by certain motor cycle firms. Can you find room for an appreciation of at least one?

I am a thoroughly satisfied rider of a Premier 1914  $3\frac{1}{2}$  h.p. machine, which I run regularly with a Swan sidecar, not a lightweight either. Some time since I sent the machine

down for an overhaul, and in assembling the back wheel a ball got in between the axle and hub, scoring them both badly, and the pieces of steel it scored off wore the cones and balls. I wrote the Coventry Premier Cycle Co., and they sent me by return a new axle, cones, and balls complete, apologising for such a thing occurring, but explaining how difficult things were in the labour way just at present. When I came to reassemble the hub I found the cups were also badly worn. Again I wrote the company, and then they asked me to send them the wheel and they would replace them and do all that wanted doing, and as the fault was theirs they would pay carriage both ways (which goes beyond their guarantee), and get the work done at once. I sent the wheel off on Monday morning, June 19th, and received it back on Thursday morning, June 22nd, put in proper order, even a broken spoke being replaced, and securely packed in a crate. In these days of grumbles and complaints and difficulties with labour, it is refreshing to meet a firm which carries out its obligations in so prompt a manner without any quibbling or bother, and I think some of the others would do well to take a leaf from its book. I may say that whenever I have written the Premier Co. for information they have always replied promptly, although I bought my machine second-hand. The usual disclaimer.

J. H. ABELL.

#### A Ha'p'orth of Tar.

Sir,—Just lately I had the misfortune to witness one, and take part in another, breakdown, which, with a little care and forethought in the construction of the respective motor cycles, should not have occurred. In both cases the frame had snapped near the junction of the tubing in front of, and of that immediately above, the engine. This tubing, which takes all the strain, had snapped like a carrot an inch below the joint.

I am assured by a practical motor engineer that for the cost of sixpence or a shilling the tubing concerned could be made sufficiently stout to withstand the road strain necessarily imposed upon it.

I do not think it would be fair to name the two makes concerned, as there are probably others equally as bad, but as a keen motor cyclist I regret that for the sake of a shilling or so a motor cycle should be made a danger trap on a rough road.

LUPUM HABEO.

#### Average Speed.

Sir,—I am amazed at the letter signed A. Collings in last week's issue of *The Motor Cycle*. Mr. Collings says that he rode from London to Pontypridd, 176 miles, in 6h. 10m.; that is to say, at 29 m.p.h. on the average, and, of course, a good deal faster than that in parts of the journey. It is plain, even to one who knows but little about motor cycling, that the danger of accidents, resulting sometimes in injury to limbs, sometimes in death, varies directly with the speed at which motor cycles are ridden. It is also plain that in order to make it certain that motor cycle riding should cause no bad accidents the riding of motor cycles would have to be stopped altogether. If the speed limit were 8 m.p.h. it is as certain as a thing of the sort can be that during the year at least one child would be run over.

The makers of our laws in their wisdom, or folly, have said, "We will do away with the old law which forbade the riding or driving of machines impelled by any power excepting human muscles on the high roads, but, as the introduc-



tion of mechanically driven machines brings in a new element of danger, and as the danger is greater the more quickly these machines go, we do it on condition that they shall never go more quickly than 'n' m.p.h." At present the law has fixed "n" at 20. If a man rides at more than 20 m.p.h. he is breaking the law, and he is making it a little bit more likely that he will kill or injure some child or someone who suddenly comes into the road from an unsuspected cross-road, or some man on a walking tour who has lain down by the roadside to rest during the heat of the afternoon, and jumps up awakened by the noise of the car, and is maimed for life before either he or the man with the car can say "Jack Robinson."

Of course, none of these sad things do happen to the great majority of those who habitually break the speed limit, but they *do* happen now and then. And what I want to ask Mr. A. Collings and a host of other motor cycle riders is, "Is it quite *honourable* to break the law when it does not please you to observe it, when all the time you are taking advantage of the fact that the law has been altered so as to allow you to ride a motor cycle on the highway at all?"

WILLIAM THOMPSON.

Sir,—I have just been reading a letter by Mr. Osborne Blythe in your issue of April 13th.

I see he is most emphatic in his disbelief that an average of 45 m.p.h. is possible in England. He is, I imagine, the owner of an excellent touring machine with touring bars. Personally, I wouldn't risk my neck riding any machine without semi-T.T. bars at anything like speed.

I would like to mention a few averages I have done. I don't expect Mr. Blythe to believe them, or anyone else for that matter.

I remember when I was a cadet at Sandhurst in pre-war days doing the fifteen miles from Brooklands to Sandhurst, most of which is along a winding lane bordered by high hedges, in alarming time. I had half an hour to get back and parade for a French examination. I was in my seat in the hall on time, but my hands trembled so that my writing was not good. The machine was a racing Rudge—a beauty.

Another time I rode from Sandhurst to Lichfield with a passenger on the carrier in six hours. We stopped for lunch, after which we had a stroll at Henley, and at Coventry I went to look up my brother who was in the Daimler works, and had tea with him. With the same passenger I rode from Lichfield to Holyhead, non-stop, in under the four hours. The machine was a T.T. Rudge Multi, 500 c.c.

I have a road racing 7-9 h.p. Indian now which I have tuned up. I lightened the pistons in the usual way, and also removed the baffle plate of the front cylinder. The other night, bright moonlight, I rode 90½ miles over the road in 1h. 34m.

I might point out that here (India) the roads are practically dead straight and quite open; in short, when they are clear, as they are at night, it is track riding, and one can go all out.

I did this time for a bet, and was timed by two friends, over the Sialkit-Lahore road.

I wonder will one of your readers credit this?

SIALKIT, PUNJAB.

J. TIDMARSH, Lt.

#### Fast Stretches.

Sir,—*Re* fast stretches, I notice that "B.A.T." says there are only two corners on the Cambridge and Newmarket road that a car cannot take at 60 m.p.h. Has "B.A.T." any idea what 60 m.p.h. is really like round even the slightest corner in a car?

If "B.A.T." were to think a little more, he would find that there are at least *six* corners or bends in the said road that a car could not possibly take at 60 m.p.h.

RUDGE.

#### Piston Tap or What?

Sir,—I have had the same trouble with my 1912 Triumph. When going over 35 m.p.h. it started tapping, as though it had a loose gudgeon pin, and then slowed down to ten miles an hour, and would not climb a small bridge.

After examining the engine, and finding nothing loose or broken, I fitted a new plug, which stopped all the tapping, and the machine will now go any speed and up any hill without trouble.

A. GOMERSALL.

#### Petrol Waste.

Sir,—Having seen several letters in your excellent paper on petrol wastage, I am writing to point out what seems to me to be a very unnecessary use of the precious spirit.

I refer to the number of motor omnibuses which one sees standing in the approaches to London railway termini with their engines running, in some cases at quite a high speed.

Two examples I have in mind are those of Victoria and London Bridge stations, where there are seldom fewer than eight 'buses standing, and frequently many more.

Surely it would not be a great hardship for the drivers to switch off when arriving and start up again when ready to go, and so save a very considerable amount of petrol.

ERIC E. HART.

#### A Silly Act.

Sir,—On the Chester Road near Stonebridge I was resting by the roadside when three testers came along on two-stroke machines. The leader looked curious in the distance, and seemed as if his hat were over his face. To my surprise, he was riding backwards, his handle-bars behind him. He nodded to me as he passed at 20 m.p.h., and that threw him out and upset his balance. His bicycle ran up the bank, down again, and wobbled across the road, and the rider, evidently forgetting his position, tried to steer his back wheel, and ran up the opposite bank. No damage was done, although he narrowly escaped being run over by his two companions. He then rode to the top of the hill, turned his machine, got on again backwards, and came blinding along at, I should think, 25 m.p.h.

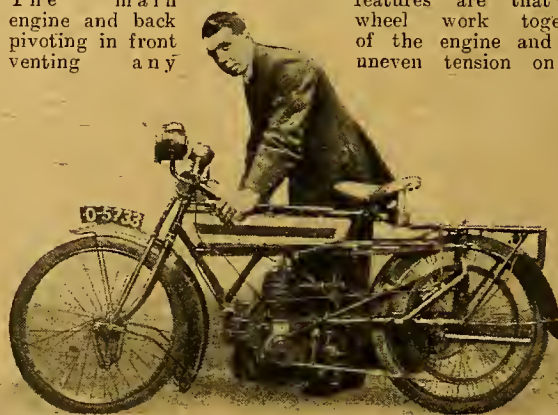
O 5036.

[We publish the above letter, not because we share our correspondent's admiration for the rider referred to, but because we hope it may be a warning to others to avoid such pernicious practices. The rider endangered not only his own neck, which may be of small consequence, but also the life and limbs of anyone who might have been using the road in a proper manner. We trust that the police will rigorously put down dangerous driving of this kind.—Ed.]

#### Spring-Frame Design.

Sir,—Being a motor cyclist and reader of your valuable paper for over eight years, I thought the following particulars of my spring frame would be of some interest to you.

Having an old Minerva 2½ h.p. machine at my disposal, I decided to try an idea, which I have since protected. The main engine and back wheel work together, pivoting in front of the engine and preventing any uneven tension on the



An old machine that has been fitted with a spring frame. See letter from Mr. Herbert O. Troman

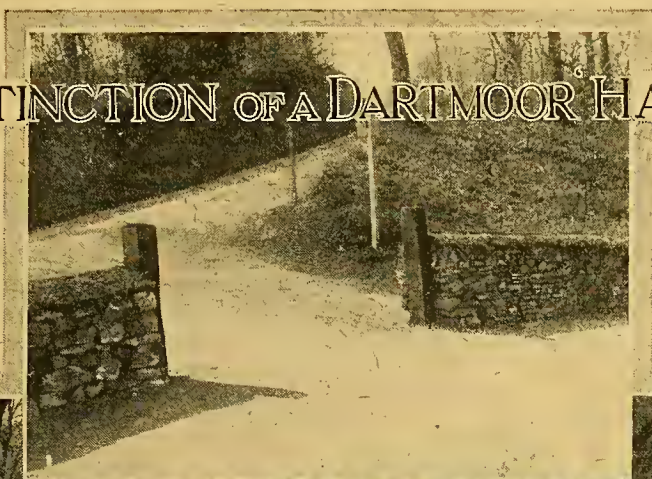
belt. There is no knee movement, body and limbs moving together. Flexible petrol and oil pipes are fitted, and when only three bolts are removed the working parts are free from the rest of the frame for grinding valves or any other repair. I have ridden the machine for the past four months, very often with my brother on the carrier. It has proved very satisfactory.

HERBERT O. TROMAN.



## EXTINCTION OF A DARTMOOR HAIRPIN.

The New Road at  
Holne Chase,  
near Ashburton.



(1) The hairpin corner which  
has been done away with.

(2) The newly cut road on  
the right of the bridge.

(3) The old road, now blocked,  
and the new road on the left.



The numbers on the illustrations correspond to the numbers on the map reproduced below.

**T**O motor cyclists Ashburton is perhaps the best known of the principal "gates" to Dartmoor.

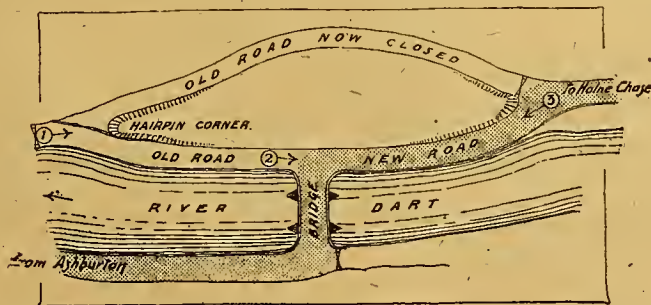
It is on the main road from Exeter to Plymouth, and has figured in many of the long-distance reliability trials. The town has a long and interesting history, and in 1285 was made a Stannary Town in connection with the Dartmoor tin industry—that is, a town where the miners had their tin weighed and a sort of hall-mark affixed. The other Stannary towns were Chagford, Plympton, and Tavistock. The brothers Lysons, who wrote their *Magna Britannia* in 1822, state "that there had been nothing peculiar in the government of Devonshire as a district from that of the rest of the kingdom, except that of the Stannary Laws, which have been in force from an early period in the mining district in the south-west part of the county." The Stannary parliaments were at first held in the open air upon an elevated spot, about six miles from Ashburton, known as Crockern Tor. "Till within the memory of man the commission was opened and the jurors sworn upon this spot, after which the court was adjourned to one of the Stannary towns." In later centuries Ashburton was an important wool centre.

The town contains an ancient grammar school and a church, said to have been founded in

1137. The present building, which includes a fine tower 90ft. in height, dates from the fifteenth century, with some remains of earlier work.

These objects are easily missed by riders of the present day who just "pass through," and to a casual observer there does not appear to be much of interest in the town. The most noticeable object is a large golden lion above the portico of the principal hotel, which catches the eye on the near side as soon as the main street is entered. Another sign, not nearly so obvious, is a small equestrian figure on the ridge of an old house on the opposite side. This was the sign which interested travellers in the seventeenth century. During the Civil War it indicated a safe refuge for the Cavaliers of the army of Charles I. Whether or not these curious little signs were ever numerous does not appear to be known. Another remains at Totnes, eight miles further along the main road, and one still exists on a fine Elizabethan house at the top of Exeter's steep Fore Street.

But it is doubtful if the competitors in the Jarrott Cup and similar events gave much thought to antiquities as they passed through Ashburton; what most probably occupied their minds was the knowledge that about two miles distant lay the local terror known as Holne Chase. In the



Sketch map showing new and old roads at Holne Bridge. Positions from which the three photographs reproduced above were taken are shown by the numbers.



**Extinction of a Dartmoor "Hairpin."**

days of fixed gears and less tractable engines than we now ride this was certainly a name with which to conjure. First a sharp left-hand turn over a narrow and concealed bridge, which spans the gurgling Dart, gave warning that something was doing, and before one had time to recover from one's surprise another left-hander swung one clear of the bridge and opened up a vista of about one hundred yards, apparently quite choked by a collection of all the motor cycle enthusiasts of the neighbourhood, to say nothing of their "crops" and female impedimenta lined along the hedges. A shout or a rattle above, caused by the failure of another competitor, gave warning that Devon's most notable "hairpin" was at hand, and almost before you realised it you were foot slogging around its 1 in 3 gradient; with a bit of luck you struggle round and up, up, you go only to come to grief a few hundred yards further on, when your hot engine positively jibs at a still steeper specimen of a typical Devon main road.

Those competitors who were compelled to make several attempts at this bit of the course probably carried away some recollections of the beauties of this delightful spot, and will perhaps recognise it from the accompanying photographs. They may also experience a difficulty in finding their bearings. The fact is the erstwhile terror has been superseded by a broad, almost flat road of no "negotiable" interest, which bears to the right after crossing the bridge.

**The New Road.**

Since those days of real excitement, when machines called for actual skill in driving, the mechanical engineer has provided gears, clutches, and engines capable of making fun of the gradients and twists which at one time inspired us with real terror. Consequently Holne Chase has been deprived of much of its interest. Nevertheless, many will regret that the hand of the improver has been let loose on such an old friend. True, the hairpin still exists, but its terrors are "preserved"—like the best fishing. As will be seen from illustration No. 1 a gateway is in course of erection across its mouth. No. 2 shows the alternative road which has been cut on the right-hand side of the bridge, and No. 3 shows where this new road debouches on to the old. This also is blocked by a gate bearing the legend "Private road"—second only in its aggressiveness to the sign "Trespassers will be prosecuted." The corners of the bridge have also been eased: improvements which will undoubtedly appeal to the "scorcher" and the drivers of "peregrinating drawing rooms" with 15ft. wheelbases, but the alterations will be regretted by lovers of the picturesque and by many an old competitor. Some compensation is, however, gained in the fact that the new road, which has been well carried out, promises to be very pretty, and it certainly opens up a charming view of the River Dart as it tumbles and foams along over the granite boulders which in vain attempt to obstruct it in its scamper to the sea.

H. TAPLEY SOPER.

**FIRST TRIAL OF THE YEAR IN  
THE CAPE PROVINCE.**

SCENES IN THE SEVENTY MILES  
RELIABILITY TRIAL HELD BY  
THE CAPE PENINSULA M.C.C. ON  
ASCENSION DAY.



(Top) J. F. Smuts (3½ h.p. P. and M. sidecar) leaving the lunchcon control. (Left) Different ways of tackling a drift. (Right) The winner, J. Roylowski (6 h.p. Enfield sidecar), passing the timekeeper at the summit of test hill. Second and third places were secured by W. McFarlane (6 h.p. A.J.S. sidecar) and G. W. Prillewitz (6 h.p. Enfield sidecar) respectively. McFarlane is shown pushing his machine through the water on the left.



## QUESTIONS



## REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Registration Fee.

**?** I have been charged £1 for the registration of a motor cycle and sidecar. Would you please inform me if this is the proper charge, as I was under the impression the registration of a combination was the same as for a motor cycle, i.e., 5s.?—G.E.B.

The proper charge for the registration of a motor cycle is 5s. The sidecar is not to be counted; you cannot register a sidecar.

## Licence for Motor Cycle used for Business.

**?** My wife has an Auto-wheel. Is it necessary for her to pay a licence if she has her name, business, and address on the machine? She is an enquiry agent for a firm of furniture dealers, and uses the motor entirely for business.—E.L.

There is no exemption for a machine of this kind. Exemption from the local taxation licence can only be obtained if a machine is used solely and entirely for the transport of goods and merchandise, and is fitted with a box for this purpose, on which the owner's name and address are painted in letters not less than one inch in height.

## Driving Hints.

**?** I should be grateful if you would reply to the two following questions, since as a novice they have puzzled me considerably.

My machine is a 1916 model 5-6 h.p. twin combination with three-speed gear box. (1.) Running down hill with the throttle closed and the engine in top gear, using the compression of the engine as a brake, when the machine slows down at the bottom can I open the throttle on the top gear, or must I change to a lower gear? (2.) When in traffic, will it hurt the machine to use the foot brake to slow up, or must the brake be used only when the clutch is out?—E.W.V.

1.) It all depends upon the speed at which you are travelling. If you have slowed down to the speed at which the second gear should be engaged, then you should drop into second. If, however, you have not slowed down too much, merely open the throttle, perhaps ease the clutch as you do so to take some

of the strain off when picking up speed. (2.) It is better to shut off the engine and apply the foot brake or ease the clutch. You might close the throttle and then apply the brake without taking out the clutch until the engine has been brought to that pace at which it would be naturally running according to the degree of throttle opening. What we mean is that if you shut off the throttle suddenly the machine will continue to run for some distance before settling down to the speed obtainable from that particular degree of throttle opening; therefore you may use your brake so as to decelerate the machine more rapidly.

## IMPORTANT NOTICE.

## GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILLIFFE & SONS LTD.

## Long Induction Pipe.

**?** The carburetter on my 1913 twin being worn out, I have had fitted a new 1916 model of the same make. This being bigger and of different design it could not be fitted close up to the induction pipe, which had to be provided with an extension, with the result that the jet is now about 7in. from the junction of the induction pipes. Using a No. 29 jet as before, I find that now (1) I cannot get slow running. (2.) It will not take more than half throttle, even with all air shut off. Would you tell me if these phenomena are due to the distance between the jet and the induction pipes, and if so, whether they can be cured by a larger jet—say No. 32?—D.J.

(1.) We do not think that fitting the carburetter so far from the engine has the effect of preventing the petrol from vaporising properly. We should, however, recommend you to try the effect of a warming pipe fitted with a funnel-

shaped end, taking hot air from one of the cylinders direct into the carburetter. It might also be advisable to try the effect of the next size larger and the next size smaller jets. (2.) It is seldom possible to open the throttle half way without opening the air lever to suit. Indeed, if it were possible, the carburetter would be out of adjustment and a smaller choke required. The latter would effect easier starting.

## Running on Paraffin.

**?** Now petrol is such a price I shall be glad if you will tell me what alterations (if any) are required in order that I may use paraffin. I use a Senspray carburetter with a 27 jet.—C.A.P.

To get a motor bicycle to run really well on paraffin is a difficult matter. The great thing to do is to get the paraffin to vaporise as well as possible. The vaporisation can be aided by fitting a funnel close up against the radiating fins and conducting the hot air obtained therewith direct to the fixed air intake to the carburetter. This helps matters a little. The engine, of course, must be started first of all on petrol, as, until warm, it will not run on paraffin. Unless the combustion is perfect, there is an excess of carbon deposit, fouling of the valves, subsequently causing pre-ignition. Also it is well to lower the compression.

## Belt Slip in Wet Weather.

**?** Will you be so good as to tell me a real cure for belt slip in wet? On Saturday I had to ride fifty miles in heavy rain, and could only dodder along at 12 m.p.h., because the engine raced under more throttle. I wiped the belt several times, but it was not until the rain stopped after forty-five miles that I could do anything like the usual pace. The belt was properly tight and the proper size for the pulley. It is just when it is wet and you really want to move that this annoying thing happens. Can you help me?—C.A.C.S.

If you use a rubber belt the only remedy is to shield the belt from the wet, unless you are prepared to fit a large counter-shaft pulley. Of course, in wet weather rubber belts are notoriously bad in this respect, and if you ride in all weathers it is better to have a leather belt to use on these occasions.

**SPECIAL NOTICE.**—Copies of this journal may now only be sent to neutral countries in America and Africa & posted direct from the office of the publishers or by newsagents who have obtained permission from the War Office, as in the case of neutral European countries. The publishers of THE MOTOR CYCLE have obtained the necessary permission and, consequently, can post copies for subscribers as usual.



**Overheating and Knocking.**

? Will you please answer the following questions about my  $3\frac{1}{2}$  h.p. machine, which is of recent date: (1.) Why, when I start out with sidecar and passenger, is it that the machine goes excellently for about two miles; but then begins knocking violently, sometimes even knocking until it stops, regardless of the position of the ignition and air levers? The compression is excellent, and the machine has only run about 300 miles since the cylinder and piston were cleaned. Do you think this might arise from worn bearings? (2.) How is the ball bearing secured on the pulley-shaft, and how is the other secured in the timing gear side of the crank case? What means should be used to get the one off the shaft, and the other out of the crank case, as I have tried to remove them, but did not use much violence lest I should break something? —A. READER.

(1.) Your trouble sounds like overloading, due to the use of too high a gear. It is likely that the machine is suffering from pre-ignition, which may be due to over-oiling having caused excessive carbonisation, or to the use of inferior quality oil, or to the use of a plug the points of which project too far into the cylinder. Thin electrodes invariably heat up quickly. (2.) The ball bearings are a driving fit on the shaft. The best way is to hit one off with a piece of brass and a hammer. The crank case must, of course, be divided.

**Carburettor Adjustment.**

? I shall be obliged if you will give me your advice on the following trouble I am experiencing with my 1913 model  $3\frac{1}{2}$  h.p. If the throttle is more than half opened the engine starts misfiring at once. This engine never did run with the air lever more than half open, due to the carburettor having extra holes for racing purposes, with a full size jet (40). The magneto is apparently in perfect order and clean, while the contact breaker is clean and the points are properly adjusted. A new plug has been fitted, and the carburettor thoroughly cleaned. The trouble has only recently appeared, since the cylinder has been rebored, a new piston fitted, and the compression raised slightly by fitting a flat-topped piston instead of a concave-topped one (this was done by the makers). The machine starts very easily, and runs well slowly; the only trouble being that it misfires with more than half gas, in spite of any adjustment of the air lever. —E.A.W.

The alterations to your engine may have upset the carburettor adjustment. You should, therefore, experiment with different sized jets until you get better results. The carburettor should stand the throttle being fully opened. It is just possible that the present jet is too large. As a matter of fact, misfiring on opening the throttle is usually due to an impeded flow of petrol. We take it for granted that you have ascertained that the petrol feed pipe and carburettor passages are clear. You might also make sure that both your valve springs are in good condition.

**Economy.**

? I am greatly puzzled at the high petrol consumption (50 m.p.g.) of my  $3\frac{1}{2}$  h.p. Triumph and sidecar combination, fitted with a Sturmey-Archer hub gear. Most of my riding is done without a passenger, and last winter the consumption got as bad as 40 m.p.g., but after careful tuning, etc., I have only succeeded in getting 100 to 110 miles from a can of Taxibus. During the last 200 miles I have been working with a borrowed cylinder piston and carburettor, but find the results still the same. My top gear used to be  $4\frac{3}{4}$  to 1, then  $4\frac{1}{2}$  to 1, and now is  $4\frac{1}{4}$  to 1, and I usually ride at a comparatively low engine speed, giving very little extra air, although on hills I lower the gear, increase the engine speed, and am able to give half extra air without knocking. Now some people advise me to lower my top gear nearer to 5 to 1; others say that lowering the gear will make matters worse. I have tried a smaller jet, but find loss of power, and a larger jet made matters worse. —H.G.

If you want to reduce your petrol consumption give all the air the engine will take and keep the petrol level fairly low. We think you would get the best results with a gear of  $4\frac{3}{4}$  to 1 or even 5 to 1. Generally speaking, you cannot get economical running except by fitting a smaller jet, which entails loss of power. The only thing to do is to effect a compromise somehow—that is, lose some power and use less petrol. Also look carefully for petrol leaks in the tank, pipes, or carburettor. A little paraffin mixed with the petrol will help you to discover these.

**EXPERIENCES WANTED.**

"T.L.C." (Cranwell).—Wooler. Petrol and oil consumption, reliability, etc.

"G.H." (Gateshead).—Suitable jet sizes with a Binks three-jet carburettor attached to 8 h.p. twin J.A.P. engine.

"C.S.W.R." (Melton Mowbray).—Suitability of Searle unburntable inner tubes for motor cycles.

**RECOMMENDED ROUTES.**

OULTON BROAD TO OLDHAM.—R.E.G.

Oulton Broad, Loddon, Norwich, East Dereham, Swaffham, King's Lynn, Long Sutton, Fossdyke, Swineshead, Sleaford, Leadenham, Newark, Ollerton, Worksop, Sheffield, Ashopton, Glossop, Stalybridge, Ashton, Oldham.

BLETCHLEY TO ABERYSTWYTH.—H.C.

Bletchley, Buckingham, Aynho, Deddington, Chipping Norton, Moreton-in-the-Marsh, Broadway, Evesham, Worcester, Bromyard, Leominster, Kington, New Radnor, Rhayader, Llangurig, Pont-erwyd, Aberystwyth.

FARNBOROUGH TO LEEDS.—A.P.

Farnborough, Bagshot, Ascot, Windsor, Slough, Beaconsfield, Amersham, Chesham, Tring, Dunstable, Westoning, Ampthill, Bedford, Eaton Socon, Stilton, Stamford, Grantham, Newark, Tuxford, Retford, Bawtry, Doncaster, near Pontefract, Leeds.

BRISTOL TO CARLISLE.—J.E.T.

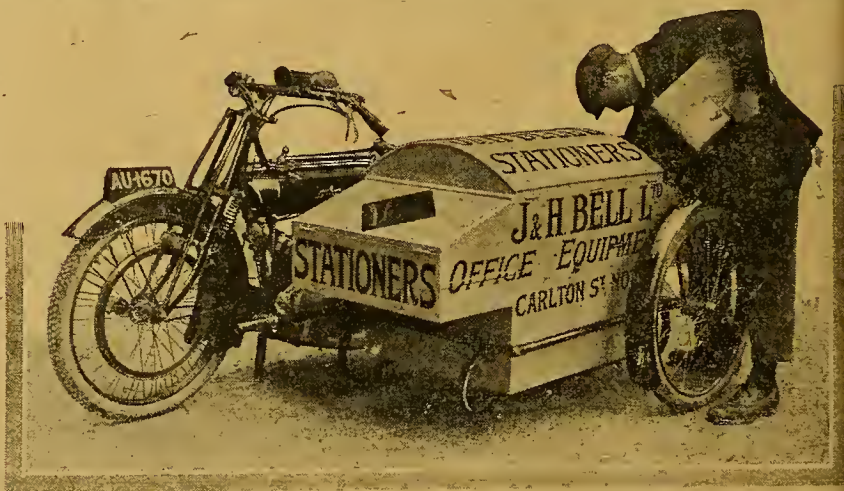
Bristol, Alveston, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Wellington, Whitchurch, Tarporley, Warrington, Wigan, Preston, Lancaster, Kendal, Penrith, Carlisle.

CARLISLE TO BOURNEMOUTH.—J.E.T.

By the route previously given as far as Gloucester, then go through Stroud, Nailsworth, Swainswick, Bath, Beckington, Warminster, Longbridge, Deverill, near Shaftesbury, Blandford, Wimborne, Bournemouth.

LONDON TO DARTMOUTH.—H.W.S.

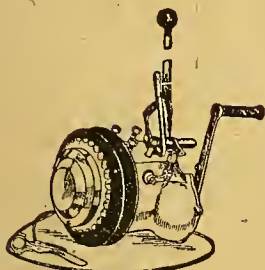
London, Kingston, Esher, Cobham, Ripley, Guildford, Hog's Back, Farnham, Alton, Alresford, Kingsworthy, Winchester, along the Southampton Road to Bassett, turn right by a pond for Shirley, continuing through Totton, Cadnam, Ringwood, Wimborne, Bere Regis, Dorchester, Bridport, Lyme Regis, Colyford, Sidford, Exeter, Chudleigh, Newton Abbot, Torquay, Paignton, Kingswear, Dartmouth.



EXEMPLIFYING THE PUBLICITY VALUE OF A SMART SIDECARRIER.

A Lea-Francis machine with an attractive body used by a Nottingham stationery firm.





While the leading variable gear, the STURMEY-ARCHER, is devoting most of its output to the army needs, there are a few points for ordinary motor cyclists to think over.

Consider the experience behind the Sturmev-Archer. For sixteen years we have been making variable gears. During that time we have found out a lot. All we have discovered in gear making is in the Sturmev-Archer of to-day.

Consider the care necessary in choice of metals. We have learnt what gives the best results. Consequently, there are no experiments to be tried on Sturmev-Archer customers. The choice of the right material counts for more than users might imagine. We KNOW.

Consider the huge plant necessary to turn out every gear in mathematical precision—for the tiniest, fractional variation will be a serious thing to the user. That plant we have, and therein lies one of the secrets of Sturmev-Archer superiority.

Consider the value of an established name and a guarantee behind every gear on which you can rely. We can't afford to run any risks with the Sturmev-Archer reputation. That is a guarantee of excellence which needs most and final consideration.

Meanwhile note the address:

**Sturmev-Archer Gears, Ltd.,  
Nottingham.**

# I SUBMIT there

is a solid reason why you should adopt a  
**BINKS CARBURETTER, viz.:**  
**YOU CUT YOUR FUEL BILL IN TWO**

if you adopt my system and use my fuel. You can, of course, use petrol or benzol without alteration.

Price of  
Carburetter  
complete—

**49/-**

plus 10% extra  
war cost.

**FIT ANY  
MACHINE.**

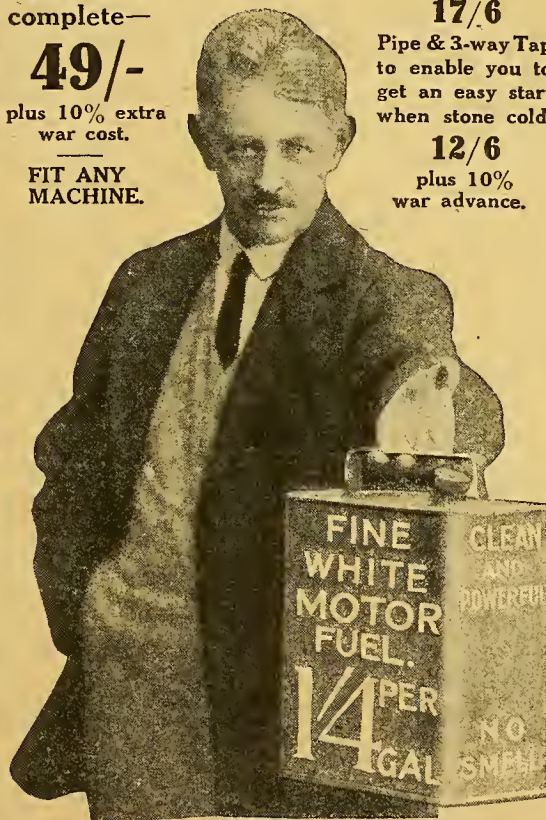
Small extra Tank  
to clip on Frame,

**17/6**

Pipe & 3-way Tap  
to enable you to  
get an easy start  
when stone cold,

**12/6**

plus 10%  
war advance.



## READ!

### MY 3-PHASE JET DAMPING CARBURETTERS

have such perfect vapourising properties that they enable you to use fuel at 1/4 per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at 2/6 a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

**C. BINKS, Ltd., Eccles.**



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON King Dick, Sept. 1915, Philipson, Cowey, P.H. lamps, Stewart mechanical, tyres unpunctured, tools, complete; 39 gns.; not done 2,000 miles.—Scott, 2, London Lane, Bromley, Kent. (D) [7985]

### A.J.S.

**A** J.S., 4h.p., new, with sidecar, in stock.—Pickering, Mardol, Shrewsbury. [X3189]

**A** J.S., 2½ h.p., 2-speed, new, in stock; £55.—Pickering, Mardol, Shrewsbury. [X3188]

**A** J.S. New 1916 6h.p. Combination on the premises waiting.—Moss, Wem. [X3708]

**A** J.S., 2½ h.p., 3-speed, 1,700 miles use; £48.—Turpins, 22-29, Preston Rd., Brighton. [0716]

**A** J.S. 4h.p. Combination, early delivery.—Williams, A.J.S. Expert, Chapel Ash Depot, Wolverhampton. [X3638]

**2** 3h.p. A.J.S., all-chain, excellent condition, all accessories; £37.—Haines, 169a, Lower Clapton Rd., N.E. [X3702]

**A** J.S. 4h.p. Combination, new May, 1915, P. and H. lamps, etc., good order; £72/10.—Castle Hill Cottage, Maltonhouse Lane, Kenilworth, Warwickshire. [X3741]

**A** J.S. 1912 6h.p. Twin Combination, coachbuilt sidecar, a good outfit; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7991]

## Halifax Motor Exchange

68, HORTON ST., HALIFAX.

\*Phone—766.

Telegrams—"Perfection."

### NEW MODELS.

MORGANS. De luxe, M.A.G. engine, hood, etc.	£127 0
EXCELSIOR (American), 7 h.p., 3 speeds	£75 0
NEW IMPERIAL, 2½ h.p., variable magneto	£38 0
OVERLAND, 12 h.p., 4-seater, electric starting and lighting (£4 4s. tax)	£225 0
RITZ 4-cylinder 2-seater Light Car	£145 0
CONNAUGHT, 2½ h.p., 2-speed	£41 15
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed	£39 10
ROYAL RUBY, 6 h.p., 3-speed, shop-soiled	£67 0
REX, 6 h.p., kick start, and Rex Sidecar	£71 0
WILLIAMSON Cy-cl-ca, W.C. Douglas engine	£126 0

### 1916 (U.S.A.) EXCELSIOR.

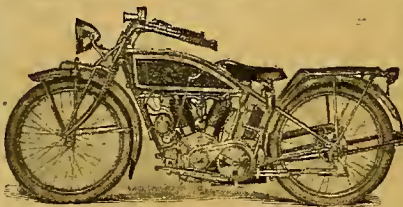
7 h.p., twin, 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

A few late 1915 new 7 h.p. 3-speed models, with electrical equipment, at pre-tax price of £71 10s.

Exchanges quoted. Easy payments arranged.

We are sole Yorkshire distributors. Liberal terms to trade.

Coachbuilt PERFECTION SIDECARS to suit, £13 10



### SOLO MACHINES.

1915 2½ h.p. 2-stroke 2-speed IVY	£26 10
1915 50N-VILLIERS, 2-stroke	£21 10
1914 6 h.p. 3-sp. GLYNO, detachable wheels	£39 10
1913 3½ h.p. ROVER, Grado gear	£27 10
1912 3½ h.p. ZENITH-GRADUA	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£23 10
RUDGE, 3½ h.p., F.E., good order	£19 19
EXCELSIOR, 3½ h.p., 3-speed, Druid forks	£19 19
KERRY, 3 h.p., magneto, Saxon forks	£5 15
P. & M., 3½ h.p., 2-speed, very smart	£25 10
REX, 1908, twin, 2-sp., F.E., wants attention	£12 10
REX, 1908, 2½ h.p., twin, spring forks	£15 10
TRIUMPH, magneto spring forks, new tyres	£18 10
MOTOSACOCHE magneto lightweight	£9 15

### SIDECAR COMBINATIONS.

6 h.p. (new) REX Sidette; reduced to	£71 0
1916 5-6 h.p. COVENTRY EAGLE Combin'n	£72 10
1915 7 h.p. HARLEY-DAVIDSON and S'car	£65 0
1914 6 h.p. ARIEL, chain drive, and Sidecar	£45 0
1914 6 h.p. REX Sidette, almost as new	£49 10
1913 6 h.p. 2-speed REX and Sidecar	£43 10
QUADRANT, 7-9 h.p. 2-speed, twin, chain drive, and coach Sidecar. Fine lot	£45 10
1910 6 h.p. REX, 2-speed, and Sidecar	£24 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1910 3½ h.p. 2-speed REX and Sidecar	£24 10
P. & M., 3½ h.p., 2-speed, and Sidecar	£19 19
J.A.P., 8 h.p., F.E., and coach Sidecar	£17 10
REX, 3½ h.p., 2-speed, and Sidecar	£19 19

### MISCELLANEOUS.

RENO 15 h.p. 4-cylinder Touring Car	£65 0
ROVER, 8 h.p., 4-seater, all on	£39 10
1913 MORGAN, 8 h.p., repainted, as new	£57 10
BRAMBLE Coach-built Sidecar (new)	£15 10
WILLIAMSON Sidecar, as new	£11 10
1915 REX Coach Sidecar, with apron (new)	£12 10
New Mechanical Horns; usual price 25/-	£7 11

WANTED, 1915 G.P. Morgan and Sunbeam Combination.

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### Alldays.

**19** 16 Allon 2-speed; 32 gns.—Troward, 78, High St., Hampstead. \*Phone: 5392. [778]

**A** LLDAYS 2-stroke, 1914, little used; £17; excellent condition.—Robinson, Sandy, Beds. [8132]

**19** 14 3½ h.p. 2-speed Alldays Matchless, excellent condition, £35.—Parker and Son, St. Ives, Hants. [8131]

**19** 16 Allon, 2 speeds, Lucas lamps, horn, accessories—£28/10.—Osman, 60, Clifton Rd., South Tottenham. [80]

**A** LLDAYS Allon, 1916, 2½ h.p., 2-speed, lamps, new.—W. Keen, Rhodes Farm, Mill Hill, Lond. N.W. [8132]

**C** OLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Allday Allon. [0738]

**A** LLDAYS Allon, 2-speed, new; special bargain £38/17 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [076]

**A** LLONS, single speed £36, 2-speed £42, 2-speed clutch £45; actually in stock; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [779]

### Ariel.

**19** 15 3½ h.p. Ariel, 3-speed countershaft gear, excellent condition; £45.—Whiting, Castlebury Bucks. [808]

**C** OLMORE Depot, 31, Colmore Row, Birmingham have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [079]

**A** RIEL 8h.p. Twin Sidecar Combination, Enfield 3-speed gear, handle starting, splendid condition, lamps, speedometer, horn; £50; seen any time.—Lewisham High Rd., New Cross, S.E. [813]

### Atlier.

**A** TILIER, 4h.p., Mahon free engine, Bosch, overhauled; £16.—167, Glenfarg Rd., Catford. [72]

### Auto-Wheels.

**A** UTO-WHEEL, new, never been on the road; £6 clear.—Masters, Raunds, Wellingborough. [X368]

**A** UTO-WHEEL, £7, little wear, easy starter; overhauled.—Harris, Homestead, Bircington. [792]

**A** UTO-WHEEL, perfect order, little used; £8/10 Rogers, Seaford, St. Ives, Cornwall. (1) [X354]

**A** UTO-WHEEL, splendid condition, little used; 16 gain, £6/10.—Crow Bros., High St., Guildford. [81]

**W** ALL Auto-Wheel, 1914, complete, little used, new; £8/10.—Murray, 37a, Charles St., Hare Garden, Holborn. [X368]

**A** UTO-WHEEL, first-rate order, sight feed oil, Hammond spring shock absorber, bicycle attached; £12.—Durkin, 44, Landguard Rd., Southampton. [80]

**O** NE Auto-Wheel, scarcely done 700 miles, almost good as new; first money order for £6 shall receive same as petrol is unobtainable here.—Char Dunnion, Glenview Terrace, Omagh. [X37]

### Bat.

**B** ATS in stock, latest 4-5h.p., 2-speed, also seen hand 1914 model, same power, £35.—P. J. Evans, John Bright St., Birmingham. [X34]



## MOTOR CYCLES FOR SALE.

## Blackburne.

**BLACKBURNES**, 3½ h.p., 3-speed, handle-bar clutch, 1914, re-enamelled; 37 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [7786]

## Bradbury.

**BRADBURY**, 4 h.p., 2 speeds, in good order; £17.—6, Warren St., London. [8207]

**1912 Bradbury**, fitted Lloyds 2-speed gear, splendid order; £25.—Parker and Son, St. Ives, Hunts. [8150]

**1914 3½ h.p. Bradbury**, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0822]

**BRADBURY**, 4 h.p., 3 speeds, and clutch, everything in good order, including tyres; £22/10 cash; London.—Box L1767, c/o The Motor Cycle. [8185]

**4 h.p. Bradbury**, 2-speed, free, cane sidecar, spare tyres, new tyre and belt, splendid condition; £26.—Beresford, Alcester Rd., Wallington. [8094]

**BRADBURY 1913 Combination**, 4 h.p., Bosch, 2 speeds, new tyres; 28 gns.—Wandsworth Motor Exchange, Elmer St., Wandsworth Town Station. [8174]

**BRADBURY**, 4 h.p., 2-speed, pedal starter, new Pedley belt, Kempshall tyres, valves, and Millford coachbuilt sidecar; offers wanted.—Box 601, c/o The Motor Cycle. [X3551]

**BRADBURY**, 1913, in good running order, 4 h.p., very fast and powerful, h.b.c., climb anything; £20; trial by appointment.—Croxford, Hassenden, The Rise, Grove Park, Lee, S.E. [8187]

**COST £10** (receipts shown).—6 h.p. twin Bradbury, built to order, cane 2-seater, special fittings, under 2,000 miles; appointment.—Fred Wright, 18, Temple Fortune Lane, Golders Green, London. [7910]

**1912 Bradbury**, 4 h.p., not used for 2 years, new cylinder, new back tyre, almost new front, air spring seat pillar, plating and enamelling very good, new horn, spare buffed tube, spare rings, guaranteed perfect order; trial by appointment; £21, lowest.—Browne, Ashley, Market Drayton. [X3561]

## Brough.

**BROUGH**, 3½ h.p., steel cylinders, T.T., 2-speed countershaft, 1915, as new, lovely condition, speed 4-60; price 40 gns.—201, Preston Rd., Brighton. [X3348]

## Brown.

**BROWN**, 1912, overhauled by makers, re-enamelled; £16.—Troward, 78, High St., Hampstead. Phone: 5392. [7782]

## B.S.A.

**B.S.A.** New 1916 Model K actually in stock; no waiting.—Moss, Wem. [X3709]

**B.S.A. Motor Cycle**, 1916, model K, in stock.—Chilton, High St., Watford. [8122]

**COLMORE Depot**, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**B.S.A.**, 1915, model K, 4 h.p., 3-speed, chain-cum-belt, one of the hard-to-get machines; £43, bargain.—Layton's Garage, Bicester, Oxon. [X3734]

**1916 B.S.A.**, chain-cum-belt, and coachbuilt sidecar; cost £82 two weeks ago, fully equipped; sacrifice £75.—L1768, c/o The Motor Cycle. [8185]

**B.S.A.**, 1915, 4½ h.p., 3 speeds countershaft, and smart coachbuilt sidecar, usual accessories, excellent condition; £52.—P. J. Evans, John Bright St., Birmingham. [X3662]

**B.S.A. 1914 Chain Drive Combination**, hood, screen, all accessories, speedometer, in splendid condition; £60.—Colmore Depot, 261, Deansgate, Manchester. [8082]

**B.S.A.**, 1915, model K, 4½ h.p., chain-cum-belt, 3-speed, really good condition; £46; fullest particulars, approval with pleasure.—Tollady, Bicester, Oxfordshire. [X3618]

**B.S.A.**, 1915, 4½ h.p., 3-speed gear, kick starter, countershaft drive, accessories, nearly new, with light coachbuilt sidecar; £60; Portsmouth.—L1744, c/o The Motor Cycle. [7926]

**B.S.A.**, 1916, model K, 4 h.p., 3-speed; we can to-day deliver from stock; price £62 complete; buy before a further advance in price takes effect.—Layton's Garage, Bicester, Oxon. [X3619]

**1913 B.S.A.**, 2-speed, with nearly new coachbuilt car, Lucas lamps, speedometer, etc., in good order, £45; also 1915 B.S.A., 3-speed, tyres unpunctured, accessories, £50.—54, Wyndham Rd., Salisbury. [X3578]

**B.S.A.**, models H and K delivered now, also a 1912 2-speed £30. 1914 all-chain drive model, with coach sidecar, very carefully used, £52/10; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7960]

## Calthorpe.

**1915 Calthorpe-Jap**, Enfield gear, lamp, horn, etc.; bargain, £26.—Earl, 5, Heath St., Hampstead. [X3747]

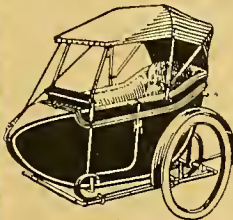
**CALTHORPE-J.A.P.**, brand new, 2½ h.p., with Enfield 2-speed gear and free engine; £35.—Moss, Wem. [X3712]

**CALTHORPE**, 1915, 2½ h.p. J.A.P., Enfield 2 speeds, as new, £25; a 1915 2-stroke, 2 speeds, in perfect order, £20.—6, Warren St., London. [8204]

**COLMORE Depot**, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

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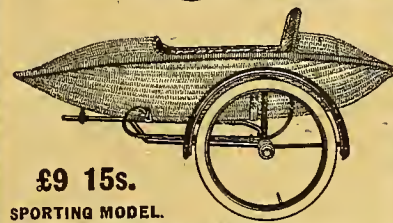


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4 h.p. WOLF-J.A.P., 1915, 3-speed, chain drive, with £13 coach Sidecar	£47 15
3½ h.p. TRIUMPH, 1912, free engine, and Philipson gear	£26 15
FORD Car, 1915, detachable wheels	£85 0
7-9 h.p. PREMIER, 1914, 2-speed countershaft, with £13 10s. new coach Sidecar	£55 0
6 h.p. REX, 2-speed, magneto	£13 15
2½ h.p. MINERVA, magneto, variable gear	£9 15
7-9 h.p. INDIAN, 1915, 3-speed, electrical model, and £18 Montgomery Sidecar	£69 15
1916 7-9 h.p. HARLEY-DAVIDSON	£80 15
1916 ditto, electrical model	£89 0
7-9 h.p. INDIAN, 1915, electric model, with Millford £18 18s. Sidecar, screen	£75 0
8 h.p. ZENITH, 1913, Zenith gear	£29 15
2½ h.p. WOLF, 1916, 2-stroke, 2-speed	£33 10
20 h.p. FORD Van, new, 1916 model	£130 0
20 h.p. FORD Van, 1915 model	£90 0
6 h.p. REX, 1912, 2-speed model	£21 15
2½ h.p. TYLER, 1915, 2-speed model	£24 15
3½ h.p. TRIUMPH, 1910 model	£17 15
3½ h.p. LINCOLN-ELK, 1912 model	£13 15
5 h.p. INDIAN, 1915, 3-speed, finished red, beautiful condition	£55 0
2½ h.p. ENFIELD, 1912, 2-speed	£15 15
3 h.p. TRIUMPH, 1912, Philipson pulley	£26 15
3 h.p. CLYDE, M.O.V.	£4 15
4 h.p. NEW HUDSON, 1915, 3-speed model, with £13 coach Sidecar	£35 15
2 h.p. QUADRANT, spring forks	£3 15
3 h.p. LINCOLN-ELK, 1911, magneto	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn	£25 15
2½ h.p. PREMIER, 1912, 3-speed model	£18 15
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar	£69 15
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2½ h.p. MATCHLESS-J.A.P., 1910	£12 10
1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps	£89 0

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## Calthorpe.

**1916 2½ h.p. Calthorpe-Jap** (nominally second-hand), Enfield 2-speed, run 100 miles; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0825]

**CALTHORPE-J.A.P.**, 2½ h.p., 2-speed, 1915, only run 800 miles, perfect condition; £26.—T. E. Sykes, 90, Nursery Terrace, Newsome Rd., Huddersfield. [X3663]

**CALTHORPE Motor Cycles**, 1916 models.—Just arrived: 2-stroke 2-speed 31 gns., J.A.P. 2½ h.p. 2-speed 36 gns.; easy terms arranged.—Storey's, 118, Gt Portland St., W. [0777]

**CALTHORPE-J.A.P.**, 1915, 2½ h.p., 2-speed, T.T. bars, speedometer, lamps, mechanical horn, excellent order; £27.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491]

**CALTHORPE-J.A.P.'s**, with Enfield gears, actually in stock; £37/16; deferred payments by arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7955]

**1913 4½ h.p. Precision-Calthorpe**, 2-speed countershaft, kick start, new Watford, lamps, etc., new underslung sidecar, reliable touring turnout; £34 cash.—679a, Romford Rd., Manor Park. [8067]

**CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

## Campion.

**CAMPION-VILLIERS**, 1915, 2½ h.p., sound lightweight, extra good engine; £20; approval anywhere; satisfaction guaranteed.—Layton's Garage, Bicester, Oxon. [X3617]

**CAMPION**, brand new, 4 h.p. J.A.P. engine, 3-speed Sturmer-Archer countershaft, Dunlop tyres; list price £66/10. First cheque for £60 accepted.—A. H. Inger, 14, Handel Mansions, Handel St., W.C. [7954]

## Chater-Fafnir.

**CHATER-FAFNIR**, mag., new Pedley belt and tyres, first-class condition and order; £12.—14, Dalbrooke Rd., West Norwood. [8171]

## Chater-Lea.

**CHATER-LEA**, with 1914 6 h.p. J.A.P. engine, new N.S.U. gear, wicker sidecar, reliable turnout; £30.—Manor Farm, Eton Wick, Windsor. [8090]

**CHATER-LEA**, 3½ h.p., 2-speed, clutch, kick starter, spring forks, excellent condition; bargain, £16, offers.—Graham, 27, Wandle Rd., Upper Tooting, [7993]

**4 h.p. Chater-Lea**, 1912 engine, very lively and economical, variable gear, free engine, tyres, belt good; £17; with sidecar £19.—Coleman, Sheldon Rd., Chippenham. [X3722]

**1913 8 h.p. Chater-Lea Combination**, wicker torpedo sidecar, J.A.P. engine, new drip feed lubricator, new back tyre, tools, and spares, new tube, P. and H. lamps, Cowey speedometer, in excellent running order; trial given; £50, or nearest offer.—Seen at R. Kendall, Garage, 7, Melbourne Grove, East Dulwich, or write 110, Kennington Rd., S.E. [7944]

## Clarendon.

**CLARENDON**, 2½ h.p., spring forks, perfect going order, accumulator; £3, bargain.—J. Pearce, Woodmancote, Cirencester. [7970]

## Clyno.

**CLYNO**, 1912, 5-6 h.p. twin, Bosch, 2 speeds; £27/10.—1, Elmer St., Wandsworth. [8175]

**2½ h.p. Clyno**, 2-stroke, 2-speed, hand clutch, speedometer; 30 gns.—Hart-Smith, 6, Throley Rd., Sutton, Surrey. [8093]

**CLYNO**, 1914, 6 h.p., 3-speeds, clutch, and starter, detachable wheels, £35.—P. J. Evans, John Bright St., Birmingham. [X3654]

**CLYNO**, 2½ h.p., 2-stroke, 2-speed, hand clutch, 1914, just overhauled, new condition throughout, 24 in. tyres; £28.—Green, 44, Craven Rd., Rugby. [X3693]

**CLYNO**, 1915, 8 h.p., 3 speeds, with sidecar, very little used, equal to new; what offers; can be seen any time.—Edgerley, Knowe Hill, Twyford, Berks. [X3557]

**CLYNO 1914 Special Combination**, cost £130, little wear, guaranteed perfect, spare wheel, screen, speedometer, lamps, horns, valves, chains, etc.; £60.—Eden, Marston Green, Birmingham. [X3549]

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**CONNAUGHT**, 2½ h.p., good appearance, tyres and running order; £14.—The Garage, The Green, Southgate, N. [8040]

**CONNAUGHTS** in stock for immediate delivery, miniature, standard, and 2-speed models; prices from £28/17/6.—P. J. Evans, John Bright St., Birmingham. [X3660]

## De Dion.

**2½ h.p. De Dion**, mag., good condition; £7/10, nr exchange ultra lightweight.—37, Carlton Rd., Small Heath, Birmingham. [X3740]

## Dot.

**DOT-J.A.P.**, 8 h.p., 1914, 2-speed gear, with luxurious coachbuilt sidecar, Lucas dynamo lighting set, electric horn, push button in sidecar, coachbuilt box fitted to chassis behind sidecar, a splendid turnout; £70.—Colmore Depot, 261, Deansgate, Manchester. [8083]





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- TRIUMPH**, 3½ h.p., 1911, 2-speed countershaft gear, chain-cum-belt, complete with wicker Sidecar; cheap at .....
- NEW HUDSON**, 1914, 6 h.p., 3-speed, kick start, complete with New Hudson coach-built Sidecar with screen, all accessories .....
- ZENITH**, 1915, 6 h.p., countershaft, complete with Millford Sidecar .....
- NEW HUDSON**, 1915, 3½-4 h.p., 3-speed countershaft, kick start, coach-built Sidecar, as new .....
- A.J.S.**, 1914, 6 h.p., 3-speed, lamps, horn, speedometer, and Millford Sidecar, as new .....
- BRADBURY** 1914 6 h.p. Combination, cane Sidecar, 3-speed, kick start, speedometer .....
- ENFIELD** 1915 6 h.p. Combination, lamps and speed.; very good condition .....

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- ROYAL RUBY**, 2½ h.p., 1915, J.A.P., 2-speed .....
- TRIUMPH**, 1912, 3½ h.p., clutch, Philipson pulley .....
- B.S.A.**, 1915, 4½ h.p., 3-speed, chain drive .....
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- DOUGLAS**, 1914, T.T., 2 speeds; 35 gas.
- TROWARD**, 78, High St., Hampstead. Phone: 5392. [7781]  
15, Douglas, 2½ h.p., 3 speeds; £42.—Dewhurst, [X3627]  
Five St., Winebank, Sheffield.
- DOUGLAS**, 1913, 2½-3 h.p., Bosch, 2 speeds, very fast; £29/15.—1, Ebner St., Wandsworth. [8176]
- DOUGLAS**, late 1913, 2½ h.p., 2 speeds, Stewart, excellent order; £32, or near.—Locke, Draper, Pease, [8004]
- DOUGLAS**, 1911, new tyres and belt, all in good running order; £13, offer.—455, York Rd., Wandsworth. [8113]
- DOUGLAS**, 2½ h.p., 2 speeds, perfect condition, economical; bargain, £20.—436, Whitehorse Rd., Thornton Heath. [7973]
- DOUGLAS**, 1913, 2-speed gear, free engine, kick starter, footboards, accessories, excellent order; £32.—Moss, Wem. [X3713]
- DOUGLAS**, 1913½ (November), 2½ h.p., 2 speeds, hardly used; any trial; £32/10.—Housekeeper, 15, Austin Friars, E.C. [7975]
- DOUGLAS**, 1914, 2 speeds, perfect condition; £32/10, or nearest offer.—Woodall, 23, Argyll Av., Victoria Park, Manchester [8105]
- DOUGLAS**, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]
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- 1913 Douglas**, 2½ h.p., T.T. model, 2-speed, good condition, accessories, lamps, horn, etc.; £34, or offer.—28, Brooklands Rd., Romford. [7909]
- DOUGLAS Specialists**—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [1189]
- 1915 Douglas**, 4 h.p., and Millford sidecar, lamps, speedometer, etc., in splendid condition; £61.—Apply, Willis, 31, Inglis Rd., Ealing Common. [7925]
- DOUGLAS**, 2½ h.p., 1913, 2-speed, fast, tip-top condition; owner buying heavier machine; £36.—Vannstone, Higgs and Hill, Hayes, Middlesex (G.W.R.) [8134]
- 1914 Douglas**, 2½ h.p., model W, clutch, kick-start, Stewart speedometer, plated horn, good tyres; £36.—Robinson's Garage, Green St., Cambridge. [8050]
- DOUGLAS**, late 1914, 2½ h.p., all accessories, including Jones speedometer, excellent condition; no dealers; £40, or near offer.—Maor House, Ewell, Surrey. [7949]
- COLMORE** Depot, Birmingham, Manchester, Leicester and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]
- 1915 2½ h.p. T.T. Douglas**, 2 speeds, Lucas lamps, Lucas horn, touring mudguard, Kempsall heavy, long exhaust; £45.—Charlton, 9, Dewhurst Rd., West Kensington. [X3357]
- DOUGLAS**, 2½ h.p., late 1914 model U, 2-speed gear, not done a thousand miles, full equipment, in excellent condition; owner fighting; lowest £38.—C. Wigg, 31, Bow St., London, W.C. [8001]
- 1911 Douglas**, engine re-bushed, frame re-annealed, new tyre and Pedley belt, X'fall saddle, B. and L. drip feed, 100 m.p.g. with passenger; £19.—8, Turner St., Higher Broughton, Manchester. [X3699]
- DOUGLAS**, 4 h.p., late 1915, 3-speed clutch, and 16 ga. Mills-Fulford Empress sidecar, perfect condition, little used for week-ends only; £60.—Harrington, Chemist, 137, Woodlands Rd., Ilford, Essex. [7952]
- 1915 Douglas**, 2½ h.p., model U, 2-speed, upturned or semi-T.T. handle-bars, Lucas lamp and horn, in absolute perfect condition throughout, mileage under 2,000; £44.—Robinson's Garage, Green St., Cambridge. [8052]
- DOUGLAS**, T.T. model, 2-speed, new Hutchinson tyres, Amac carburettor, in perfect condition, practically new, lamp and horn, tools, pump; exceptional bargain, £42.—Robinson's Garage, Green St., Cambridge. [8051]
- DOUGLAS**, 1913 (November), 2-speed, semi T.T., new extra heavy tyres, Pedley belt, lamp, horn, knee-grips, long exhaust, new piston and crankshaft, just fitted, naval spares, speed machine, cannelling and plating in good condition; £32.—54, Clive Rd., Rochester. [8126]
- DOUGLAS**, 1914, 2½ h.p., model V, 2-speed, lamp, horn, speedometer, knee-grips, spare chain, plugs, and valves, complete set of tools, not ridden for 9 months, owner likely to be called up; thoroughly overhauled 6 weeks ago, excellent condition; £35.—Box 605, c/o The Motor Cycle. [X3611]
- DOUGLAS** Motor Bicycles.—2½ h.p. models. Deliveries are almost impossible to obtain. We are large Douglas agents. If there is any possibility of immediate deliveries we can in all probability assist you. We suggest you write us your requirements.—Douglas Specialists, Robinson's Garage, Green St., Cambridge. [8045]
- Elco.**  
2½ h.p. 1915½ 2-stroke Elco, in good condition; £16, no offers.—Oswell, 39, Churchgate, Leicester. [X3640]



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| 6 h.p. Combinations | £94 10 |
| 3 h.p. Twins        | £55 0  |

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| 5 h.p. 3-speed, semi T.T. bars                          | £75 0  |
| 7 h.p. Powerplus, rigid frame                           | £80 0  |
| 7 h.p. Powerplus, spring frame                          | £83 0  |
| 7 h.p. Dynamo, with sidecar, Powerplus and spring frame | £112 0 |

#### HARLEY-DAVIDSONS.

- |  |         |
|--|---------|
| 7-9 h.p., 3 speeds, dynamo equipped, Model 16J | £89 0   |
| Or with De Luxe H.-D. sidecar                  | £110 0  |
| 7-9 h.p., 3 speeds, no equipment, Model 16F    | £80 15  |
| Ditto with sidecar                             | £101 15 |

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| 2½ h.p. 2-stroke, single speed | £29 10 |
| 2½ h.p. 2-stroke, 2-speed      | £36 10 |
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| 2½ h.p. 2-stroke, single speed | £36 0 |
| 2½ h.p. 2-stroke, 2-speed      | £42 0 |
| 2½ h.p. 2-stroke, and clutch   | £45 0 |

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NEW IMPERIAL-J.A.P., 2½ h.p., 2-sp.	£36 15
1915 3-speed HARLEY-DAVIDSON ..	£68 5
NEW IMPERIAL-J.A.P., 2½ h.p., 2-sp., kick start and clutch ..	£44 8
NEW IMPERIAL-J.A.P., 2½ h.p., 2-sp.	£38 0
Popular LEVIS ..	£32 0
ENFIELD Combination ..	£89 5
SPARKBROOK, 2-stroke ..	£40 0
ALLDAYS-ALLON, 2-speed, 2-stroke ..	£42 0

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1914 RUDGE, 5-6 h.p., 3-speed ..	£45 0
1914 A.J.S., 5-6 h.p., 3-sp. Combinat ..	£70 0
1915 3-speed HARLEY-DAVIDSON ..	£55 0
1914 3-sp. CLYNO and coach Sidecar ..	£66 0
1915 NEW IMPERIAL ..	£32 10
1915 2-stroke 2-speed VELOCETTE ..	£21 0
1915 MATCHLESS, 3½ h.p., twin, over- head valve, 3-speed ..	£35 0
1910 B.S.A., 3½ h.p. ....	£12 0
2½ h.p. HUMBER, twin, 3-speed ..	£22 0
8 h.p. THOR, 2-speed, dynamo light- ing set, speedometer, and Sidecar, run 750 miles ..	£60 0
1915 MATCHLESS Combination, M.A.G., all accessories ..	£75 0
2½ h.p. 3-speed PREMIER ..	£20 0

#### Second-hand Cars.

1914 SINGER, dynamo lighting ..	£17 5
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1914 STANDARD ..	£15 5
1915 HILLMAN Delivery van ..	£17 5
1914 HILLMAN ..	£16 5
1914 CALTHORPE Coupé ..	£16 5
1913 MORRIS-OXFORD ..	£13 5
1915 MORGAN, water-cooled, magneto ..	£110
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#### MOTOR CYCLES FOR SALE.

##### Enfield.

3 h.p. Enfield, 1916, as new; highest offer.—Donaldson,  
163, South St., St. Andrews. [7911]

ENFIELD New 1916 6½ h.p. Combination in stock; ex-  
changes arranged.—Moss, Wem. [X3711]

COLMORE Depot, 31, Colmore Row, Birmingham,  
for immediate delivery of Enfields. [0801]

ENFIELD Combination, 1916, indistinguishable from  
new, speedometer; £75-6, Warren St., London. [8202]

ENFIELD 6 h.p. Combination, new, latest 1916 model,  
actually in stock; price 85 gns.—The Morris Gar-  
ages, Oxford. [0811]

1915 Enfield, 6 h.p., 1916 coach sidecar (unused);  
48 gns., perfect.—Troward, 78, High St., Hamp-  
stead. Phone: 5392. [7788]

ENFIELD, 1916, 3 h.p., accessories, only done 700  
miles; £45; owner going to Front.—Lient. Blofeld,  
43, Sydenham Hill, S.E. [X3673]

ENFIELD Combination, 6 h.p., 1916, very little  
used, well fitted up; new condition; 73 gns.—  
51, Burnt Ash Rd., Lee, S.E. [8103]

6 h.p. Enfield, purchased in Feb., 1916, hood, screen,  
speedometer, usual spares, 2 lamps; £67.—Macey,  
20, Woodgrange Rd., Forest Gate. [X3695]

ENFIELD 1911 Lightweight, 2½ h.p. twin, m.g., splen-  
did order; £15/10.—Wandsworth Motor Exchange,  
Ebner St., Wandsworth Town Station. [8177]

1915 2½ h.p. Enfield 2-stroke, 2-speed, 2 lamps, horn,  
engine just overhauled, condition perfect; £27/10.  
—Robinson's Garage, Green St., Cambridge. [8049]

ENFIELD, 3 h.p., T.T., 2-speed, kick-start, speedo-  
meter, new tyres, overhauled by makers, new con-  
dition; £34.—Stagsdene, Maybank Rd., Woodford. [8099]

ENFIELDS, 6 h.p. 90 gns., 3 h.p. 55 gns.; actually  
here; generous deferred payments.—Lamb's, 151,  
High St., Walthamstow; and 50, High Rd., Wood Green. [7957]

ENFIELDS actually in stock for immediate delivery.  
6 h.p. combinations, 3 h.p. and 2½ h.p. models, ready  
to drive away.—P. J. Evans, John Bright St., Birming-  
ham. [X3658]

ENFIELD Combination, 1914, Lucas lamps and horn.  
Covey speedometer, excellent condition throughout;  
expert examination invited; £65.—12, Kryddleton Rd.,  
Bowes Park. [7967]

ENFIELD Combination, 1916, 6 h.p., new April, done  
300 miles, speedometer, horn, lamps, spares, in-  
surance transfer; bargain, £80.—17, Cicada Rd., Wanda-  
sworth, S.W. [8063]

1916 3 h.p. Enfield, only week old, unsold, com-  
plete with Lucas lamps, horn, registered; cost £58,  
first cheque £50 secures.—Jobborn, 33, Roscoe St.,  
Middlesbrough. [X3634]

##### Excelsior.

EXCELSIOR, 1914, 3½ h.p., lamps, speedometer,  
horn, toolbags, B. and B. variable jet, Bosch mag.,  
adjustable pulley, Druid forks, new tyres, excellent con-  
dition; trial; £28.—Blackman, 17, Fortress Rd., Kentish  
Town, London. [7966]

##### Fafnir.

3½ h.p. Fafnir, 2-speed, F.E., and sidecar; £16; any  
reasonable trial.—1, Wards Terrace, Broad Lane,  
Tottenham. [7920]

##### F.N.

F.N., 4-cyl., 1912, and sidecar, perfect condition, just  
overhauled; £18.—W.B., 103, Sherland Rd.,  
Twickenham, Middlesex. [8135]

1913 4-cyl. F.N., compression, bearings, etc., guar-  
anteed perfect; any expert examination or trial;  
£32.—L1760, c/o The Motor Cycle. [7989]

F.N., 1912-13, 2-speed, disc clutch, Middleton sidecar,  
complete, spare engine (less one connecting rod),  
frame, spring forks; lot 30 gns.—Letters, 47, Cuttison  
Rd., Ealing. [X3592]

7 h.p. F.N., new March, 1915, 3-speed, and clutch, 310,  
tyres, with Montgomery De Luxe sidecar, with hood  
and screen, a good lot, ready to go anywhere; £65, cost  
over £100.—Perry, 391, High Rd., Ilford, Essex. [7968]

##### Grandex.

GRANDEX-PRECISION, 2½ h.p., 2-speed, Bosch,  
B.B. Druids, footboards, 120 gallon; £18. 15,  
Ellesmere Rd., Dollis Hill, N.W. [8124]

##### Harley-Davidson.

1916 Harley-Davidsons in stock.—Parker and Son,  
St. Ives, Hunts. [8146]

HARLEY-DAVIDSON, 1916 models; immediate de-  
livery from stock.—Colmore Depot, 261, Deansgate,  
Manchester. [0830]

HARLEY-DAVIDSON 7-9 h.p. Twin, done under 250  
miles, perfect condition; £58/10 to clear.  
McAuliffe, Motor Engineers, Middlesbrough. [X3603]

COLMORE Depot, Birmingham, Manchester, Liver-  
pool, Leicester, for immediate delivery of all  
models of Harley-Davidsons and spare parts. [0802]

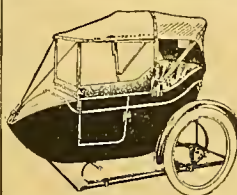
HARLEY-DAVIDSON, 7-9 h.p., lots 1915, only run  
2,000 miles, condition as new, £58; with Mills-  
Fulford sidecar, £70.—Coupland, 1, Palewell Villas, East  
Sbeon, S.W. [7974]

HARLEY-DAVIDSON Combination, 7-9 h.p., new  
September, 1915, practically unused, hood, speedo-  
meter, accessories; £72.—17, Netherwood Rd., Shep-  
herd's Bush. [7935]

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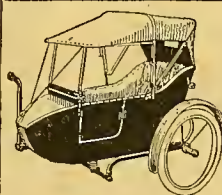
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1916 6 h.p. J.H. Combination .....	90 gns.
1916 2 h.p. OMEGA-J.A.P., 2-speed .....	38 gns.
1916 5-6 h.p. British EXCELSIOR, Sturmer countershaft 3-speed gear .....	68 gns.
1916 FORD Touring Car, 20 h.p. ....	£135 0
1916 FORD Chassis, 20 h.p. ....	£115 0
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1915 12 h.p. TRUMBULL Cycle Car, 4-cyl., water-cooled, detachable wheels, all on	£120 0

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4 h.p. WOLF, countershaft gear, 2-speed, chain drive, and Burbury coach Sidecar ..	£35 0
3½ h.p. 1908 TRIUMPH. A beauty. ....	£19 0
1916 3½ h.p. PREMIER, 3-speed countershaft model, and Coronet Sidecar to match, only done 500 miles .....	£55 0
4 h.p. BRADBURY, 2-speed, kick starter ..	£20 0
1911 P. & M., 2-speeds, very smart .....	£22 0
3½ h.p. HUMBER, 2 speeds, fine gear .....	£20 0
4 h.p. BRADBURY and rigid Sidecar .....	£18 0
1915 WOLF, lightweight, 3-speed .....	£25 0
2-stroke OMEGA, Druid forks .....	£16 0
1914 DOUGLAS, 2-speed, fine machine .....	£36 0
3½ h.p. 1908 TRIUMPH, fine gear .....	£17 0
3½ h.p. 1909 REX de Luxe, 2-speed, handle starting .....	£19 0
18-22 h.p. SIDDELEY Lorry, 4 speeds, chain drive, 2 ignitions .....	£50 0



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New Splittorf-Dixie Magneto, single, anti- clock ..	£4 0
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B. & B. Carburettor, h.b. control ..	10/-
Sonspray Carburettor, h.b. control ..	10/-
Amac Carburettor, h.b. control ..	10/-
Lukin Cycle Car Carburettor, 8 h.p. size ..	15/-
Latest Mechanical Horns, black and nickel ..	£1 0
Canocet Sidecar, very fine ..	£8 0
8 h.p. Precision Water-cooled Engine, new ..	£15 0
6 h.p. Twin Antoine Engine, water-cooled ..	£8 0
5-6 h.p. Sarcotea Twin Engine ..	£4 10
F.R.S. Lamp Set, 500ft. beam, shop-soiled ..	35/-
F.R.S. Lamp Set, 1,000ft. beam, shop-soiled ..	45/-
New Chinchier Clearance Covers, de Luxe, "heavy," rubber-studded, 26x24, 26x24, 26x24, and 26x24x24 .....	each £1 0

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## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**HARLEY-DAVIDSON** Combination, 1915, 1½ p. 8 h.p., Goodyear 5 in. tyres, speedometer, lamps, etc., smart, reliable, economical; £70.—Day, 154, The Ryde, East Dulwich. [8007]

**7-9h.p.** 1915 Harley-Davidson, 3-speed gear model, fitted with sporting sidecar, electric lamps and horn, speedometer, T.T. handle-bars, fast machine, in condition like new; £75.—Wauchope's, 9, Shoe Lane, London. [8061]

**HARLEY-DAVIDSON** Electric Model £89, standard £80/15; delivered from stock; also sidecars to suit; deferred payments to suit customers' individual requirements.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7959]

**1915 Harley-Davidson** Combination, model J, electrical equipment, speedometer, spares, etc., all on, absolutely it; ordered not to ride cycle only reason for selling; would entertain exchange, Ford, or reliable small modern car.—A.W., 19, High St., Beckenham, Kent. [X3585]

**HARLEY-DAVIDSON**, the silent grey, 1916 models, immediate delivery from stock, with Gloria, Millford, or Canelet sidecars; two only 1915 electrically equipped models at pre-Budget price, £76/13. Write or call.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

## Hazlewood.

**1914 5-6h.p.** Hazlewood, Bramble sidecar, accessories; £45, bargain.—Chester, 13, Welbury Drive, Bradford. [X3057]

**HAZLEWOOD**, 1913, 2½h.p. J.A.P. engine, 3-speed gear and free engine, Lucas lamps front and rear, spare valve, 2 belts, and inner tube, 2,000 miles; £30.—45, Broadgate, Preston, Lancs. [X3676]

## Hobart.

**HOBART-VILLIERS**, 1915, 2½h.p.; we have an extra fine sample, exceptionally fine engine, good appearance, well tired; £21; approval anywhere.—Layton's Garage, Bicester, Oxon. [X3620]

## Humber.

**HUMBER**, 1912, 2-speed, complete, 2 lamps, horn, running order; £25.—Edwards, Grocer, Syston, Leicester. [X3595]

**32 1½h.p.** 1912 Humber, 2-speed, free engine, handle starter, sidecar, lamps, horn, spares, recently overhauled, new gears, bearings; £30.—Whitley, Highbury Av., Salisbury. [X3579]

## Indian.

**1913 Indian** and Sidecar, complete, electric lamps; £43.—Cross, Jeweller, Rotherham. [X3629]

**INDIAN**, 1915, 7.9h.p., T.T., free engine, speedometer, fully equipped; £46.—6, Warren St., London. [8206]

**1914-15 7h.p.** Indian, clutch model, perfect condition, very fast; £43.—Harvey, Moors, Broadstairs. [X3505]

**7-9h.p.** Indian Combination, 1914, in splendid condition; any trial; £55, or offers.—Plumpton, Culmpton. [X3542]

**1915 3½h.p.** Indian and Sidecar, 3-speed, fast, reliable, in perfect condition; £60.—Whitting, Castlethorpe, Bucks. [8098]

**1915 Indian** Combination, 3-speed, lamps, Millford red sidecar; £60; perfect order.—Glover Bros., Windsor St., Coventry. [X3635]

**7-9h.p.** Blue Indian, 2-speed, F.E., coach sidecar, wind screen, perfect condition, all spares; £36.—Holden, 6, Norwood Av., Blackburn. [X3698]

**INDIAN**, 7h.p., clutch model, late 1915, good condition; £50, or reasonable offer.—Cpl. Guest, Fernbank, North Walsham, Norfolk. [X3666]

**INDIAN**, 1915 (May), 3½h.p., 3-speed gear, kick starter, 2 Lucas lamps, horn, etc., little used, perfect order; £45.—Bacon, Wellington, Salop. [X3679]

**1912-13 7h.p.** Indian, T.T. D model, 2-speed, with £25 Gloria sidecar to match, all as new, perfect; complete, £45.—3, Mogador Terrace, Wyke, Weymouth. [X3688]

**INDIAN**, 1915, 5h.p. T.T., 3 speeds and clutch, practically new, only used for a few miles; £48.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

**1914 7h.p.** Indian, T.T., 2 speeds, clutch, kick-start, very little used, perfect, lamp set, horn, speedometer; £36/10.—Empson, Merton Farm, Gamlingay, Sandy. [8109]

**NOV.** 1915, Indian, 5-6h.p., 3-speed, kick start, Canelet sporting sidecar, and accessories, as new, any trial given; £57.—Berkeley, 41, Warwick Av., Maida Vale, W. [8009]

**LATE 1912 Blue Indian**, 7-9h.p. twin, 2-speed, clutch, enamel and general condition very good; £24; owner serving.—Apply, Dickinson, Gt. Nelson St., Liverpool. [8129]

**1915 Indian** Combination, 7h.p., 3-speed, spring frame, electric light and horn, kick start, clutch, T.T. and touring bars; £65.—Galbraith, 10, Pinfield St., Glasgow. [X3196]

**7h.p.** Indian, 1916 model F, spring frame, with Model de Luxe sidecar, speedometer, horn, delivered last week, taken in part exchange for car; price £90.—H. V. Longhurst, J.P., The Cottage, Bromham Park, near Bedford. [X3626]

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It is asking for trouble to challenge a Powerplus INDIAN on the open road. But ride one, and you will find that the controls are so beautifully simple and effective that, although power and speed can be had at will, the engine is equally responsive for slow running, and its docility in traffic such that it can be ridden with perfect safety by the merest novice.

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## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN**, 7-9h.p., torpedo coachbuilt sidecar, electrically equipped, spring frame, new September, 1912, splendid condition; £55.—Mills and Co., Photographers, Slades Green, Enth. [7977]

**INDIANS**—Second-hand 1915 5h.p. coachbuilt combination, £55; 1914 7h.p. coachbuilt combination, extra large car, £48; both very good condition.—P. J. Evans, John Bright St., Birmingham. [X3661]

**7-9h.p.** Indian 1916 Combination, Powerplus machine and sidecar, complete with dynamo lighting set, kick start, and 3-speed gear, spring frame, the combination complete as new; £80, guaranteed.—Wauchope's, 9, Shoe Lane, London. [8066]

**INDIANS** in Stock.—Latest models. Powerplus combinations, sporting Powerplus 3 speeds models, standard 7h.p. overhead inlet combinations, with lighting set, the famous 5h.p. 3-speed double-purpose mount, and 7h.p. clutch model road racer.—P. J. Evans, John Bright St., Birmingham. [X3656]

**1915 Indian** Combination, model C, 7-9h.p., spring frame, 3 speeds, kick starter, electrically equipped, speedometer, watch, mechanical horn, spares, and valves, etc., 3 accumulators, new Dunlop and tube on rear wheel, Mills-Fulford sidecar, with Godfrey's De Luxe coachbuilt body; £68; any trial.—C. D. Willoughby Monaro, Blagdon Rd., New Malden, Surrey. [7984]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**1916 James**, 2-stroke, 2 speeds, lamps and horn, practically new; £35.—Green, Sutton-on-Trent. [X3588]

**JAMES**, 2-stroke, 2-speed, accessories, done 250, absolutely perfect.—Cooper, Chemist, Halesowen. [X3670]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**LATE 4½h.p.** James Combination, Canelet sidecar, 3 speeds, clutch; 50 gns.—Husk, Blythville, Wivenhoe. [7995]

**1913 James** Combination, good condition; £35; owner joined up.—Hill, Post Office, Woolton Hill, Newbury. [X3553]

**JAMES**, 4½h.p., 1914, 3-speed countershaft gear, all in good condition; £37, or offer.—455, York Rd., Wandsworth. [8115]

**1915½ 3½h.p.** James Twin, only used since Christmas, 3 speeds, and clutch, front and rear light, horn, etc.; £51.—C/o 33, Bedwelty Rd., Aberbarrow, near Cardiff. [X3514]

**1916 3½h.p.** Twin 3-speed James, countershaft gear, hand operated clutch, kick start, complete with lamp, horn (Lucas) as new, only done 30 miles, property of officer; accept £60.—Colmore Depot, 31, Colmore Row, Birmingham. [X3347]

## Kerry.

**5h.p.** Twin-cyl. Kerry, complete, less tag; 50/-; nearest cheque secures; bargain.—Foxford, Tiverton. [X3667]

**KERRY** Motor, 2½h.p., B.B. carburettor, splendid condition; £10/10, or exchange.—28, Bourne Rd., Bexley. [8188]

**32 1h.p.** Kerry-Abingdon, N.S.U. gear, Bosch, lamp, all 32 spares, sound order; £24, or offers.—Scarborough, Royd Terrace, Halifax. [X3639]

## Levis.

**LEVIS**, 2½h.p., late 1915; £24, or best offer.—33, Holland Park, W. [8026]

**LEVIS**, 2-stroke, 1916 Popular model, from stock; £32.—Bacon, Wellington, Salop. [X3680]

**LEVIS** 1915 Popular Model, lamp set, splendid running order; £21 cash.—81, Amersham Vale, New Cross. [7941]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**1915 Baby Levis**, complete, carefully used, very economical; £20, bargain.—Frank Boden, Matlock Bath, Derbyshire. [X3636]

**LEVIS** Popular, new; special bargain; cannot repeat; £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

**LEVIS**, 1916, Popular models.—We are sole Oxfordshire agents, and can deliver correctly tuned Popular models at once.—Layton's Garage, Bicester, Oxon. [X3735]

**LEVIS** Populars, with Enfield gears, £47/10; actually in stock; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7956]

**LEVIS** 2-stroke Motor Cycles, latest 1916 models.—Sole London and district agents, Cars and Motor Sundries Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711]

## Lincoln-Elk.

**LINCOLN-ELK**, 1913, 3½h.p., Bosch, Druids, splendid order; £16/10.—1, Ebner St., Wandsworth. [8158]

## L.M.C.

**L.M.C.**, 4h.p. T.T., in new condition, all on, speedometer, lamps, spare tube, etc.; must sell this week; sacrifice best offer over £25.—Huens, 13, Grant Rd., Addiscombe, Croydon. [8029]



## MOTOR CYCLES FOR SALE.

## Martin.

**MARTIN-J.A.P.**, T.T., 4½ h.p., excellent condition; £22;—Bunting, Abbeycroft, Berechurch Rd., Colchester. [X3691]

## Matchless.

**MATCHLESS** Motor and Sidecar, in perfect condition, 6 h.p.; cheap.—113, Haldane Rd., East Ham. [X3718]

**MATCHLESS**, 4 h.p., all in good condition, and good running order, fast; £17/10, offer.—455, York Rd., Wundsworth. [8114]

**MATCHLESS** 8 h.p. Combination, completely fitted, many spares, perfect condition; £47, or nearest.—Cpl. Gibbons, 27, Waterloo Bridge, London. [7999]

**MATCHLESS**, 1915, beautifully fitted up, and in fine order; £73/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7961]

**MATCHLESS** 1913 8 h.p. 2-speed Combination; must sell owing to recent serious illness; thoroughly good outfit; any reasonable offer, accepted.—Tollady, Bicester, Oxfordshire. [X3621]

**MATCHLESS**, 1913, twin J.A.P., 2-speed, with Dueschill coachbuilt 2-seat, sidecar, fine passenger outfit, recently overhauled; worth easily £50, accept £42.—Layton's Garage, Bicester, Oxon. [X3736]

**3½ h.p. Twin Matchless Motor Cycle**, 3 speeds, free 2 engine clutch, kick starter, countershaft, new tyres, lamps, and horn, in excellent condition, very fast and flexible; price £38.—John O. Beadle, Ltd., Motor Engineers, Dartford. [0827]

## Minerva.

**MINERVA**, 4 h.p., with sidecar, £17, in splendid condition, just overhauled; photograph sent.—Bevis, 183, Baylye Rd., West Kensington. [8038]

**MINERVA** Lightweight Motor Cycle, good condition, mag. ignition; sacrifice £8/10, or nearest offer.—H. Peters, 83, Hill Cottage, Strand-on-Green, Chiswick. [X3553]

## Moto-Reve.

**MOTO-REVE** 2½ h.p. Twin, in splendid guaranteed order throughout, practically as new, little used; going cheap, a bargain.—Cross, 94, Heath Rd., Twickenham. [8125]

## Motosacoche.

**MOTOSACOCHE** 1913 Twin, 3½ h.p. M.A.G., Enfield gear; 27 gas.—Troward, 78, High St., Hampstead. [7763]

**MOTOSACOCHE**, 3½ h.p., perfect order, enamel and plating unmarked, M.A.G. engine, Enfield 2-speed, Bosch waterlight, P. and H. head lamp, accessories; £35.—14, Dodbrooke Rd., West Norwood. [8169]

## New Hudson.

**NEW HUDSON**, 1915, 2-stroke, as new, not run 500 miles, all on; £22, offers considered.—181, Hyde Park Rd., Leeds. [X3572]

**NEW HUDSON**, 1915, 2-stroke, 2-speed, very little used; £30, or nearest offer.—Sub-Lieut. Simons, Aerodrome, Chingford. [7988]

**NEW HUDSON** 1915 6 h.p. Combination, hood, all accessories, very little used, in perfect order; £65.—Colmore Depot, 261, Deansgate, Manchester. [8084]

**1915 3½ h.p. New Hudson**, coachbuilt sidecar, 3-speed gear box, new condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0821]

**NEW HUDSON**, 2½ h.p., 2-stroke, 2-speed, 1915 model, footboards, lamps, horn, tools, in good condition; £29, or near offer.—Box 583, c/o The Motor Cycle. [X3353]

**NEW HUDSON**, 1914-15, Big Six, 3-speed, clutch, kick start, countershaft chain and belt drive, underslung coachbuilt sidecar, black and gold finish; 48 gas.—Troward, 78, High St., Hampstead. [Phone: 5392, 8200]

## New Imperial.

**1916 New Imperial-Jap**; 35 gas.—Cross, Agent, Rotherham. [X3628]

**NEW IMPERIAL**, 1915, lamps, horn; 26 gas., or offer.—322, Green Lanes, N. [8005]

**NEW IMPERIAL-Jap**, 1916 models, in stock; £38 and £44/8.—Crow Bros., Guildford. [6450]

**NEW IMPERIAL**, 1915, 2-speed; 24 gas.—Troward, 78, High St., Hampstead. [Phone: 5392, 7784]

**IMPERIAL-J.A.P.**, 1916, latest model, 2-speed, in stock; £38.—Layton's Garage, Bicester, Oxon. [X3737]

**1916 New Imperial-Jap**, purchased last January, perfect order; £32.—Parker and Son, St. Ives, Hunts. [8151]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**NEW IMPERIAL**, 1915, 2½ h.p., 2 speeds, excellent condition, £28; 1916 ditto, £30.—Crow Bros., Guildford. [8163]

**NEW IMPERIAL**, 2-speed, new, special bargain, £36/15 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0765]

**NEW IMPERIAL**, 2½ h.p., 2-speed, 1914, running order but not smart; £22, or nearest offer.—Layton's Garage, Bicester, Oxon. [X3738]

**NEW IMPERIAL**, latest models in stock; 2-speed, also kick-starter hand-controlled clutch models.—P. J. Evans, John Bright St., Birmingham. [X3657]



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## MOTOR CYCLES FOR SALE.

## New Imperial.

**NEW IMPERIAL-Jap**, late 1914, 2½ h.p., 2-speed, head light, electric tail lamp, splendid running order; price £25.—P., 29, Church St., Fenny Stratford, Bucks. [8088]

**NEW IMPERIALS**, the handy lightweight, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## New Ryder.

**1915 New Ryder**, 2-speed; £26.—Troward, 78, High St., Hampstead. [Phone: 5392, 8201]

## Norton.

**1916 Nortons** in stock.—Parker and Son, St. Ives, Hunts. [8147]

**NORTON** 1916 Big Four Combination, indistinguishable from new, speedometer; £70.—6, Warren St., London. [8203]

**OCTOBER** (1915), 3½ h.p. Norton, 3-speed hub model; owner going to the front; £50, or nearest offer.—Seldon, 3rd Batt., Gloucester Regt., Milsed Camp, near Sittingbourne. [X3085]

## N.S.U.

**3 h.p. N.S.U.**, 2-speed, free engine, new Dunlop tyres, £15.—Dale, Glen Terrace, Chester-le-Street. [X3649]

**3½ h.p. N.S.U.**, single-cyl., 2-speed gear, m.o.v., recently overhauled; £15, or offer.—J. Palmer, Etou College, Windsor. [8037]

**N.S.U.** 1914, 6½ h.p. 2 speeds, free engine, kick start, and sidecar; £10.—Whalley, 19, St. Paul's St., Low Moor, Caldwor. [X3671]

**N.S.U.** 5-6 h.p. 1909 Twin, 2 speeds B. and B., Bosch, machine been overhauled; £18; exchanges entertained.—Full particulars, Box 602, c/o The Motor Cycle. [X3508]

## P. and M.

**P. and M.**, 3½ h.p., wicker sidecar, splendid running order; £30; trial.—Williams, Hnrrage, Romsey. [7608]

**1914 P. and M.** and £15/15 Mills-Fulford sidecar, perfect, all accessories.—H. Blackburn, 13, Bradford Rd., Brighouse. [X3359]

**1914 3½ h.p. P. and M.**, 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [0721]

**P. and M. Combination**, 3½ h.p., condition as new, speedometer, lamps; great sacrifice, £32; enlisting.—Roberts, 20, Belmont Park, Lewisham, S.E. [8030]

**P. and M.**, 1908, 3½ h.p., 2-speed, renovated by makers 2 years ago, scarcely used since, splendid order; offers.—Bandmaster Ellis, Glencorse Barracks, Milton Bridge, Midlothian. [X3602]

**P. and M.**, 1912, 3½ h.p., 2-speed gear, new coachbuilt sidecar, full outfit, in good condition; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7990]

**1914 3½ h.p. Phelon and Moore**, 2-speed gear, kick start, chain drive, Lucas lamp set, 1 gn. horn, Cowey speedometer, excellent tyres, engine guaranteed perfect; £42/10.—Robinson's Garage, Green St., Cam bridge. [8048]

## Peugeot.

**PEUGEOT**, 3½ h.p., free engine, Bosch, B. and B., good condition; £22.—23, Queen's Rd., Loughborough. [X3675]

**PEUGEOT**, 4½ h.p., 2-speed, Bosch mag., B. and B.; £12/10.—Grove, 224, Fore St., Upper Edmon-ton, London. [8036]

## Premier.

**PREMIER**, 4 h.p., 2-speed, free engine, starter, excellent condition; £18.—18, Talford Place, Peckham. [7986]

**1914 3½ h.p. Premier**, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

**3½ h.p. Premier** and Sidecar, 2 speeds, kick start, 2 lamps, horn, and tools; £25, bargain.—Earl, 5, Heath St., Hampstead. [X3748]

**PREMIER**, 1914-15, 3½ h.p., Bosch, 3 speeds, like new; £33/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town Station. [8179]

**PREMIER**, 1915, 4 h.p., 3-speed countershaft, £72 combination, short tip, lamps, splendid condition; £48, offers.—309, Sydenham Rd., Sydenham. [7912]

**PREMIER** 2½ h.p., 1914½, free engine, P. and H. lamps, an exceptionally fine specimen, perfect condition throughout; £25.—H. Ikin, Tarnin, Chester. [X3700]

**PREMIER** 2½ h.p. 4-stroke Lightweight, excellent condition, well tyre, lamp and horn, thoroughly recommendable machine; £20; approval.—Layton's Garage, Bicester, Oxon. [X3622]

## P.V.

**P.V.** Combination, spring frame, 1913, 5-6 h.p. J.A.P. engine, 3-speed Armstrong gear, coachbuilt sidecar, all accessories, good condition; rider called up; offer cash or terms.—R.L.J., 38, High St., Teddington. [8042]

## Quadrant.

**QUADRANT** 4 h.p. Combination, 2-speed, Lucas lamps, mechanical horn; £35.—36, David Lane, Shadwell, E. [8085]



## MOTOR CYCLES FOR SALE.

## Radco.

**RADCO**, 2½ h.p., perfect order, practically new; bargain, £20-14, Doddbrooke Rd., West Norwood. [8170]

**RADCO**, 1916, complete; £17, cost £27/15; splendid condition.—Perrin, 6, Etna Rd., St. Albans. [8065]

## Rex.

**REX**, 5-6 h.p., Bosch, clutch, run on paraffin, very powerful; £12/10.—J. Pearce, Woodmancoote, Cirencester. [7971]

**LATE** 1912 5-6 h.p. Rex Twin, coachbuilt sidecar; £32/10; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0824]

**REX** (late) Coach Combination, 5-6 h.p., mag., 2 speeds; £25.—Wandsworth Motor Exchange, Elmer St., Wandsworth Town Station. [8180]

**REX**, late 1913, twin, 6 h.p., 2-speed, free engine, coachbuilt sidecar; no reasonable offer refused.—Stone, 158, Shaftesbury Av., W.C. [7928]

**3½ h.p.** Rex, 2 speeds, mag., B. and B., variable, fine 2nd order; bargain, £12/10; also 1½ h.p. Amac, 15/-.—M.H., 1, Acuba Rd., Earlsfield, S.W. [7942]

**REX**, 3½ h.p., mag., B.B. lamp, horn, very good tyres and belt, £7/10; or exchange lady's push bike and cash.—274, Derby Rd., Chesterfield. [X3597]

**REX** 1912 6 h.p. Combination, 2-speed, 1916 cylinder and piston, new heavy Dunlops, 75/- lamp outfit, accessories; expert examination invited; £30.—Collins, 192, Windmill Lane, Smethwick. [X3687]

**REX**, 5-7 h.p., T.T. 1912, in new condition and perfect running order, tyres and belt practically new, plate clutch, handle start, all accessories, fast; £27.—14, Doddbrooke Rd., West Norwood. [8166]

## Rex-Jap.

**REX-J.A.P.**, 1913, 6 h.p., 2 speeds, free, handle, Terry's, Badcock's, Amac, lamps, horn, Watford, perfect, with wicker sidecar; £30.—North Oxford Motor Works, 61, Woodstock Rd., Oxford. [X3668]

**1912-13** Rex-Jap, 8 h.p., 2 speeds, handle starting, gear overhauled by makers, receipt shown, new piston, rings, big-end, pulley, and extra heavy Dunlop, coachbuilt sidecar, £35, or close offer; 6 h.p. J.A.P., new piston, rings, big-end, £12.—R., 3, Vilette Brook St., Sunderland. [X3686]

## Rover.

**ROVER**, 1914, 3½ h.p., 3 speeds, Sturmer-Archer, excellent condition; £35.—P. J. Evans, John Bright St., Birmingham. [X3655]

**ROVER**, 1914, late, 3½ h.p., 3-speed clutch model, in excellent condition, lamps, etc.; 36 gns.—Longman Bros., King St., Acton. [7752]

**ROVER**, 1914, 3½ h.p., 3-speed and clutch, speedometer, Pillion seat, etc.; £38.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

**ROVER** Motor Cycles, 3-speed countershaft models, in stock for immediate delivery; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [7936]

**ROVER**, 1912, 3½ h.p., free engine, 3 speeds, good condition; £28, or exchange higher power.—E. Burnham, Orchard Grove, Chalfont St. Peter, Bucks. [8119]

**8 h.p.** Rover Sporting 2-seater, mag., Zenith carburettor, gate change, hood, lamps, shock absorbers; bargain, £45.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X3697]

**ROVER**, 2½ h.p. Peugeot engine, Palmer cord back tyre, new belt, and Hellesen battery; absolute bargain, room wanted, £5.—Clark, Garage, Long Melford, Suffolk. [8106]

**ROVER**, 1914, 3½ h.p., T.T. model, an exceedingly fast and well-preserved machine, good in every way; approval with pleasure; £36, bargain.—Layton's Garage, Bicester, Oxon. [X3623]

**1914** Rover and Canelet Sidecar, wind screen, Sturmer-Archer 3-speed, new extra heavy Dunlop tyres and belt, tools, accessories, spares, excellent condition, little used owing to war; £50.—35, Ashurst Rd., North Finchley. [7981]

**THIS** Week's Bargain.—3½ h.p. Rover combination, guaranteed perfect, 3 speeds, clutch, all accessories, unused last 14 months; any trial 3 up any hill in Derbyshire; must sell instantly; £36 secures, no offers.—Brown, Gloucester Rd., Chesterfield. [X3644]

**ROVER**, 3½ h.p., early 1915, 3-speed Sturmer-Archer, Phoenix sidecar, lamp, tools, all spares, in perfect running condition, just overhauled, new tyres, belt, only done 4,000 miles; a genuine bargain, owner joining army, £42, all complete.—C. Charles, 6, Regent Parade, North Finchley, N. [7940]

## Rudge.

**1912** 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

**1913** Rudge Multi, with new belt and good tyres, Lucas 25/- horn; £23.—Walker, Fishburn, Ferryhill. [X3648]

**3½ h.p.** I.O.M. Rudge Multi, fast machine, fitted with all accessories; £49.—Vauchope's, 9, Shoe Lane, London. [8059]

**1914** T.T. Rudge, very fast, and perfect mechanical order; sacrifice £29.—P. Riddelsell, Boxford, Suffolk. [8138]

**RUDGE** Multi, 5-6 h.p., new 1914, recently overhauled, new belt, picked engine; £38.—H. Cooke, 97, Lichfield St., Tamworth. [X3632]

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## Rudge.

**1914½** Rudge Multi, clutch, pedal start, foot oiler, speedometer, spare valves; £30.—Armstrong, 17, Carlton Terrace, Spennyngmoor. [X3604]

**RUDGE** Multi, 5-6 h.p., with Victoria coachbuilt sidecar, all tyres new, lamps, horn, speedometer, good condition.—H. Cotton, Goulceby, Louth. [7964]

**3½ h.p.** Rudge Multi, Mills-Fulford cane sidecar, mile-2 age 6,000, complete with accessories; 37 gns.; appointment.—Alva Cottage, Ashford, Middlesex. [7951]

**RUDGE** Multi, 5-6 h.p., coachbuilt sidecar, excellent condition; £44, bargain; seen by appointment.—Webb, 2nd Lt., R.(F.)R.E., Pier Rd., Gillingham, Kent. [7929]

**1915** Rudge Multi, 3½ h.p., delivered August, done 600 miles, Millers' lamp and horn complete, unpunctured; nearest £46.—The Garage, Whitland, S. Wales. [7518]

**RUDGE**, late 1912, T.T. in excellent order, long exhaust, lamps, and horn; £20.—Longman Bros., King St., Acton. Phone: 1578 Chiswick. Rudge specialists. [8181]

**RUDGE** Multi, 3½ h.p., T.T. model, actual winning machine of last Senior Tourist Trophy Race, in splendid order, 60 m.p.h. guaranteed; £50.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

**1914 3½ h.p.** Rudge Multi, new Montgomery sidecar, in perfect condition; would exchange for a good 6 or 8 h.p. Indian or Excelsior, or any other good make, and cash adjustment, or a good motor and car suit grocer.—G. J. Jones, 13, Broad St., Blaenavon. [X3356]

## Scott.

**COLMORE** Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

**SCOTT**, 2-speed, free engine, T.T. powerful; £25.—S. Sgt. Wareham, Highwood School, Brentwood. [8095]

**SCOTT**, 2-speed, kick start, needs adjustments; sell, or exchange lightweight.—A. C. Walker, 2, Lvall Mews, Eaton Sq. [8212]

## Shaw.

**SHAW**, 3½ h.p., good running order; bargain, £10.—A. Simpson, Threlkeld, Penrith. [X3550]

## Singer.

**SINGER**, 1½ h.p., Bosch mag., B. and B. carburettor, new back tyre and Service belt, just overhauled, re-bushed, grand order throughout; £12.—Clark, Garage, Long Melford, Suffolk. [8107]

## Simplex.

**1915½ 2½ h.p.** 2-stroke Simplex and coachbuilt sidecar, 3-speed, clutch, kick starter, good condition, Lucas lamps, etc.; £35.—Powell, 105, Carpenter Rd., Lozells, Birmingham. [X3614]

## Sun.

**SUN**, 2-strokes; all models from stock from £29/10.—Colmore Depot, 261, Deansgate, Manchester. [0828]

**COLMORE** Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [0807]

**SUN** 2-strokes, 1916 models, single and 2-speeds; delivery from stock.—Jackson Wright, 10, Pudding Chare, Newcastle-on-Tyne. [6611]

**1916** Sun-Villiers, 2-speed, Lucas lamps, run about 500, perfect; £30, or near; ride about 20.—Kilby, Union St., Farnborough, Hants. [8069]

## Sunbeam.

**SUNBEAM** New 1916 3½ h.p. 3-speed model in stock.—Moss, Wem. [X3710]

**SUNBEAM** 3½ h.p. Combination, April, 1916, 500 miles only, condition as new, full accessories; £87.—Dr. Morris, Infirmary, Bristol. [7969]

**1916 3½ h.p.** Sunbeam Combination, fitted with Lucas lamps and horn, latest improvements, new February; bargain, £85.—747, Washwood Heath Rd., Birmingham. [X3522]

**SUNBEAM**, 6 h.p., 1915, delivered July, with 17 gn. sidecar, lamps, horn, and spare, excellent running order; £85.—Caines, Renscombe, Worth, Lington Matravars. [8080]

**SUNBEAM**, 1914, 3-speed, 3½ h.p., with sidecar, Lucas lamps, horn, spare valve, chain and tyre, purchased in 1915, and not much used; £49, no offers.—Pardy, Mus. Bac., Beethoven House, Wolverton Av., Kingston-on-Thames. [7905]

**3½ h.p.** Sunbeam, latest pattern, black and gold finish, 32 with Mills-Fulford coach Skiff sidecar, apron and mat, Lucas black lamp set, Lucas rear lamp set and 1 gn. horn, ridden 100 miles only; £87.—Robinson's Garage, Green St., Cambridge. [8047]

## T.D.C.

**T.D.C.**, 1915½, 2½ h.p., 2-stroke, 2-speed, pan saddle, Lucas head and rear, will take light sidecar, what offers?—N., c/o Brewster's Library, Pinner, Middlesex. [8023]

## Triumph.

**TRIUMPH**, 3½ h.p., T.T., good condition; £17.—K., 40, Adelaide Rd., N.W. [8032]

**3½ h.p.** Triumph Motor Cycle and sidecar; £14/10.—9, 32 Waldegrave Rd., Teddington. [8028]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## The Noise of Motor Cycles.

**A** FACT which one cannot fail to observe is that present day motor cycles are, with few exceptions, no quieter than they were a few years ago. The Government orders on the subject and the outcry against noisy machines prior to the war will be fresh in our readers' memories. As a climax to the general complaints, an Order was laid down that no cut-outs should be used on motor cycles, nor should the exhaust be allowed to enter the air without first passing through an expansion chamber. Where the Order failed, however, was in the introduction of the personal factor in determining a noisy or quiet motor cycle. It will be recalled that the Order leaves it to the police to decide whether a motor cycle is noisy or not, and as the opinions of policemen are widely divergent, it is not surprising that in some districts the utmost laxity prevails, whereas in others the police are correspondingly severe.

We have surely reached a stage at which a silent motor bicycle is not a difficult problem. We are possessed of magnificent engines, in which we can afford to sacrifice a small degree of efficiency in order to obtain silence of running. Our opinion is that nothing is more impressive or more likely to attract new converts to the pastime—when happier days return—than the sight of a practically noiseless machine flitting along the road. We realise that an absolutely noiseless mount might be a danger on occasion, though this point is, to our mind, greatly exaggerated. Cars which make no noise at all, and which occupy ten times the amount of room on a road that a motor bicycle does, and, therefore, constitute a much greater danger—if silence spells danger—exist in thousands.

The purpose of this article is to appeal to those motor cyclists who appear to take a delight in rousing the countryside to have a little more respect for other road users' feelings, and conform strictly to the letter of the law. If they fail to do so spontaneously, it is certain that it

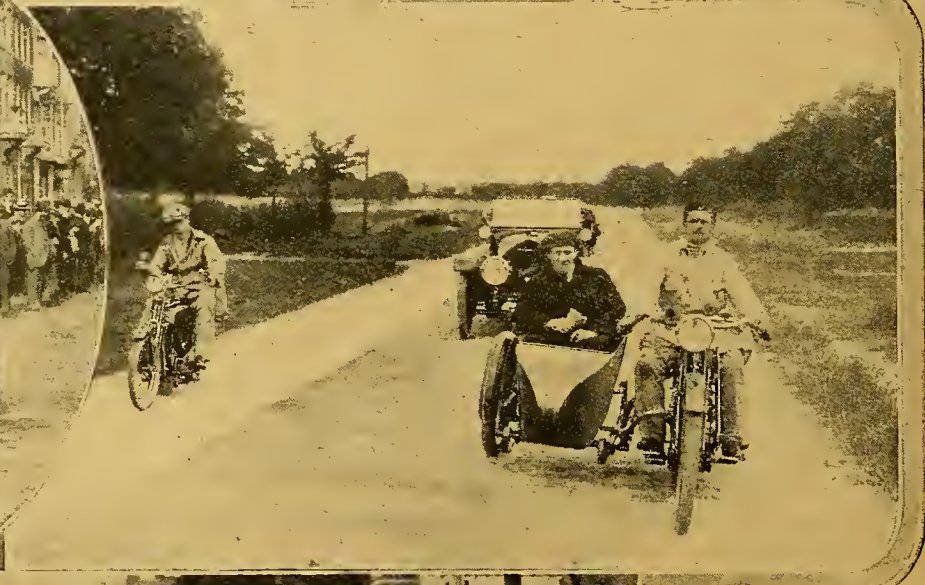
will not be long before legislation of a much more severe nature will be introduced. It is, therefore, in motor cyclists' own hands to decide whether they will continue to ignore restrictions and use semi-open exhausts and silencer cut-outs and thus bring about stricter regulations.

## A Reduced Supply of Petrol.

**M**ANY of our readers have apparently misunderstood the work and actions of the Petrol Committee. The work of the Petrol Committee has been to find out how much petrol is available, and this has now been done. Motorists who were owners of motor vehicles actually in use were asked to fill in certain forms on which the amount of fuel in hand and the quantity required was stated. It was pointed out that if the forms were not sent in no fuel would be supplied to the motorist who did not comply with the request. Numerous readers of *The Motor Cycle* for reasons, some good and some bad, omitted to fill up and send in these forms, and now write to ask us what they ought to do, while others who are equally ignorant of the procedure have bought new machines since the order came into force. Our advice in both cases is that the motor cyclist should write to the secretary of the Petrol Committee at 19, Berkeley Street, London, fully and clearly stating his case, and enclosing a filled up form, and on no account omitting to mention the use to which he intends to put his machine. Petrol cards or tickets will be obtainable on August 1st, and will be available for six months in the case of medical men, four months in the case of commercial users, and three months in the case of private owners. Each licence will fix the quantity of spirit which the licensee may obtain per month, and the additional war tax (6d. per gallon) must be paid in advance. *We hear it rumoured that only 25% of the amount asked for will be granted.* Motorists, therefore, must not be misled by the incorrect statements in the daily press a day or two ago.



# SCENES IN THE DUTCH MOTOR CYCLE CLUB CHAMPIONSHIP.



THE CLUB  
CHAMPIONSHIP OF  
THE DUTCH M.C.C.  
HELD RECENTLY.

EIGHT TEAMS TOOK  
PART. AND EACH  
TEAM CONSISTED  
OF TWO SOLO  
MOUNTS AND ONE  
PASSENGER  
OUTFIT.



(1.) On the road.  
Note the special bicycle  
path on the right.

(2.) Some of the  
passenger machines on  
a slight gradient.

(3.) Mr. K. Witte-  
veen on a James sidecar  
outfit at the start in  
Amsterdam.

(4.) A good stretch  
of open road.

(5.) The South  
Holland team, who  
came through the trial  
without losing marks,  
and so won the cham-  
pionship.



# Occasional Comments by "Ixion"



## Reliability.

Since 1916 opened I have driven various machines a total of just on 5,000 miles with no other troubles than periodic decarbonisations and a few sooted plugs, so far as honest road work is concerned. If I have experienced a few other troubles, they have been exclusively ascribable to experimental work with special trial fittings. I have neither had a puncture nor choked a jet, and I have grown so careless that I have not infrequently tackled a longish run without so much as a spanner and a spare plug, a belt fastener, or a tyre outfit on board. If these lines should happen to catch the eye of some whilom enthusiast who has spent the last five or six years in some unrideable colony, I wonder whether he will believe them.

## Enclosed Chain Drive.

I quite agree with Mr. H. M. Batten that enclosed chains are infinitely preferable to open chains. I should, however, add a very big "but," and my "but" should be taken as possibly a more valid reason for the common dislike of such designs than the isolated cases of broken chains jamming inside chain cases which Mr. Batten cites. It is that some chain cases on the market are of simply atrocious design. It is extraordinarily difficult to open them up for access to the chain, and usually more difficult to replace them. I have tested many kinds, and there are few on the market which I prefer to an open chain. The split cast aluminium case, which Mr. Batten votes for, is obviously the goods for the front chain, and ought to be universal. The designing of the rear case is the rock on which many makers encounter shipwreck.

## Belt-rim Brakes.

I never thought I should write a word against the belt-rim brake, and I may yet have to withdraw the hint I now offer. The belt-rim brake has always appealed to me as the simplest, most foolproof, most reliable, and easiest adjusted brake it was possible to apply to a motor cycle. But after years of aversion of the band brake, and even greater aversion of the concealed internal expander, I have been driving an external band of modern design, and it has proved a revelation. When I first needed it, I needed it very badly. I had foolishly counted on finding a lonely hill deserted, and was sliding down much too fast when I met a herd of bullocks, jammed between hedges on a very bad corner. I crushed on the band, expecting to feel the usual stagger of the hind part of the machine, and to experience something of a dry skid, possibly mild, possibly demanding much resistance on my part. Not a bit of it. The machine slowed down perfectly smoothly without a wobble or a protest. I held my pen in leash for a thousand miles, expecting chatter, glazing, or adjustment difficulties to crop up in due course; but so far they have not appeared, and as I ride other machines with belt-rim brakes "in between whiles," as the cumbrous colloquialism goes,

I have every chance to muse on the merits of the other type. I look like revising one of my sturdiest allegiances.

## Everybody Using Mixtures.

I made a long trip last week, and took the opportunity of consulting many garage owners on the fuel question. They testified that most motor cyclists now call for the petrol-paraffin mixture, and many who only kept a nominal quantity of paraffin in stock in the old days have laid in a big cask or drum of a high-grade brand. They agree that the north-country riders are specially fond of the mixture—canniness being a typical north-country virtue—and say that many Lancashire and Yorkshire owners used to demand paraffin before the war. A north-countryman informs me that he has used equal parts of petrol and paraffin for years on his Clyno sidecar outfit, but that the petrol now sold is not good enough to stand so large an admixture of heavy fuel, so he is fitting a Binks carburetter. For myself, I am going one better, and using Binks fuel neat, after starting and warming up my engine. By the way, I have a correspondent who is evidently an old Parliamentary hand, accustomed to resurrect bygone speeches of ministers against them; for he sends two of my paragraphs, one of which is a note on top feed carburetters, whilst the other describes how I unscrew my carburetter lid to insert the starting dose of petrol. In future I shall append a footnote to all my paragraphs, explaining that I have at present three machines in my shed, and ring the changes on seven different carburetters. Lest I be next attacked for unpatriotic extravagance, let me hastily add that two of the mounts are trade loans.

## A SERVICEABLE AND NEAT HAT FOR LADY MOTOR CYCLISTS.

This most becoming headgear is known as the Reta.



The upper illustration shows how it is worn in fine weather with the peak turned up and the back flap folded. In heavy rain the back flap and front peak come down and an elastic chin strap secures the hat firmly to the head. A lady reader who has tried the Reta hat is most enthusiastic about the neat manner in which it left her hair. It is sold by Mr. E. Harrison, 41, The Grove, Hammersmith, London, W.





## THROUGH FEMININE GOGGLES.

**M**OST lady motor cyclists' earliest experiences are obtained on a low-powered lightweight, and rightly so. After one is familiar with the driving and controls of the lesser machine one may captain a high-powered mount. I am, personally, no believer in tackling a 6 h.p. or 8 h.p. machine without first having well passed the initial stages. It is rash to trust to one's hand or foot finding the clutch when in a tight corner, or to trust to luck in an emergency. For the past week, thanks to the courtesy of Messrs. Humphries and Dawes, of Birmingham, I have had one of the open-framed O.K. Juniors at my disposal. The machine in appearance is most dainty, enamelled black and green with smart lines, the low open frame giving ample room for ordinary skirts. The tiny engine of 2 h.p. is fitted with an overhead inlet valve and Amac carburetter, while a two-speed gear box is provided. The detail work is remarkably good throughout, roomy foot-boards with raised ends to protect the boots, two really efficient brakes and wide comfortable handle-bars. Makers of ladies' mounts often make the mistake of fitting impossible upturned bars, which render the steering awkward and sometimes difficult. A priming tap to ease starting, should it be required, is fitted, and a well-made guard over pulley wheel and belt. The chain from the engine to the countershaft is also



## A TRIAL OF A LADY'S O.K. JUNIOR.

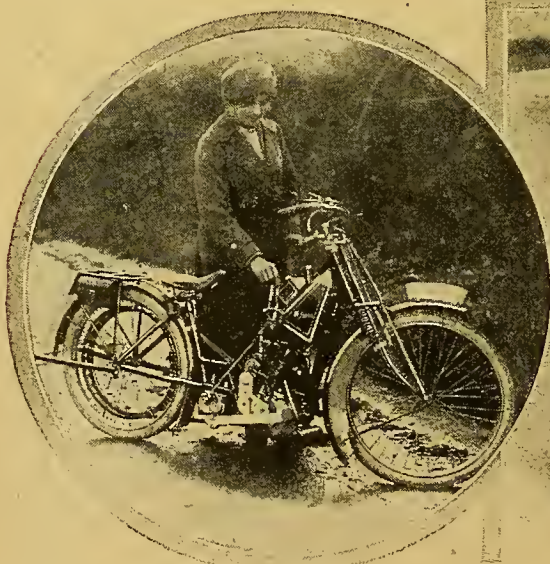
enclosed. I looked round the machine, noting these details with satisfaction.

### On the Road.

As there was neither handle nor kick-starter, I put the gear lever into the low position and ran a few yards to see what happened. The engine commenced to fire immediately, so pulling up I stepped across the tiny frame and paddled away with ease. For a hundred yards or so the engine misfired whilst I manipulated the throttle levers to find the correct mixture. This was soon determined and away we went, the tiny power unit firing merrily. I turned the machine in the direction of my favourite test hill, a gradient of 1 in 8, with a sharp curve at the bottom to prevent a rush. The engine ticked over at fifteen miles an hour for the lower part until the increasing rise called for the low gear, and on this we sailed easily over the summit. This was quite good for the baby engine, and the makers are to be congratulated upon placing on the market such an eminently suitable mount for the beginner—low, comfortable, and withal possessing so many practical features.

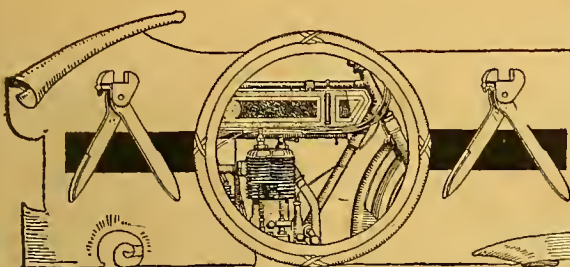
MAY WALKER.

[Details of the O.K. Junior were given in *The Motor Cycle* for May 18th, pages 467-8. The engine is a single-cylinder M.A.G., 64 x 77 mm. bore and stroke, 248 c.c.—Ed.]



On the road with a lady's model O.K. Junior. Note convenient position of change speed lever (left) and dress guarding (right).





## HINTS FOR BEGINNERS.

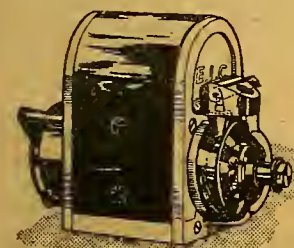
### TUNING THE POPULAR LIGHTWEIGHT TWO-STROKE.

(The previous instalment appeared in the issue of June 22nd, pages 576-577.)

#### Overhauling the Magneto.

Next transfer your attention to the magneto. The high-tension wire leads to a carbon brush, which in turn presses lightly upon a brass ring. The carbon brush is housed in a vulcanite carrier, which in some instances is screwed into the magneto casing from the outside, while with others it is carried inside one of the end plates. In the first instance, detach the high-tension wire from the magneto terminal, and then unscrew the vulcanite carrier, using the fingers only, as should pliers be used there is every possibility of a breakage. Now take a pencil and wrap a clean piece of rag round it, dip it in petrol, and insert it through the hole, and revolve the magneto by hand, pressing the pencil and rag down upon the ring while doing so. This will quite clean out any foreign matter that may be lodged there. Now, by lightly turning to the left, remove the carbon brush from its housing, and look at the end that was in contact with the ring, and if at all shiny pass a smooth file across it once or twice, or draw it lightly across a piece of fine emery paper. Now take a piece of rag and twist it round until it is small enough to pass inside where the spring and carbon brush go; this is brass tubing, and will be benefited by a wipe out with this piece of rag dipped

in petrol. Replace the brush and afterwards its housing by reversing the order of withdrawal. In the case where the high-tension wire is carried through the cover at one end, remove the two holding down screws, when the cover will become free, and can be lifted off. The carbon brush will be found inside the cover, and the procedure may be exactly

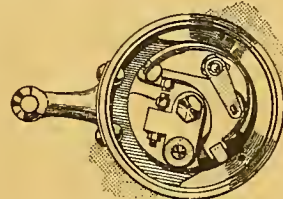


Sectional view of driven end of magneto showing arrangement of high-tension pick-up carbon brush and slip ring.

as before, except that matters are simplified owing to a greater amount of the slip ring being visible and much more accessible.

Now remove the contact breaker cover, when it will be found that in most instances the whole contact breaker can be removed by simply withdrawing the centre screw; having done this remove the carbon brush that will be found on the back and treat this as you did the other one, but before replacing attend first to any adjustment that may be necessary. To do this, first remove the rocker spring at one end only; this will enable the rocker to be lifted off. It will

then be an easy matter to pass a smooth file across the platinum points, and so remove any uneven places or pitting that may be there. Next examine the fibre block at the end of the rocker, and if this shows signs of wear it is very easy to renew it. First remove the old fibre and keep it as a pattern, and then procure an ordinary fibre brake block of the red variety as fitted in cycle brakes. Dry this thoroughly in front of a fire, especially if you suspect it of being damp, and when quite dry cut another to your pattern but slightly deeper to allow for the wear on the old one, then place it in position, seeing that it is a tight fit; when properly secured, finish off the part that comes in contact with the cam with a file or emery paper. This has been a complete success in my case in three instances. Having done this, it will be necessary to readjust the points; having replaced the rocker and spring, put the contact breaker in position on the magneto again, seeing that the centre or holding on screw is done up securely. Now revolve the shaft slowly until the rocker is lifted on to the cam, and by means of a magneto spanner screw up the adjusting screw until the platinaums are so far apart that the gauge on the spanner will just pass through, when you may screw up the locking nut, and all should be well.



Contact breaker and segment sleeve.

#### Timing the Ignition.

The magneto can now be replaced and timed. To do this proceed as follows: place the magneto upon its platform, but do not screw the fastenings up too tightly at first, as the chain will have to be adjusted; now retard the magneto as far as possible, turn the magneto shaft round until the platinum points are just about to open, next bring the piston to the top of its stroke, and then couple up with the chain, which should have previously been removed from the paraffin and wiped quite clean. Adjust the chain so that there is no slack in it, but avoid tightness. It is as well to turn the engine over until the chain has moved right round its length, meanwhile feeling the chain to discover if there are any tight places in it; if so, adjust the chain when in its tightest position, and then screw the fastening nuts of the magneto firmly home. Finally dress the chain with good lubricating oil and replace the cover. In the case where there is fixed ignition, the position I favour most is



**Hints for Beginners.—**

with the points about to break, and the piston within  $\frac{3}{16}$  in. of the top of the compression stroke.

The next item to receive attention will be the sparking plug. It will be as well to give this a good clean out by turning it upside down and pouring some petrol into it and working a piece of very thin wood about in all the crevices around the electrode; then shake out the petrol and see that the points are quite clean. With the two-stroke engine, I have had good results from three and four point plugs, but my best results have been obtained from the single point variety. Care must be taken that the points are not too far apart. For easy and quick starting I find the magneto gauge gives the best results; therefore I set my points so that the gauge just passes through between them; with this setting, provided other items are in order, one or two pulls of the back wheel will start the engine easily when upon the stand. Now replace the compression release after cleaning it.

**Carburetter Adjustment.**

Then as to the carburetter: this will require to be taken to pieces and thoroughly cleaned. If the carburetter is extravagant in petrol try the next size smaller in jets; this may be the means of economising and obtaining more power, but as no hard and fast rule can be followed with carburetters it is only by personal experimenting with different sized jets and varying levels that the best results can be obtained; but the main points to aim at are to use the smallest jet possible that gives even running, and to keep the level in the float chamber down as low as possible in conjunction with it. When mounting the inlet pipe on the cylinder place a brown paper washer which has been seccotined on both sides between the faces of the joint; this will prevent any chance of an air leak there. In placing the carburetter back again on the inlet pipe, see that it is perfectly straight, and placed across the machine as much as possible—that is, the float and jet chambers side by side, and not one behind the other, as when the latter is the case the



**PUBLIC SCHOOL BOYS AND "THE MOTOR CYCLE."**

Three Charterhouse boys who are keenly interested in motor cycle matters. Practical riding experience and the technical knowledge acquired by reading are the finest schools for prospective recruits in the mechanical sections of our Army.



The N.C.O.'s of E Company Heavy Section Machine Gun Corps at their training centre. Their names are from left to right: L.-Cpls. Smith, Herrick, Clegg, Williamson, Russell, Moulding, and Sgt. Maloney, on the cycle Sgt. Pye, and in the sidecar Company Sgt.-Maj. Smith.

level is constantly altering with the rise and fall of the road. Should any doubt exist as to the carburetter union being air-tight, this can be bound round with insulating tape. The petrol pipe can now be put on again, care being taken that the pipe is not bent in such a manner that the joints do not seat "squarely." Should this happen, a gradual leakage will take place.

**Don't Neglect the Bicycle Parts.**

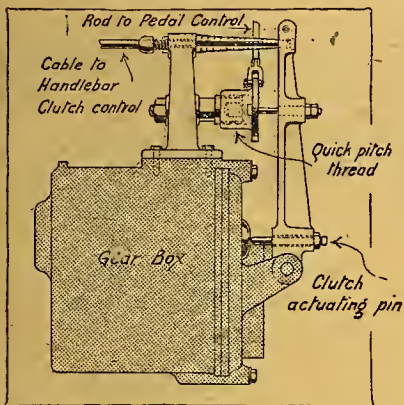
It now remains to attend to the exhaust pipe and box. These should be dismantled and scraped clear of carbon whenever possible, and made perfectly "free," as anything tending to choke the exhaust will very quickly destroy power. It is an undoubted fact that most riders, even where they give attention now and again to their engines, etc., sadly neglect the bicycle, its bearings, and various fittings. This should not be the case. The overhaul should be made the occasion properly to clean out wheel bearings and re-pack the hubs with a suitable grease, grease being better than oil, as it prevents road grit entering the bearings. See that all cones are properly adjusted, while a touch here and there with enamel will save the appearance of the machine. Also give attention to the springs and axles of the front forks, and see that they are in good order and receiving the proper supply of oil. Examine the belt and remove any pieces of flint that may be found sticking in the sides; these will, if allowed to remain, cause very rapid wear of the pulley faces. The last item, but not the least, will be the tyres. First remove all small pieces of flint which can generally be found sticking here, as these will eventually work their way through if allowed to remain and cause a puncture, besides letting the water through and ruining the canvas. Attention to this point will probably mean many more miles in the life of your tyres. Afterwards fill up all small cuts with a good tyre stopping, following carefully the maker's instructions when using it. The overhaul may now be considered complete, and the first time the machine is taken on the road again it will be a joy to hear the healthy bark of a well-tuned engine, while its old power will be there once more. After an overhaul of this description it is really wonderful how much better a rider seems to understand his machine, so that he can detect by sound almost every alteration, also its cause, should the slightest derangement take place.

ALEC. W. STANBROUGH.



## Duplicate Clutch Control for Bradburys.

THE Bradbury Co. has designed a neat duplicate clutch control, which is to be fitted to all future Bradbury models. The handle-bar control, placed to the left-hand of the rider and operating by means of a stout Bowden cable,



Plan view of Bradbury clutch control.

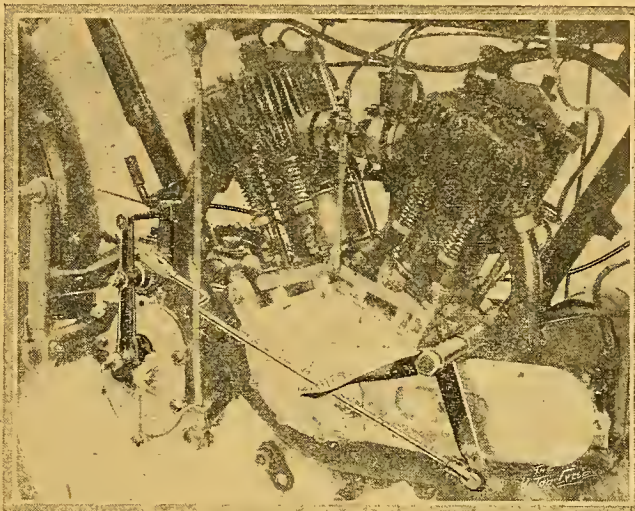
remains as before, but in addition a pedal-operated control, placed conveniently above the right footboard, is now to be included. The two controls are quite independent, and in both cases the adjustment is extremely simple.

The photograph conveys a fair idea as to the working of the pedal controls. As regards the hand control, the only alteration made is in the securing of the Bowden cable at the gear box end, so that the nipple at the end of the cable cannot disengage from the clutch actuating arm when the foot control is in use.

The pedal is of sensible dimensions, and the rod from it operates a small disc, so that when the pedal is depressed the disc rotates one quarter turn. Inside the disc is a quick pitch thread mechanism, and when the disc is turned this thread comes into engagement with a corresponding thread on the small bolt passing loosely through the clutch actuating arm, so that the small bolt tends to draw the arm inwards. At the end of this

bolt are lock nuts by which adjustment is obtained.

The device has been thoroughly tested, and works well, and the duplicate control may certainly be regarded as a very desirable refinement.



Right-hand side of Bradbury power unit, showing combined foot and hand clutch control.



R.E. DESPATCH RIDERS IN EGYPT.

In sending us this photograph Cpl. A. C. Webb has given the names of the men together with the towns from which they come. This is very interesting, as the riders come from all parts of the United Kingdom and Overseas Dominions. The names are as follow, reading from left to right :

Back row : Cpls. Knott (Fulham), de Cunha (Calcutta), Marston (Leicester), Paterson (Glasgow), Lea (Leicester), Saunders (Southampton), Butler (Kingston), Partlo (Reading), and Hinchcliffe (Sydney, N.S.W.).

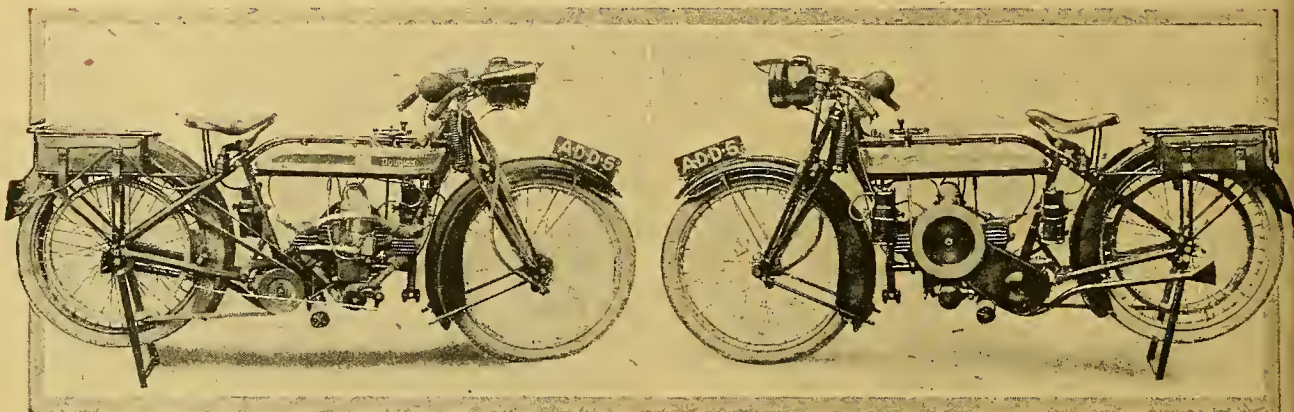
Middle row : Cpls. Thomas (Auckland, N.Z.), Clifford (Sunderland), Mattl-ows (Leicester), Webb (Coventry); Lt. Foster (Leeds); Cpls. Murgatroyd (Scarborough), Hess (Ayr), and Nicholls (Crouch End).

Bottom row : Cpls. Richmond (Chorley), Clydesdale (Belfast), and Neave (Salisbury).



## THE 2 $\frac{3}{4}$ h.p. DOUGLAS.

ONE-LEVER CLAUDEL CARBURETTER; NEW FORKS AND SILENCER.



The latest pattern 2 $\frac{3}{4}$  h.p. Douglas from the valve side.

Transmission side of the new Douglas.

WE recently had the opportunity of seeing the latest model 2 $\frac{3}{4}$  h.p. Douglas, which is so far greatly ahead of anything the Douglas firm has turned out. The machine, of course, is not ready for sale to the public, owing to the Government's call upon the Douglas factory, but some notes concerning it will doubtless be of interest.

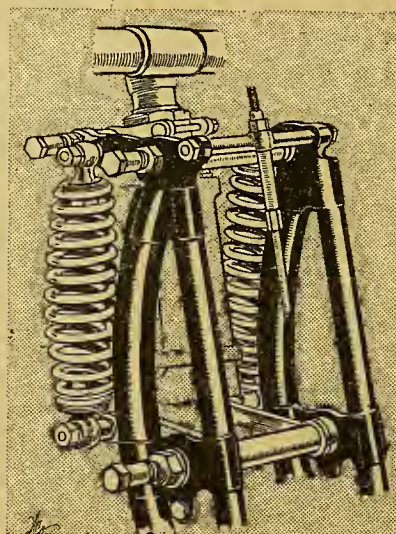
As regards general outline, the machine remains very much the same, but there are numerous improvements in detail. The oil is delivered through a sight drip feed of totally new design, the oil dripping through a pipe enclosed in a casing of cup form, the interior of which is white, and so designed that the glass cannot be obscured and the drips can be seen under all conditions.

The little engine remains much the same as when we saw it on the occasion of our last visit to the works. The compression taps in the cylinders have, however, been discarded, as they were never necessary, for no one ever wants to inject to start a Douglas. The little tap on the top of the crank case is retained for cleaning purposes.

### An Automatic Carburetter.

The most striking change of all is the fitting of a Claudel carburetter made by the Douglas Co. under licence. The single lever is an improvement of untold worth. For many years we have experi-

mented with different types of automatic carburetters on this machine, some good and others only fairly so, but the difference in running and the improvement in flexibility were so great that



The latest spring forks, showing the grease cups on the spindle ends.

we were firmly convinced, and often stated, that the automatic carburetter was the carburetter of the future. It will be noted that air is taken in warm from the back cylinder. This is a most important item, which has been much neglected by many designers.

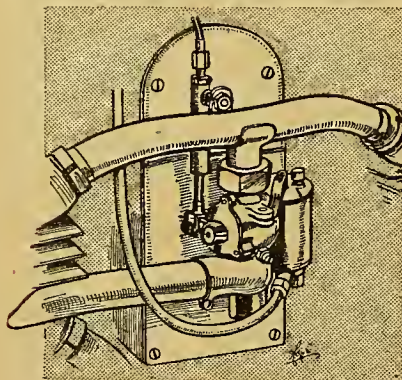
The footrests are now carried on separate lugs, so that in the case of one getting bent or broken it can be instantly removed and straightened, or replaced by a new one. The toolbags are worthy of special remark, being of large dimensions, and extending the whole length of the carrier. Straps take the place of fasteners, so that the toolbag is always secure, and there is no chance of getting the contents lost upon the road. The bags are, of course, enclosed in metal, and there is a separate compartment for spares.

The substantial mudguard is now carried well away from the saddle, so that there is ample clearance between these two points. The front mudguard has also been greatly improved by the addition of large valances. A weak feature in previous models has been the stand clip attached to the back mudguard, but this has been greatly altered for the better, and is now quite secure.

### Improved Spring Forks.

Not the least important improvement incorporated in this machine is the silencer, which is now merely an expansion chamber with a long exit pipe, fitted with a fish-tail end, which is carried well beyond the rear axle. The forks have been improved in the anchoring of the springs and the provision of stronger springs, while grease cups have been provided for every working part, which is certainly as it should be. Another good feature is the provision of a cover for the chain. The machine is, of course, fitted with a three-speed gear.

We tried the machine for a short time in traffic, and were immensely pleased with its running. We found that it could be ridden in a certain quiet square at eleven miles an hour on top speed without the engine missing, and we feel confident that this can be improved with a little further adjustment. On low gear the engine could be throttled down to such an extent that it was barely possible to balance the machine.



The one-lever Claudel-Douglas carburetter.



New Douglas lubricator and rounded tank.



# CAR OR SIDECAR?



A Comparison of the Methods of Control with the Advantage in Favour of the Car.

WITH a view to economy, there are probably many car owners who are contemplating giving up their cars in favour of sidecars. As the writer until recently was a confirmed carist, and has since had some experience of modern sidecar outfits, his impressions may be of interest to those in similar positions.

A car driver about to purchase his first motor cycle passenger machine is really much more difficult to suit than the absolute novice. This applies not only to the actual selection and equipment of the machine, but also to its care and driving. Excepting for what one may call "road-sense," the fact of having driven cars, say as the writer has done for the past ten years, is not going to help one in the least as a motor cyclist; rather the reverse. On the other hand, a car owner who has served his apprenticeship on a motor cycle will probably get on much better with a car than a novice. But this should not deter motorists from taking up the two or three-wheeler, because it is only a matter of time before one becomes as much at home on a sidecar as on a car.

## Good Equipment of Sidecar Desirable.

The former car owner will be well advised to buy an outfit the specification of which embodies as far as possible car practice. For instance, detachable wheels, three or four speeds, hood and screen for the sidecar, dynamo lighting, and foot-operated clutch are fittings that the writer would endeavour to have on any machine he was purchasing. Needless to say, all those enumerated are not absolutely necessary, but it is better to spend, say, an extra £25 on the first cost, and avoid disappointment later. Thus the writer assumes that the car owner is prepared to spend about £100-£120, and it should be stated that this article is written after experience with a couple of sidecars of well-known make, the first cost of which in each case was in the neighbourhood of £110. Some readers may ask what is the use of paying £120 for a sidecar when a good second-hand light car can be bought at a slightly bigger figure? To this the correct retort is that as regards running costs, taxation, and accommodation, the sidecar is undoubtedly the more economical.

## The First Drive.

If one has only been accustomed to driving medium-powered cars, the acceleration and hill-climbing powers of a 750-1,000 c.c. sidecar are very striking, and the former car driver should proceed very cautiously for the first few miles. On the method of clutch operation with which the outfit is equipped will depend mainly the manner in which the novice progresses on this first trip. Hand control only will be worrying, and if the

machine is so equipped the driver will be well advised to practise coming to a standstill, changing gears, etc., before occasions make such operations necessary. With a foot-operated clutch, or a dual control, one is perfectly happy. Another matter that will be found rather disconcerting at first is the two carburettor levers—one for the throttle and one for the air; likewise the ease with which the engine may be stopped accidentally! Mention of the engine reminds one that our former car driver will require a word of warning as to the inadvisability of running the air-cooled engine when the machine is stationary. Being so accustomed to running the water-cooled engine of a car for ten minutes or so in order to allow it to warm up before leaving the garage, the writer found it most difficult to avoid doing likewise with his sidecar. One feels that one has not the control over the sidecar as on a car, and one longs for an accelerator pedal and a hand throttle stop to prevent the engine stopping altogether.

## Steering and Clothing.

Regarding steering, it is only a matter of time before one becomes quite used to it. For the first few runs the sensation to the driver when he is well on the left side on an over-cambered road is rather uncanny. On the question of clothing, the car owner undoubtedly scores over the sidecarist, for, however well the motor bicycle may be mudguarded, on a long run overalls are necessary for the driver. The sidecar passenger is, of course, quite as well protected as in a car, and with a hood and screen special clothing is not necessary.

The feeling of exhilaration one gets after a run on a comfortable sidecar is quite absent after a car run, and this the writer considers is one of the charms of a good sidecar. Unless one can afford a high-powered car the three-wheeler is undoubtedly the thing. The modern car of less than 15 h.p. lacks that quick acceleration and capability of rapid hill-climbing that one obtains with an 8 h.p. sidecar.

In conclusion, the writer may say that the only difficulty he has had in changing over from a car to a sidecar has been in converting his wife to the charms of the latter. But even this has not proved insurmountable.

BLUEBEARD.

## THE EVOLUTION OF A PRIMING TAP.



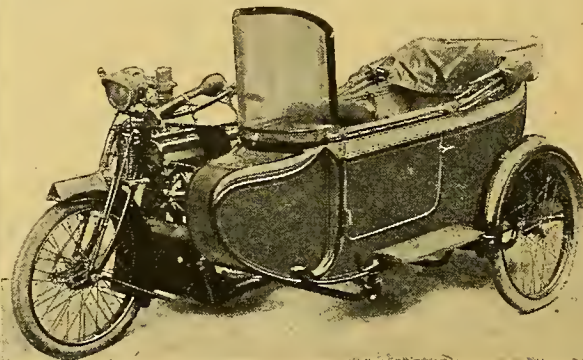
(From "Motor Cycle Illustrated" of May 11th.)



## THE SIDECAR DE LUXE.

A Special Gloria Production, excellently Designed and beautifully Finished.

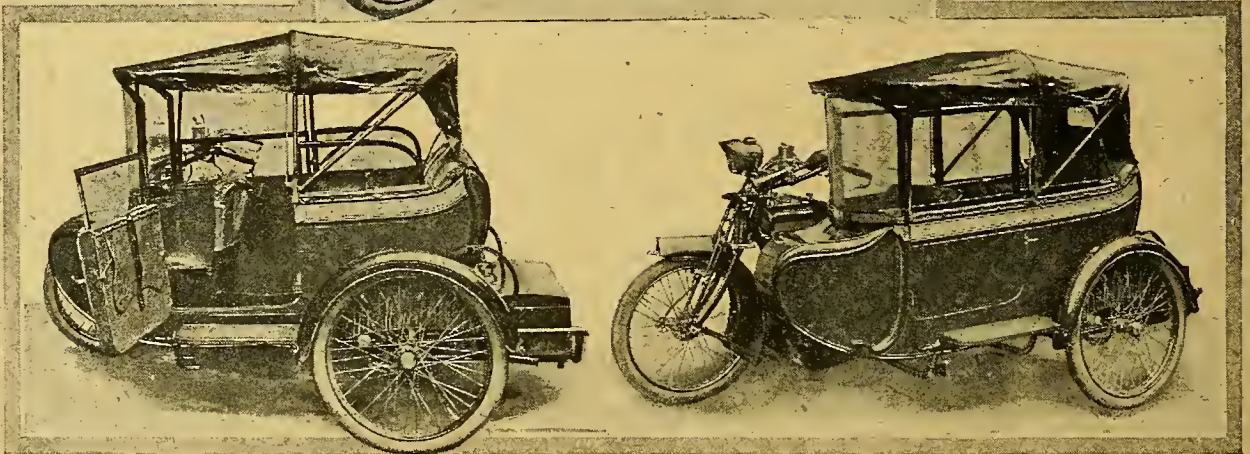
"THE sidecar is the most un-mechanical arrangement it is possible to conceive"; so say not only many owners, but even the manufacturers themselves: yet it has caught public favour. Until something as cheap to buy, as economical to run, and as handy, is produced, there is very little chance of it being aban-



similar material, is a fixture.

### Complete Protection.

With the hood and side screens in position the passengers are very efficiently protected without being in any way cramped. There is ample room in the body for the adult passenger at the same time as the front seat is occupied by a



### WEATHERPROOFNESS IN SIDECARS.

A luxurious Gloria sidecar attachment with extra child's seat in front. Complete protection from the elements is afforded.

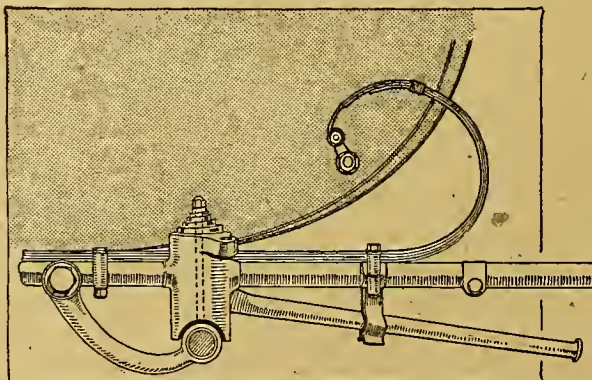
doned for a long time to come. Whatever may be said against it, at the present time the tendency with all makers of sidecar bodies is to elaborate, improve, and generally endeavour to attract attention until, as is frequently the case, even the most severe critics are won over.

One of the most ambitious designs we have seen yet is a special attachment, unobtainable by the ordinary motor cyclist, but produced specially for Mr. R. A. Tomson, manager of the Gloria Co., of Coventry. This attachment represents quite the last word in sidecar luxury. It has a large double-seated body provided with a hood, curved front screen, and folding side windows. As will be seen in the illustration, in fine weather the hood is carried neatly folded down at the back, and the side windows drop into the side panels. The front screen, which is made of transparent mica or

junior. And yet the storage room is not curtailed, there being a lock-up trap in the back of the body and a large coach-finished box mounted on the back carrier. The springing of this model has been very carefully designed, the rear being supported on large C springs, with the addition of a special Gloria shock absorber, consisting of a short pivoted arm and an involute spiral spring carrying the wheel axle. The C

springs support the body, and the spiral spring carries the frame. The front of the body is carried on a flat leaf spring set crossways in the frame. The tubular frame is extremely substantial, as also are the four connections to the motor cycle frame. A stand for the sidecar wheel is provided.

The particular model which we illustrate was finished in a rich purple enamel, with pale blue band and gold lines; upholstered in a mottled blue leather, black leather hood, and



The Gloria sidecar spring wheel has been increased in efficiency by the employment of an extra involute spring at the top.



**The Sidecar de Luxe.—**

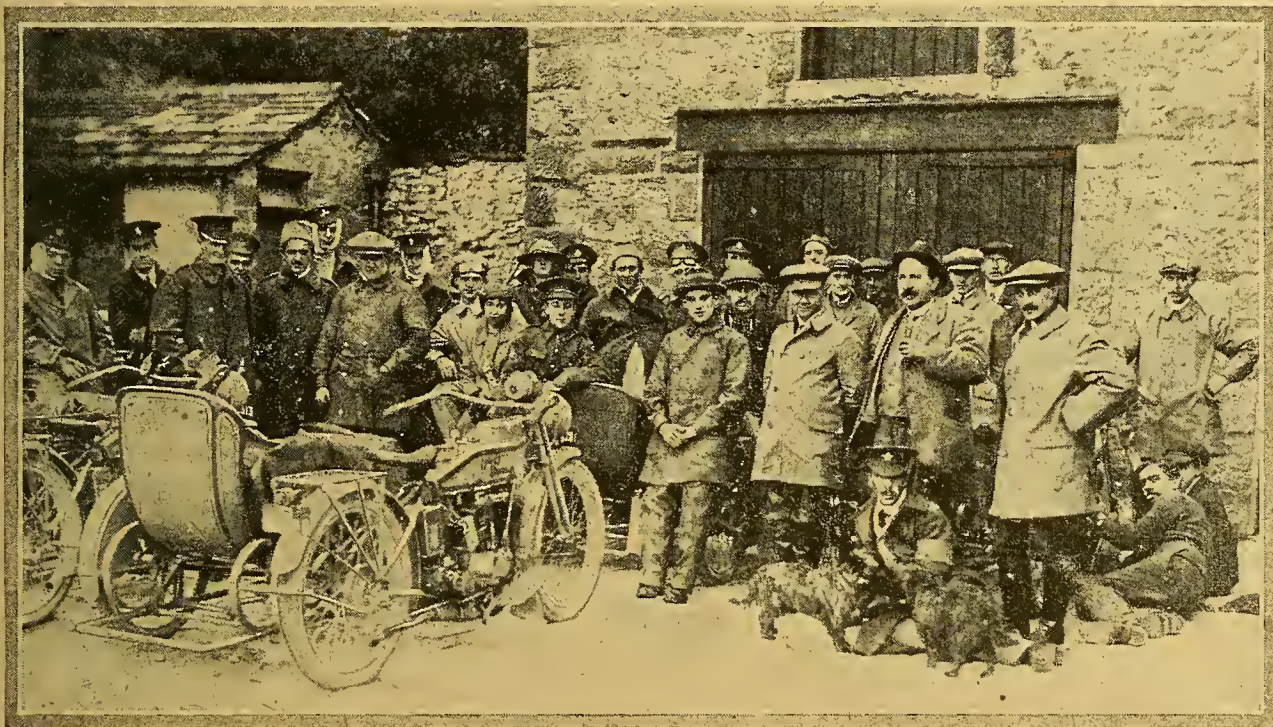
mahogany stained windscreen frames. This elaborate style, combined with a powerful motor cycle finished to match, formed one of the smartest outfits we have seen. To use an Americanism, "It is some sidecar."

Naturally, it is by no means a lightweight, the sidecar alone probably scaling 170 lb., but with a machine of suitable power this should be no drawback.

**A Gloria Motor Cycle after the War.**

The motor bicycle shown in our illustration is a powerful twin-cylinder three-speed chain-driven Gloria, a newcomer to the motor cycle world, of which, no doubt, much will be heard after the war. For months

the forerunner has undergone exhaustive tests, but, as it is still in a purely experimental stage, it would serve no useful purpose to describe it at this juncture, and it is useless readers troubling the Gloria Co. (which, by the way, is Government controlled) for particulars. Suffice it to say that three different types of twin-cylinder V-type engines have been tested under all conditions of road use by men who know what a good motor cycle should be like. We can promise our readers that the Gloria, when it finally makes its appearance, will be a remarkably fine production, embodying all the latest ideas, and quite in keeping with the excellent work for which the Gloria Co. is noted.



**SHEFFIELD MUNITION WORKERS TAKE WOUNDED SOLDIERS FOR A SIDECAR OUTING.**

A party of Sheffield motor cyclist munition workers entertained a number of wounded soldiers, fresh from the "great push," to an afternoon's outing into the Peak District last Saturday. They took tea at Bakewell, and, of course, stopped at Haddon Hall, immortalised by Dorothy Vernon.

## PETROL LICENCES.

### DRASTIC RESTRICTIONS AND MUCH UNCERTAINTY.

**R**UMOUR follows rumour with regard to the amount of petrol which will be allowed to private motorists. For instance, it was stated in the daily press on Monday that 80% of their requirements would be available. Unfortunately this view was soon proved to be far too optimistic, and it is probable that private owners will receive about one quarter of what they asked for. Private users will get less than commercial men and doctors, and the general reduction all round will be about 50%.

#### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

We hear that something like half the motor 'buses will be taken off the road, and possibly an equal proportion of taxicabs, while char-à-banc trips will be entirely abandoned, except for the transporting of munition workers.

At the present time it is almost impossible to buy petrol in many places, and this difficulty seems likely to continue until the issue of the petrol cards on August 1st.

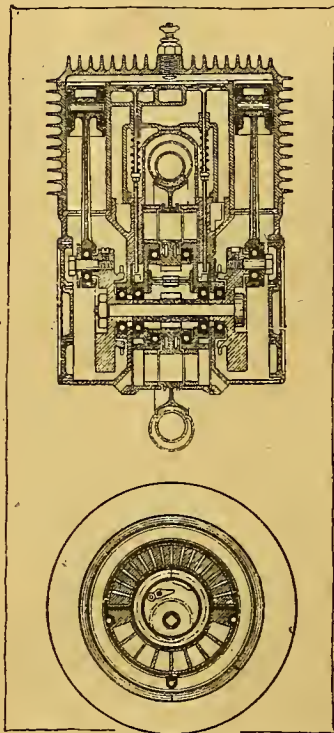
The requirements of the Government amount to approximately 2,000,000 gallons per week.



## A MOTOR SKICYCLE.

A Natural Development of the Child's "Scooter."

**T**HE child's skicycle or scooter has long ceased to be a novelty, and has taken its place among the child's regular playthings, but any attempt to propel the toy by motor power takes it out of the reach of the average junior, and we are afraid that this invention will not obtain the popularity its forerunner had.

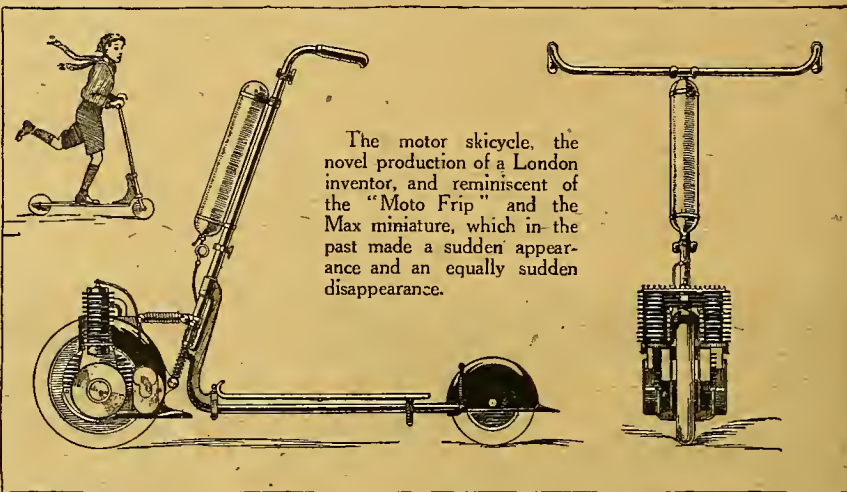


Cross section of the twin-cylinder engine and wheel, and also section through the wheel showing the turbine-like flanges through which the exhaust gases pass

Mr. Joseph Maina, of Brixton, London, is responsible for this novelty under patent No. 7,056, 1915.

He has incorporated the power unit, consisting of a twin four-stroke engine, *en bloc* with the front wheel. The two cylinders are placed vertically on either side of the wheel, and drive by a reducing gear on to the axle. Simultaneous firing by one plug in a combined compression space tends to simplicity. We presume the magneto is geared off the axle, but ignition, carburation, and lubrication details are not clear in the patent drawings.

The principal departure from the ordinary is the endeavour to utilise the exhaust to give extra power. The escaping gases are directed through vanes in the centre of the front wheel after the manner of a turbine, the intention being to add impetus to the already driven wheel, but we believe this idea has been experimented with before, and has proved to be a fallacy. The frame is similar to the usual skicycle, with refinements in the springing arrangements. A cylin-



The motor skicycle, the novel production of a London inventor, and reminiscent of the "Moto Frip" and the Max miniature, which in the past made a sudden appearance and an equally sudden disappearance.

drical petrol tank is carried on the steering column. The lower part of the frame is to be made to fold over alongside of the front wheel for easy storage.

Generally, the machine may be said to be efficiently designed, with the exception of the use of the exhaust to aid propulsion, but we are very dubious of it coming into public use.

It would be unreasonable, and even dangerous, to allow a juvenile free use of such a machine on the pavements, and

should it be confined to the roadway, the child runs a grave risk of being killed by other faster vehicles. No idea is given in the patent specification of the approximate size of the machine or the h.p., and even if constructed large enough for an adult it cannot be ridden in a standing position with any degree of comfort; but it is a distinct novelty, and any further developments on these or similar lines will be awaited with interest.



WOUNDED SOLDIERS' SIDECAR RUN IN THE NORTH MIDLANDS.

A party of soldiers from the Hooton Hall hospital were taken for a run to Worksop and the Dukeries, the picture showing the start. The organiser was Dr Pycroft, and many local sidecarists assisted in making the outing a success.



## "THE MOTOR CYCLE" RECRUITING SECTION.

INSPECTIONS of recruits for the Motor Machine Gun Service were held at the Coventry Recruiting Office on Tuesday, and in London (20, Tudor Street, E.C.) on Saturday last. The names of those motor cyclists and car drivers accepted will be found in the list given below.

Ballard, A. H., Berkhamsted.  
Brotheridge, A. T., Rodborough, Glos.  
Burke, H. C., Aldershot.  
Chandler, W. E., Lewes.  
Colombe, P. M. V., London.  
Cox, G. A., Cheltenham.  
Crossdale, F. W., Bristol.  
Danks, C. L., London.  
Eady, W. R., Wilby.  
Escott, A. J., London.  
Evans, M., Brigg.  
Forster, W. A., London.  
Francis, P. S., Broseley.  
Frank, S., Romford.  
Gauby, H., Brigg.  
George, F., Cerne Abbas.  
Green, L., Pontypridd.  
Harrison, W., Ryton-on-Tyne.  
Howkins, G., Coventry.  
Jelly, V., Guildford.  
King, W., Northrpe.  
Lee, F. J., Wellborough.  
Mariani, A., London.  
Meggs, A. L., Slough.  
Olley, C., East Dereham.  
Read, A. H., Brundall.  
Russon, G. W., Wellington, Salop.  
Short, A. C., Cerne Abbas.  
Stenhouse, A., Stirling.  
Summers, W., Honiton.  
Sutton, R., Newton-le-Willows.  
Tate, E., Richmond, Yorks.  
Waighell, W., Llanneston.  
Whittaker, J. H., Blackpool.

### Central Office for Motor Machine Gun Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

Appointments with another group of candidates had been arranged for Tuesday this week at the Coventry Recruiting Office.

Readers having motor cycle or car driving experience and wishing to enlist in the M.M.G.S. should note the following particulars:

AGE.—19 to 40.

ENLISTMENT.—For duration of the war.

MEDICALLY FIT.—For general service abroad or for garrison duty abroad.

PAY.—Is. 2½d. per day, all found; the usual separation or dependant's allowance.

Men may attend any of the inspections without previous notice, provided they are ready for immediate enlistment if accepted, but it is desirable that all be examined by the Medical Board at the headquarters of their respective places of attestation beforehand.

It seems likely that the immediate requirements of the Motor Machine Gun Service will be satisfied at an inspection which has been arranged for Tuesday next, the 25th inst., at the Coventry Recruiting Office, between 2 and 4.30 p.m. Should the applicants exceed the vacancies existing on that date, a waiting list will be formed to meet future calls of the Commanding Officer.

A recruit accepted by Mr. Smith in London on Saturday last was born in the West Indies, and has lived there up till recently, when he paid his own expenses home to enlist.

### Royal Engineers Signal Service.

Men passed for the waiting list of the Royal Engineers Signal Service are called up much more promptly than in the past. A few months ago it was no uncommon thing for a man to be kept waiting three or four months, and even then have to enlist in some other section. Two readers passed by the Editor as despatch riders received their calling-up papers within a week.

For the benefit of prospective despatch riders, we repeat that new regulations recently introduced provide that men must be between 18 years 9 months and 35 years of age. Also the test now applied is much more stringent than formerly, only first and second-class men being accepted.

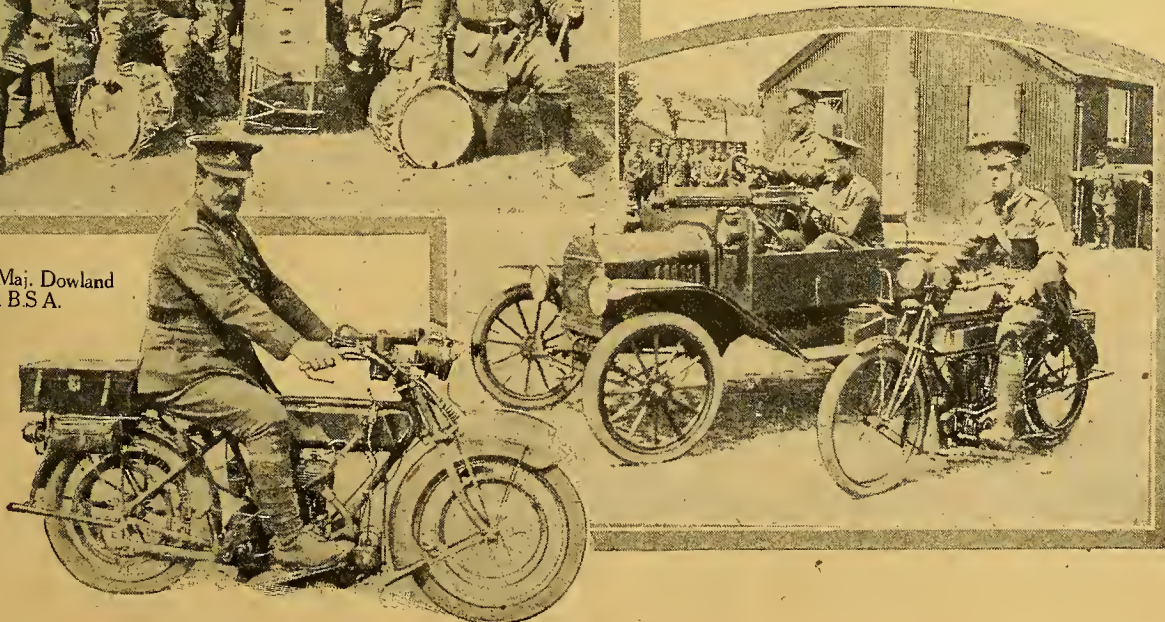
### AT THE TRAINING CENTRE OF THE MOTOR MACHINE GUN SERVICE.

(Left) The regimental band.

(Below) N.C.O.'s of the Ford battery. Mech.-Sgt. L. A. Bees (the former L.M.C. rider) on Triumph; Sgt.-Major Forsyth at gun; Sgt.-Driver Lightfoot driving.



Reg. Sgt.-Maj. Dowland  
on a B.S.A.





# A HARLEY-DAVIDSON DINNER.

Reception to Directors of a Leading American Motor Cycle Company.

ON Wednesday evening last week a reception was held, and a dinner given to various members of the motor cycle press and trade, to welcome the Milwaukee directors of the Harley-Davidson Motor Co., Mr. Walter Davidson, president of the company, and his colleague, Mr. J. A. Stone, at the Hotel Pagni, Great Portland Street, W. Previous to the dinner the company were entertained to a series of kinema pictures of events in which Harley-Davidson machines in London had recently taken part. There were shown the first two Harley-Davidson wounded soldiers' outings, starting from St. Thomas's Hospital, and finally the wounded sailors' outing.

## The Speeches.

At the conclusion of the dinner Mr. Duncan Watson rose to propose the health of His Majesty the King, whose portrait in the style of a cameo was situated over his head, tastefully illuminated by electric light, and surrounded by the flags of the Allied nations. Next the National Anthem was sung with deep feeling, and then Mr. John J. Withers, a director of the London company, rose to propose the toast of Messrs. W. Davidson and J. A. Stone. He had, he said, only to ask those present to drink the health of his friends from the United States. Good wine needs no bush, and he could add nothing to the lustre of their names. Their factory produced an extraordinarily efficient motor bicycle, and he hoped that they would turn out a still better one. It was really not a time to speak of politics, though politics formed a part of their lives at the present moment. There had been some talk of a premature peace, and he asked Mr. Walter Davidson to tell his friends across the Atlantic that there would be no premature peace, and that the end would only come when we were satisfied, and not before.

Mr. Walter Davidson, in reply, said that part of Mr. Withers's speech had affected him very deeply. He felt very strongly about this war. His people had been Scotch. The Milwaukee inhabitants, who were not all Scotch—(laughter)—had thought him mad for coming over to England, and thought he would meet with an untoward fate owing to submarines or Zeppelins. "Still," said Mr. Davidson, "we are here." He was pleased to be here, and thanked the chairman for the privilege of meeting so many good friends.

## Zeppelin Raids.

Mr. J. A. Stone said that as he looked round the room and saw the Stars and Stripes and the Union Jack entwined it brought back memories to him of early days. He was proud to see that English-speaking races were now keeping together. The Americans had been said to be "dollar-chasers," and they had no interests in the struggle save money. He was glad to say that there never had been a shadow of doubt where the sympathies of the majority of the American nation had been, and that there was a growing sentiment throughout the States towards the

Allies. What more could America have done? There was no nation more unprepared for war. English statesmen had received moral support and encouragement from across the Atlantic. This was his second visit. He was over here in August and September last year, and was in the thick of the Zeppelin raid on September 8th, and it brought the war home to him. Next day he saw the infinitesimal damage which had been suffered, saw its effect upon the English people, and said, "My German friends, all you have done is to provide England with more soldiers."

## Scotsmen.

Next followed the toast of "The Chairman" by Alderman Beaumont. "The chairman of the London company, Mr. Duncan Watson," said Mr. Beaumont, "is a Scotsman." That fact was evident by many signs; by his unnatural caniness, and by what had been flashed on the screen before the dinner. If a Scotsman saw a crack in the wall of circumstances he would get through, and what is more, would expand it and bring other Scotsmen with him. Mr. Duncan Watson was a good fighter and a hard fighter. He never hit below the belt, but he was a bad man to have against one. We were now happily in the possession of the truly benevolent neutrality of the U.S.A.

Mr. Duncan Watson then rose to propose the toast of "The Visitors." He thanked Alderman Beaumont, Ex-Mayor of Marylebone, for his words, and said that not only was he a Scotsman, but the American Harley-Davidson chiefs were Scotsmen too. Mr. Stone had come over last year to put a proposal before him which he had accepted, and he hoped now to associate himself with the Harley-Davidson Co. for some time to come. It was his duty to greet the members of the press, their agents, and other friends, the Mayor of Marylebone, the Town Clerk, and Alderman Beaumont. He had great pleasure in welcoming Mr. Otto Thomas. The body he represented had done much against the drastic form of taxation with which they had been threatened. He greeted Mr. Geoffrey Smith, Editor of *The Motor Cycle*, Mr. Pascall (Colmore Depot), one of their Birmingham agents, and Mr. Saylor (Goodyear Tyres), who represented the tyre industry.

In reply the Mayor of Marylebone extended a hearty welcome to the Harley-Davidson Co. on behalf of the borough, and hoped that it had come to stay. He had greatly enjoyed the remarks of Mr. Stone, and believed that all right-thinking Americans knew the Allies' cause to be the right one. He hoped that the Harley-Davidson Co. would stay and prosper, as it thoroughly deserved to do.

## The Work of the A.C.U.

Mr. Otto Thomas (Chairman the A.C.U.) stated that the Auto Cycle Union was doing its best to fight for the cause of motor cyclists, and to ensure an adequate supply of petrol. He was right in saying, as an example of what the Auto Cycle Union had done, that it had been responsible for the withdrawal of the

threatened taxation. It had done more; it had put forward proposals of a practical character. The Auto Cycle Union had done good work in recruiting, and one of its first considerations had been how to win the war, and it had become appointed the clearing house for recruits for the Royal Engineers' Despatch Rider Service. Furthermore, it created a body to look after men connected with the motor movement who had been injured at the Front, and would see that not one of these men would be in need after the war, but would always have a helping hand extended to him.

Mr. R. D. F. Paul said he did not know which to admire most, the business or the sporting side of the Harley-Davidson Co., but every credit was due to Mr. Duncan Watson, Mr. Masters, and Mr. W. Cooper. He welcomed the schemes that were evolved, and greatly appreciated what they had done, speaking in loud terms of praise for the wounded sailors' outing. He was glad that Mr. Walter Davidson had not, like most Americans, gone to see the beauties of England on a Rolls-Royce, but instead had started by taking an excursion into the country on the occasion of the wounded sailors' outing as a driver of one of his own sidecar combinations.

Mr. Hermalin said a few words on behalf of the Harley-Davidson staff in London.

## A "Silent" Baby (?)

Mr. Geoffrey Smith (Editor, *The Motor Cycle*) said how pleased he had been to meet men of this big company, who had had sufficient pluck and confidence in their productions to start business in a country which was in a state of war. That this confidence had been justified was shown by the fact that they had, to use an American expression, "made good." He heartily welcomed Mr. Walter Davidson and his colleague, and hoped to see them back again soon, perhaps with a Silent Grey baby—lightweight.

Mr. McKenzie, in the course of an amusing speech, in which he related his experiences in America, said that he considered that the Harley-Davidson machine was the nearest approach to British finish and British production he had yet seen in the U.S.A.

Mr. Pascall said that three years ago he had gone to the United States, and found them very backward in the design of motor bicycles. With the exception of one or two firms they were not nearly up to English standard. He thought that English influence had made the Harley-Davidson what it was to-day. "When he was in America two-speed gears were a rarity, and anyone who saw a sidecar thought he had made a discovery."

Mr. Saylor, speaking of the romance of the Harley-Davidson Co. and of its wonderful growth from a small beginning, said that its success had been due to three causes—concentration, co-operation, and confidence.

Mr. Duncan Watson then returned thanks on behalf of his directors and himself, and the proceedings terminated with the singing of the National Anthem.





# Letters To the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

## Petrol Lighting.

Sir,—Can you or one of your readers supply me with the address of a gasoline lighting outfit for motor cars? This fitment was British made, and, I think, used a mantle. I have read your most excellent journal for a number of years, and have found many valuable "tips" from your columns.

SIDNEY C. TRAVER.

Chicago, U.S.A.

## Paraffin as a Fuel.

Sir,—With reference to the illustration and description of my vaporiser that you published in *The Motor Cycle* on May 25th, you may be interested to hear that I have now covered about 1,000 miles on paraffin with splendid running results, and have taken the engine down and find there is very little carbon deposit, no more than if I had been using petrol. The bearings are in very good order also, which goes to prove that the paraffin is efficiently vaporised and is not getting past the piston rings and diluting the oil.

WM. BARNETT.

## The Motor Cycle in Australia.

Sir,—I should like, as an Australian officer, over here on Active Service, to correct some of the impressions which many of your Australian correspondents give of the conditions in that country. Anyone would imagine that we spend our motor cycling lives ploughing through deep sand and jolting over impossible humps; and that the English motor cycle is hopelessly inadequate for the work. The truth is that the average roads of Australia, while not good, are by no means so atrociously bad as some people say. I have ridden over many roads in England considerably worse than the Australian average. It is quite true that just round Sydney the main roads are as bad as can be, but in most other parts of New South Wales, at any rate, they are quite decent. For instance, I never had any difficulty in riding from Sydney to Leura—sixty-three miles and more than 3,000 feet high—in less than three hours on my little Douglas, and that included the dreadful fifteen miles of the Parramatta Road, the chief glory of the State.

As a matter of fact, the best English motor cycles are not only quite suitable for Australia, but are eagerly rushed after, and I have no doubt that there is now a waiting list as long as my arm for the two machines I know intimately—the Douglas and the Scott—to say nothing of the Triumph, New Hudson, etc. I have no patience with a fanatic who says that motor cycles should have no valances, or that the 4 h.p. Douglas fails there because some imbecile bent its footboard in trying to corner too quickly. I see many despatch riders who ride in far worse conditions than anywhere in the civilised parts of Australia, and they all tell me that the 4 h.p. Douglas is a most splendid solo rough-riding machine, and probably the best in the world. I only wish I could get one.

No doubt the American machines are at present monopolising the Australian market; but things may be very different after the war. I have yet to see any American bicycle that will give the constant runabout service of the little Douglas. It starts at a very slow walk, does 100 miles and more to the gallon, needs practically no looking after, never sideslips, and is, to my mind, at any rate, the most altogether lovable little machine on earth. And as for speed, I fancy the Scott will hold its own with most of the big Americans, and when a spring-framed Scott comes into being

it is going to be mine. I know nothing like the beautifully sweet smooth and silent dash of the Scott up hill.

At present the Americans are having everything all their own way over there, and I fancy that Australians may have perhaps forgotten how good the good English machines really are, but after the war I believe there will be a very different tale to tell. As to whether a spring frame is quite necessary on a little machine like the Douglas time will show. My present experience is that Terry's links, knee-pads, and a big Brooks saddle go far to avoid it; but I am quite willing to let Douglas Brothers decide for me in that respect. With powerful high-speed machines like the Scott, which storm up a 1 in 9 hill as if it were level, I am sure a spring frame is badly needed in Australia. One real grievance that we have is that the English firms appoint only one agent, in whose hands we are left like sheep in the shearer's. The result is that, in some cases, we have to pay an advance of 60% or more on the English list—not trade—prices, whereas, I believe, the cost of bringing out a machine to Sydney is not more than about £15 in normal times. I mention no names, because most of the principal agents are personally known to and friendly with me, but none the less the grievance is a real one, and the English makers will find the American competition pretty severe unless they are prepared to see that their machines are sold in Australia at a reasonable price.

C. MACLAURIN, Lt.-Col. A.M.C., A.I.F.

## A Tip for Rudge Riders.

Sir,—The following tip might prove helpful to Rudge Multi riders, and, incidentally, do much to lessen the prevailing fallacy that Ridges "eat belts." When changing up, close the throttle lever temporarily until the lever (gear lever) is in the desired position. (N.B.—Do not move more than three notches at a time at the outside.)

C. M. THOMAS, G.C., R.M.A.

## Sparking Plugs.

Sir,—Has "Ixion" tried the Reliance sparking plug? At one time I had a twin Rex 5 h.p., a.i.v., and the front cylinder always got too much oil which caused a lot of trouble with the sparking plug. After having tried several makes, with more or less the same result as described by "Ixion," I tried the Reliance, and was very pleased with the result. I am now riding a Scott, using the same make of plug, and so far have had no trouble, although I have used oil plentifully.

E. J. COPE.

## Binks Fuel.

Sir,—Re Binks fuel I am trying it with a big single Excelsior combination, and find it excellent. I inject petrol through the decompressor, and the engine starts at once. The running is unaltered, but the cost works out at rather more than 1s. 3d. per gallon. I only received thirty-seven gallons instead of forty-two (through leaky cask), and can get no compensation. There is also the carriage from Manchester and carriage of cask back. Thus:

Paid for forty-two gallons at 1s. 3d. ...	£2 12 6
Carriage both ways ...	5 0

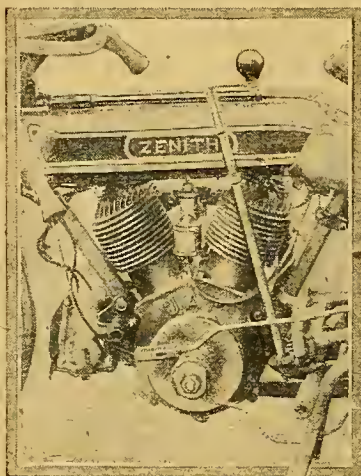
Thirty-seven gallons cost ...	£2 17 6
(Nearly 1s. 6½d. per gallon.)	

H. J. DUNNE COOKE



### "As Docile as a Two-stroke."

Sir,—I thought perhaps these photographs of my Zenith would interest some of your readers. I find this machine very fast and powerful, and yet as docile as any two-stroke.



J.A.P. engine on the big Zenith, showing lever for operating the Zenith-Gradua gear.

The appearance is unique, the frame being French grey and the wheels black; thus another example of the cult of disc wheels. I think it an ideal machine for fast touring and competition work.

R. BRASS, Lr.

### "Spots" and Cheap Fuel.

Sir,—Like most other motor cyclists, I am rather interested in the cheap fuel question. Long before the war began I used to try various dodges to cut down the fuel bill. I tinkered with the carburetter until I got the lowest possible consumption consistent

with moderately good power. I have used only three makes of carburetter, i.e., Amac, Binks, and B. and B. single-jet model. The machine on which practically all my tests—if I may so call them—were carried out was a 596 c.c. single-cylinder with heavy coachbuilt sidecar attached. I did experiment a little with a 499 c.c. single, but that was without sidecar, and the experiments were confined to the use of various jets in the B. and B. carburetter, and to the use of pure benzole and benzole-petrol mixture. With regard to benzole, I may say that if I could at present obtain it I would never use petrol. My experience with it in three different engines was exactly the same, namely, more power and consequently greater mileage at a given speed, cooler and cleaner engine, and total absence of knock, except when severely overloaded.

My present mount is, as I say, a 596 c.c. single-cylinder fixed engine with Philipson pulley, heavy sidecar and a thirteen-stone passenger; I myself weigh eleven stone. This machine I found, on stopping and starting runs on ordinary give-and-take roads of fairly good surface, averages 75 to 80 m.p.g. on No. II. petrol, running at an average speed of 20 m.p.h. or thereabouts. Recently I tried a half-paraffin mixture, but the result was not very good. I admit I made no alteration to the carburetter, with the result that much of the paraffin was not consumed, and, of course, left the engine decidedly free when cold; I therefore stopped using the mixture after the first two gallons were consumed. I also tried "Spots" as directed, and to my mind the addition of "Spots" to petrol makes it as good a substitute as possible for benzole. Some may say that is a very poor recommendation, as there are many who dislike benzole, but I venture to say if these objectors give benzole a really fair trial they will be more than satisfied. Why I myself have a friend who would not use benzole on any account, simply because he once saw a seized piston, the machine being driven on a benzole-petrol mixture by a not too skilful driver. He admits the seizure might have occurred on pure petrol, and he also knows how my machine runs on pure benzole, but at the same time he will not use it.

"Spots," I find, give me more power for a given throttle opening, though I do not think the engine is any cleaner. Certainly the carbon is softer, but whether I get 25% greater mileage I do not know, as I have not been able to make a careful test just yet. I have used "Spots" for about 1,000 miles, wet and dry, on good and bad roads, and I can fully endorse what your correspondent, "Chief Consul, C.T.C.," says.

Recently I did a 95 miles non-stop run, with a 13 stone passenger and a large quantity of luggage and spares. I should say the load carried was about 28 stone—that is to say, myself, passenger, and luggage. About one-third of the road was of moderate surface, but was wet and had plenty of sticky mud; one-third dry and bad surface; and one-third dry and rather good surface. Several very stiff main road hills were met with, two of which were each over two miles in length. On this occasion I used "Spots," but my consumption, as nearly as I can calculate, went up to 60 m.p.g.; but opposite that must be placed the fact that I did the distance in 3h. 40m. I am quite sure I should never have been able to get up some of the hills on pure petrol. I know absolutely that there are several hills that the machine climbs with ease when "Spots" are added, but which took all my driving skill before such addition was made. Like "Chief Consul," I did not notice so much difference when I first used "Spots," but I certainly did notice a great change when on one occasion I "filled up" without them.

I cannot speak too highly of the Philipson pulley. It is a delightful form of gear, giving exactly the correct gear when it is wanted. Mine is fitted with an extra strong spring, so that it is only very slightly automatic in action, and then only on very heavy hills. I much prefer to do the control work myself. I use a top gear of 4½ to 1 for sidecar work, which is rather higher than is usual, but this, I find, is the most suitable gear for this particular engine.

I have not, so far, been able to obtain Binks fuel in small quantity, but when I do lay hands on some I will try it with the three above-mentioned carburetters; but at present I pin my faith to petrol and "Spots," and a B. and B. single jet with extremely low petrol level, and last, but not least, a Philipson pulley.

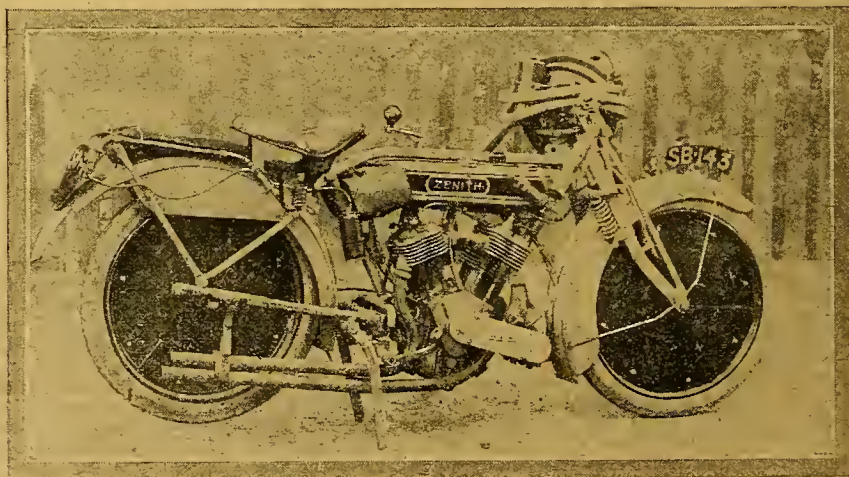
H.II.

### Hints for Beginners.

Sir,—I was much interested in the article, "Tuning a Two-stroke," in the issue of the 22nd ult.

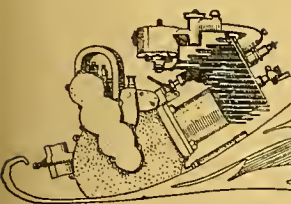
May I suggest that it is a good plan to clean the outside of your 'bus before you take it down. "Shinie" is a grand thing for cleaning the ports and piston ring slots; you can get them beautifully bright with it. Oiling the piston ring slots is new to me. I do not think I have seen it in print before. Why are the joints in two-strokes made with seccotined paper and in four strokes nearly always with oiled paper? I think a good tip for a beginner is to leave his magneto alone if there is nothing wrong with it.

LIMIT GAUGE.



A high-powered solo mount de luxe—the big Zenith belonging to Lt. R. Brass.





# QUESTIONS & REPLIES



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Sidecar Attachment.

When attaching a sidecar to a motor cycle would it be advantageous to set it so that the motor cycle leaned very slightly away from the sidecar, or would it be better to set it so that the motor cycle leaned towards the sidecar (a vertical lean in each case)?—H.N.W.

In our opinion, when attaching a sidecar to a motor cycle, your better plan would be to fix it so that the motor cycle leans neither away from nor towards the sidecar, but perfectly vertical.

## Tyre Sizes.

(1.) Will you please tell me if a  $26 \times 2\frac{1}{2}$  in. tyre will fit a  $26 \times 2$  in. rim? I believe I have seen it so stated. (2.) Also will you please tell me the best way to take the stretch out of a new belt?—S.C.

(1.) A  $2\frac{1}{2}$  in. tyre will usually fit a 2 in. rim, if there is sufficient clearance in the forks. (2.) Hang up the belt with a heavy weight on it, and leave it all night. Or it may be fitted to the machine and stretched by applying pressure by pressing the lower portion down with the foot, turning it round a little and applying the pressure again, and so on. After which it will be found a considerable length may be removed and that most of the elasticity is gone.

## Testing for Clutch Slip.

(1.) I have a 1914 5-6 h.p. A.J.S. fitted with a countershaft three-speed gear. Is there any way of ascertaining by turning the wheel on the stand that the clutch has the right strain on the springs, and will the clutch slip more readily on top gear than on low? (2.) How many miles should a pumpful of oil last with sidecar and passenger? I give one every four miles, and my crank case, etc., is always covered with oil, so I think it is getting too much, but would like to be safe. (3.) How should the magneto be timed for sidecar use? I understand from what I read in your paper more than a year ago that when riding with a sidecar attached one should time one's magneto slower, so that one could nearly always ride with spark fully advanced.—S.M.

(1.) You cannot test the clutch for slip on the stand. You must take the machine out on the road and test it on a stiff hill. The clutch is more likely to slip on the high gear than on the low when pulling up hill. (2.) A pumpful every ten miles for medium speeds would be about right; half a pumpful every five miles is better. Evidently there is a leakage somewhere

in your crank case. (3.) The magneto should be timed as follows: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break and the ignition lever two-thirds advanced.

## A Sidecar to Prevent Skidding.

I should feel grateful if you would kindly give your opinion on (1.) The use of a light sidecar with normal power air-cooled motor bicycle to prevent skidding, having a  $3\frac{1}{2}$  h.p. three-speed, which I am often obliged to use in wet weather on very rough hilly roads, which are characteristic of this district (Wicklow), with plenty of mud. The machine is constantly skidding, and I have to use low gear practically all the while. Will it strain the machine if I fit a light sidecar on such hills, or would it merely remedy the complaint? (2.) I notice the engine will occasionally stop if I give its usual proportion of air, and about every ten explosions misses once or twice. The plug is clean and right. How can I remedy this?—W.F.M.

(1.) You can quite well use a light sidecar with this machine, and this would help to prevent skidding. Such a sidecar would not strain the machine in the least, and would enable you to get over the difficulty. The only objection to a light sidecar is that it might possibly upset when turning a corner, therefore

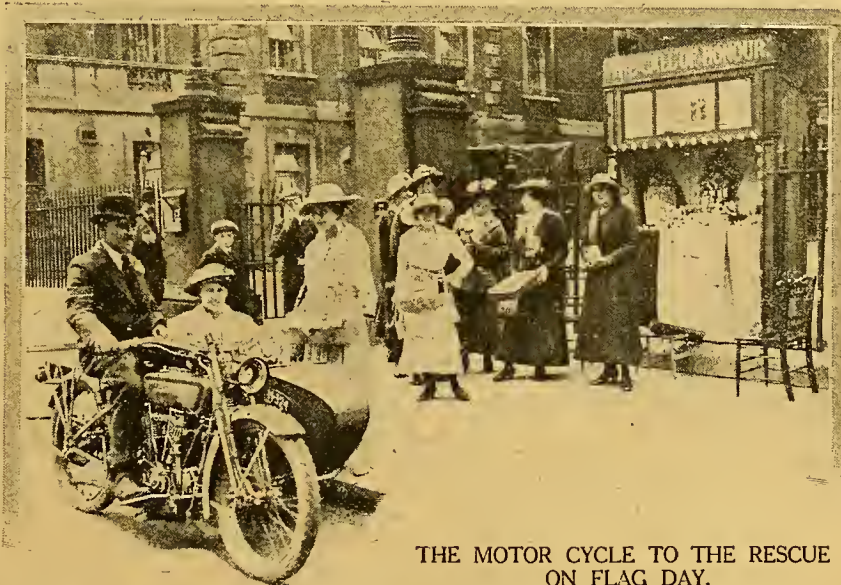
you would get steadier running by fitting a body in which there was a weight if you do not wish to carry a passenger. (2.) Perhaps there is a slight obstruction in the jet.

## Cleaning Macintosh Overalls.

(1.) Will you kindly tell me if there is a satisfactory way of cleaning double texture macintosh overalls, chiefly oil-stained?

I may say that I have tried soap and petrol without success. (2.) The oil seems to blow out of the crank case through the engine-shaft bearing on to the N.S.U. pulley, and of course is thrown in all directions. Is there any method of stopping this without re-bushing?—W.G.B.

(1.) We are afraid that there is nothing which will clean these garments satisfactorily. If you use an excessive amount of petrol you may remove the stains, but you will probably destroy the proofing. (2.) Possibly the pulley bearing is worn; if this be the case it will have to be rebushed. If the oil comes out of the gear itself there is nothing you can do, as the gear is lubricated by means of oil leaking from the crank case. If this be so, all you can do is to fit a shield to keep the oil off your clothes; or you may plug the hollow engine-shaft and fit another crank case release, in which case the gear should be lubricated occasionally by hand.



THE MOTOR CYCLE TO THE RESCUE  
ON FLAG DAY.

The driver of a sidecar brings another helper and a further stock of flags to the stall outside the Middlesex hospital.



**Pre-ignition.**

When travelling along (up hill, down hill, or level) the machine will lose power suddenly and smoke will come from the exhaust. The engine will generally continue to pull badly until I either lift the exhaust valve or close and open the throttle, when all will be well again and the smoking instantly disappears. Sometimes the engine loses more power than at others. I have had the machine at the makers', and they fitted a new cylinder and valves, which did not make any difference. I have also tried another carburetter and magneto without result. The valve gear and engine appear in perfect order, and I am totally at a loss to account for the trouble, which is very annoying when going up hill, as I have sometimes to run with the machine.—S.W.

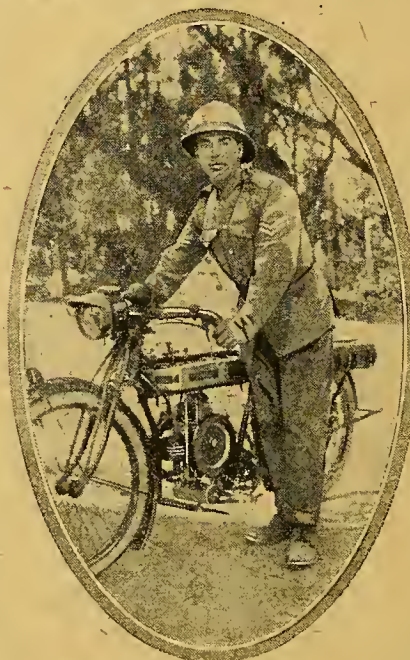
The trouble is pre-ignition, caused by the use of an unsuitable plug, which results in loss of power and eventually stoppage. If the engine is pulled up even for a few seconds it will start again as well as ever and continue to run for a short time.

**Firing with a Closed Throttle.**

I have a 1916 two-stroke machine, which has rather an irritating fault. When I am running down hill, with the throttle fully closed, firing takes place intermittently, giving the machine a jerk each time. I would not mind an occasional explosion, but I suppose sixty to seventy occur a minute. I have made quite sure that the throttle piston reaches to the bottom of its seating when the handle-bar lever is fully closed, and I have also shut off the air valve as well when descending a hill, but the explosions still occur. I suppose this can be due to no other cause than gas getting past the throttle somehow. This, however, seems a good fit, and the machine is quite new. There are two other machines of the same make in this town (St. Anstell), and these have the same fault. The makers, to whom I wrote, replied to the effect that "it is quite impossible to prevent a certain amount of gas getting past the throttle when the lever is closed, and a charge being fired occasionally in consequence." (I presume they do not mean by "occasionally" one explosion a second!) Anyhow, this fault quite spoils the pleasure of going down hill, and I should be glad to know if you or any of your readers can suggest a way of overcoming this trouble. In other respects the machine is excellent. Perhaps some of your readers of an inventive turn of mind have succeeded in dealing with this difficulty. I do not wish to raise the exhaust lever, as I do all my driving on the throttle.—S.B.P.

The trouble is apparently due to a leaky throttle slide. One way to prevent the explosions taking place is to fit a magneto switch, which presents no difficulty, if you order a contact breaker cover

from the magneto makers to which a switch terminal is already fitted. It will be easy then to switch off when running down hill. Another way such explosions may sometimes be prevented is to open the air intake wide, and so weaken the mixture to such an extent that it will not fire.



A MOTOR CYCLIST IN A SANITARY SECTION.

Cpl. W. Carlyle Ford, a Douglas-mounted motor cyclist attached to a R.A.M.C. Sanitary Section in Egypt. Before the war, Ford was assistant surveyor to the St. Thomas R.D.C., Devon.

**Engine Refuses to take Air.**

I should be greatly obliged if you would advise me as to the probable cause of a little trouble with my machine. It is a 1914 4 h.p. Triumph fitted with semi-automatic carburetter. Up to the present I have been able, on the open road, to run splendidly with the extra air lever fully open and the gas about one-third open. After my last trip (i.e., the next day) without touching the machine in any way I found I could hardly open the air lever at all; the machine stopped almost at once if I did, even after running for some time. The machine still runs well, but gets much hotter. I have taken the carburetter and cylinder down, but find nothing wrong so far as I know (I am not an expert, but have a fair idea of the working of the machine). I have used Mex motor spirit for the last few runs, but that has not affected it before.—F.Y.G.

We can only think that the jet is partially stopped up, or that the petrol supply is impeded in some way. Perhaps there is

a piece of foreign matter in the petrol pipe. You should also make sure that no air leaks exist between the carburetter and cylinder, and that the valves are seating properly.

**EXPERIENCES WANTED.**

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"Rex" (Chester).—1912 6 h.p. four-cylinder two-speed F.N. Reliability, maximum speed, consumption, tyre wear, and if suitable for occasional use with sidecar.

**RECOMMENDED ROUTES.**

OSWESTRY TO SWANSEA.—W.N.F.

Oswestry, Welshpool, Newtown, Llanidloes, Rhayader, Builth, Llanwrtyd Wells, Llandovery, Llandilo, Pontardunlais, Swansea.

LEICESTER TO WESTON-SUPER-MARE.—E.H.

Leicester, Sharnford, Coventry, Warwick, Stratford-on-Avon, Evesham, Tewkesbury, Gloucester, Filton, Clifton Downs, Flax Bourton, Congresbury, Weston-super-Mare. Approximately 140 miles.

ROTHERHAM TO BLACKPOOL.—J.W.J.

Doncaster, Ferrybridge, Aberford, two miles south of Wetherby turn left and go through Harewood, Otley, Ilkley, Skipton, Gisburn, Clitheroe, Whalley, Preston, Lytham, Blackpool.

WATFORD TO CHAGFORD.—P.T.W.

Watford, Rickmansworth, Uxbridge, Staines, Bagshot, Camberley, Hartley Row, Basingstoke, Andover, Amesbury, Hindon, Wincanton, Sparkford, Ilchester, Ilminster, Chard, Honiton, Exeter, Moretonhampstead, Chagford. Approximately 180 miles.

LEIGHTON BUZZARD TO HASTINGS.—A.S.

Leighton Buzzard, Hockliffe, Redbourn, St. Albans, Hatfield, Hertford, Harlow, Ongar, Brentwood, Ingrave, Orsett, Tilbury, by ferry to Gravesend, Meopham, Wrotham, Tonbridge, Pembury, Lamberhurst, Robertsbridge, Battle, Hastings.

BUCKIE (BANFESHIRE) TO HALESWORTH (SUFFOLK).—F.P.

Buckie, Keith, Huntly, Tap-o'-Noth, Inverurie, Aberdeen, Stonehaven, Laurencekirk, Brechin, Forfar, Cupar, Angus, Perth, Kinross, Cowdenbeath, Queensferry, Edinburgh, Dalkeith, Lanark, Greenlaw, Coldstream, Woorle Long Framlington, Morpeth, Newcastle-on-Tyne, Chester-le-Street, Neville's Cross, Aycliffe, Scotch Corner, Leeming, Boroughbridge, Wetherby, Aberford, Ferrybridge, Doncaster, Retford, Newark, Grantham, Donington, Long Sutton, King's Lynn, Stoke Ferry, Thetford, Diss, Harleston, Halesworth.

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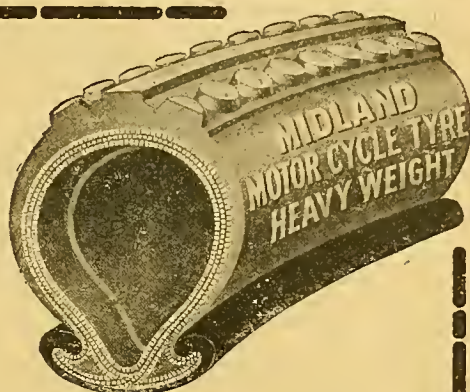
# MIDLAND

## MOTOR CYCLE & CYCLE TYRES

# ENTHUSIASM

goes a long way but the rider who fits Midland tyres goes further and fares better. Why? Because in Midland motor cycle and cycle tyres the finest materials, the longest experience, and the most modern manufacturing facilities combine to ensure the production of tyres which are satisfactory in every respect. Specify Midlands for your machine.

**PROMPT DELIVERY.**



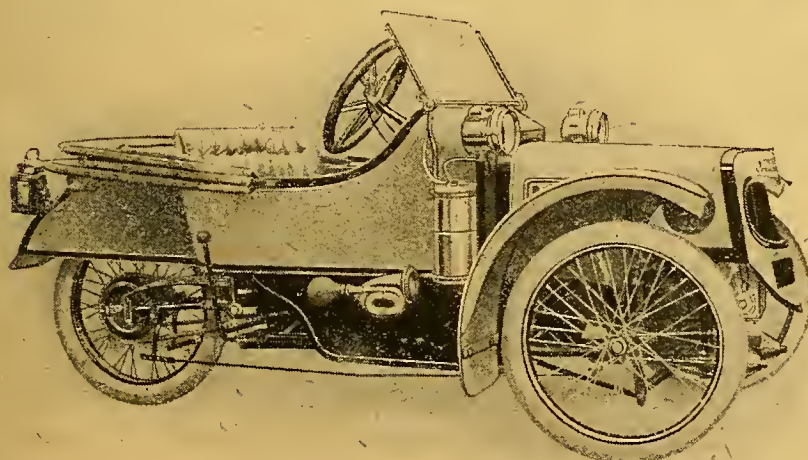
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... THE ...

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**EVEN MORE RELIABLE  
THAN THE SIDECAR.**

Won the Gold Medal  
three years in succe-  
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Days Trials, and the  
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and Cycle Cars in which  
no sidecar survived.

**PRICES from £100**

AVERAGES 50-60  
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**Morgan Motor Co., Ltd., Malvern Link.**



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

ADVERTISEMENTS in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C., 1915, 3½ h.p., horizontal twin, T.T., 4 speeds, spring frame; £63.—Odell, Nutley, York Rd., Guildford. [X4136]

### Abingdon.

A BINGDON King Dick, 1912, 3½ h.p., mag., 2 speeds, countershaft, kick; bargain, £25 cash; easy terms arranged.—Wandsworth Motor Exchange, Elmer St., Wandsworth (Town Station). [X4082]

### A.J.S.

A.J.S. New 1915 6 h.p. Combination on the premises waiting.—Moss, Wem. [X4261]

A.J.S., 1914, 2½ h.p., purchased 1915, sporting model, Lucas accessories; £39.—1, Pennel Rd., Liverpool. [X4145]

A.J.S., 2½ h.p., 1911-12, perfect; bargain, £16.—Pickard, 27, Woodland Park Rd., Tottenham. [8371]

A.J.S., magnificent combination (new); just cost £100, accept £90; enlisted.—136, Devonshire Rd., Blackpool. [X4132]

A.J.S. Late 1915 4 h.p. Combination, excellent condition, as new; £72.—Frank Lee, 105, Lark Lane, Liverpool. [X4160]

1914 A.J.S., 2½ h.p., 3 speeds, kick-starter, lamps, etc., in splendid condition; £40.—Allport, Woodhaven, Woking. (D) [8432]

## EVERYBODY'S WANTS AT PRICES TO SUIT EVERYBODY'S PURSE

will be found ready for Immediate Delivery in the great stock of New and Second-hand Machines, all fully guaranteed, now on display

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New and slightly used 1915 models of best makes and a great array of reliable Second-hand Motor Cycles and Sidecars, at surprisingly low prices for cash or easy terms, are included in our

## CLEARANCE OFFERS.

GET TO-DAY'S LIST. IT INCLUDES THESE:

No.	h.p.		
10511.	4	1915 3-sp. chain drive B.S.A.	£52 10
10517.	3	single-speed 1912 TRIUMPH	£25 0
10510.	3	1914 2-sp. PREMIER	£35 0
10523.	2	1913 2-sp. DOUGLAS	£44 0
10527.	5	1912 2-sp. F.N.	£30 0
10528.	4	1914 3-sp. TRIUMPH and Sc.	£55 0
10529.	4	1914 ZENITH	£45 0
10530.	3	1915 T.T. single-speed ROVER	£50 0
10533.	4	3-sp. 1912 QUADRANT	£27 10
10534.	2	1914 single-speed LEVIS	£17 10
10536.	3	1914 ROVER, single-speed, T.T.	£35 0
10466.	3	1915 RUDGE Multi	£45 0
10477.	2	1912 2-sp. SINGER	£20 0
10478.	2	1911 single-speed DOUGLAS	£17 10
10479.	8	1914 2-sp. WILLIAMSON and 2-seater Sidecar	£55 0
10485.	4	single-speed BRADBURY	£23 10
10495.	5	INDIAN and Sidecar	£65 0
10504.	2	1915 2-sp. REVERE	£35 0
10506.	4	1913 2-sp. B.S.A. and Sidecar	£45 0
10430.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10435.	6	1912 REX-J.A.P. and Sidecar	£27 10
10445.	3	twin N.S.U.	£15 0
10448.	4	1914 3-sp. B.S.A.	£57 10
10453.	3	1915 SUNBEAM and Sidecar	£73 10
10454.	2	1915 2-sp. CALTHORPE-J.A.P.	£25 0
10458.	2	1914 2-sp. 2-stroke CLYNO	£25 10
10462.	5	1913 2-sp. N.S.U.	40 gns.
10465.	3	1915 T.T. I.O.M. Multi RUDGE	£55 0
10419.	2	1915 CALTHORPE-J.A.P.	£33 10
10427.	3	1912 3-sp. ROVER and Sidecar	£32 10
10384.	2	1914 2-speed 2-stroke ALLON	£32 10
10390.	2	1915 2-sp. WOLF-J.A.P.	£30 0
10393.	1	1916 AUTO-WHEEL	£11 10
10396.	3	2-sp. FAIRNIR	£12 10
10402.	4	1915 GRANDUX	£37 10
10372.	6	1912 MATCHLESS and Sidecar	£35 0
10373.	7	1913 2-sp. INDIAN and Sidecar	£50 0
10342.	1	1914 AUTO-WHEEL	£10 10
10354.	4	1914 2-sp. BRADBURY	£30 0
10323.	2	1911 2-sp. DOUGLAS	£25 0
10325.	3	single-speed CENTAUR	£12 10
10333.	3	1908 2-sp. TRIUMPH	£26 0
10335.	4	1915 2-sp. BAT	£45 0
10301.	8	1913 BAYARD Light Car	£100 0
10271.	2	1915 2-sp. LEVIS	£37 10
10205.	3	2-sp. N.S.U.	£20 0
10142.	3	1913 3-sp. SINGER	£32 10
10109.	3	1909 F.E. TRIUMPH	£25 0
10070.	6	1914 2-sp. ENFIELD Combin	£65 0
10068.	3	1912 QUADRANT, variable gear	£20 0
10021.	3	1912 SWIFT	£20 0
9867.	2	1911 2-sp. ENFIELD	£22 10
9847.	4	1913 3-sp. QUADRANT	£42 10
9839.	3	1907 TRIUMPH and Sidecar	£22 10
9772.	3	1914 w.-cooled 3-sp. HUMBER	£35 0

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## MOTOR CYCLES FOR SALE.

A.J.S., 6 h.p., 1914, lamps, indicator, spare tyre, accessories; insurance policy; bargain, £250.—Reevea Garage, Purley. 'Phone: 384. [X4136]

A.J.S. 1912 6 h.p. Twin Combination, coachbuilt car, a good outfit; £40.—Tuke and Bell, Motor Dept., Carlton Engineering Works, High Tottenham, N. [X4136]

A.J.S., 1913, 6 h.p., 3-speed, with Swan de Luxe car, new hood and screen (cost £4 Mar), latest and B. carburettor, 70 m.p.g. with passenger, speedometer, a grand climber, little used, and in perfect running order; 60 gns.—Frisby, 233, Westbo Grove London, W. [X4136]

A.J.S., 6 h.p., 3-speed, etc., late 1914, detachable wheel, spring pillar saddle, F.R.S. lamp, and cylinder, wind screen, hood, and storm apron, large of spares, recently thoroughly overhauled by master-bush, all faulty parts renewed, in perfect condition; price £90.—22, Westland Rd., Watford, Hert. [X4136]

### Alldays.

1914 4 h.p. 3-speed Clutch Alldays Matchless, 1st; £35.—24, The Parade, Upper Tooting S.W. [X4136]

COLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Alldays. [X4136]

1915 Allon, equal to new, Cowey speedometer, 1st horn, accessories.—Burstow, Westlands, Horsham, Sussex. [X4136]

ALLON, 1916, new, £36; owner in army, so easy use; offers wanted.—Gunner Harwood, Clifton, Fort, Isle of Wight. [X4136]

ALLON, 2½ h.p., 2-stroke, 2-speed model, splendid condition; £30; guaranteed.—Vauchope's, Shoe Lane, London. [X4136]

1916 Alldays Allons, 2-speed models, in stock; easy payments arranged.—Jones, Garage, Buryway, Muswell Hill. [X4136]

ALLDAYS Allon, 2-speed, new; special bargain £38/17 cash; gradual payments 2%.—Referee Co., 332, High Holborn. [X4136]

1915 Alldays 2½ h.p. Allon, 2-stroke, splendid condition, lamps, horn, tools complete; first secure.—Thompson, Asylum, Arley, Beds. [X4136]

1915 Alldays Allon, 2½ h.p., 2-speed, hand ch cost £45 last February; condition as new, guaranteed; sacrifice for £32.—Jones, 38, East Ave., Maidon. [X4136]

ALLONS, single speed £36, 2-speed £42, 2-speed £45; actually in stock; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, Rd., Wood Green. [X4136]

1914 3½ h.p. Alldays Matchless, Sturmer-Arch speed, Bosch, Sensapry, Dunlops, overhauled makers, first-class condition, spares, accessories; £25.—Jenkins, Grammar School, Coleshill, Birmingham. [X4136]

### Ariel.

ARIEL, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [X4136]

3½ h.p. Ariel, perfect order; £7/10; exchange Walker, 39, Manor Rd., Bentley, Doncast. [X4136]

ARIEL, 2½ h.p., mag., Amac, with sidecar, in good condition; £12.—13, Batley Rd., Stoke Newington. [X4136]



## MOTOR CYCLES FOR SALE.

## Ariel.

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## Auto-Wheels

**UTO-WHEEL** and Bike, spring forks, as new; £20. -138, Church Rd., Battersea. [8474]

**UTO-WHEEL**, perfect, nearly new; bargain, £8/10. -Bausor, 1a, Mortlake Terrace, Kew. [8313]

**UTO WHEEL**, splendid condition, little used; bargain, £6/10.—Crow Bros., High St., Guildford. [8164]

**UTO-WHEEL**, as new, £10/10; also lady's Singer cycle, £2/10; together £12.—260, Well Hall Rd., Ham, Kent. [8359]

**VALL** Auto Wheel, 1914, complete, little used, equals new; £8/10.—Murray, 37a, Charles St., Hatton Road, Holborn. [X4252]

**VALL** Auto-Wheel, attached Rover cycle, 2-speed gear, with fittings complete; £8.—Seen Mostyn Range, Ackerman Rd., Brixton, S.W. [8293]

**UTO-WHEEL** in thoroughly good condition, with a new spare tyre, owner bought car; price £7/10.—est, 15, Gledow Terrace, Old Brompton Rd. [X3977]

**UTO-WHEEL**, 1915, attached 3-speed Ariel, excellent running order; £15/15; seen evenings by appointment.—Curtis, 13, Coniston Rd., Muswell Hill. [8353]

**UTO-WHEEL**, fitted to 3-speed lady-back tandem, absolutely in splendid condition; best offer accepted; owner called up.—Speechley, 45, Church Rd., Ton. [X4253]

**UTO-WHEEL** (Wall), complete, powerful, perfect running order; room wanted; trial given; appointment after 7 p.m.; £8/10.—28, Goldsmith Ave., Manor Park, E. [8355]

**UTO-WHEEL**, had very little use, thorough order; £7/10, or with bicycle, which was specially built for same, £11/10.—Rumsey, 44, St. Thomas St., Hackney. Phone: Dalston 1373. [8386]

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**h.p. Bat**, 1914, countershaft, sporting sidecar; £55. -175, Knollys Rd., Streatham, S.W. [8373]

**AT**, 4½ h.p., Bosch, good order; £12, or exchange lightweight.—Farley, Portholme, Selby. [X3782]

**AT-J.A.P.**, 8 h.p., Gloria sidecar, perfect condition; offers wanted.—Mrs. M. H. Allen, Longfield, Kent. [8504]

**AT**, 3½ h.p., spring saddle seat, good running order; £10.—McCrindle, 11a, Princes St., Kilmarnock. [X3778]

**AT-J.A.P.**, 7-8 h.p., and Millford sidecar; £28, complete.—W. Bradwell, 9, Nunnsfield Rd., Buxton, Derbyshire. [X4138]

**ATS** in stock, latest 4-5 h.p., 2-speed, also second-hand 1914 model, same power, £35.—P. J. Evans, 1a Bright St., Birmingham. [X4127]

**AT-J.A.P.**, 6 h.p., sidecar coachbuilt, clutch, kick starter, 3 speeds, excellent condition, Stewart edometer; £50, or offer; joining up.—Howard, 7, Cherne Terrace, Earl's Court, London. [8312]

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**BRADBURY**, 4 h.p., 1912-1913, good condition; bargain, £20.—On view, 81, Newington Butts, E. [8506]

**914 3½ h.p. Bradbury**, 3 speeds, wicker sidecar; £235; cash or easy terms.—R. E. Jones (Garages), 1, Swansea. [0822]

**914 4 h.p. Bradbury**, 2-speed, F.E. and Dunhill's underslung sidecar; £32.—268, Hornsey Rd., Halloway, N. [8636]

**BRADBURY**, Bowden 2-speed gear, sidecar, Whittle, Stelatic, excellent condition; £34.—30, Church St., Southgate Rd., N. [X4016]

**BRADBURY**, new sidecar, countershaft gear, Sen spray, many spares, Whittle, good tyres; £32.—Lavender Grove, Dalston. [8266]

**BRADBURY**, 2-speed, chain drive, C.B. sidecar, excellent condition £36/10, what offers?—Chas. Mett, 39, Cross St., Macclesfield. [X4164]

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**LACKBURNE**, 1914, 3-speed, hand clutch; 34 gns.—Troward, 78, High St., Hampstead, London. [8458]

**LACKBURNE**, 3½ h.p., 3-speed, clutch, hub, under 2,000, perfect order; nearest £40.—Andrew's Garage, Liskeard, Cornwall. [7715]

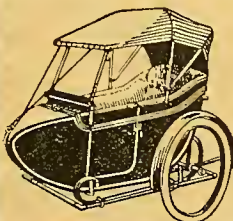
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**ROUGH**, 3½ h.p., 1915, 3-speed, hand clutch, only 2,500 miles, new tyre back wheel, perfect order; 6.—Tozer, c/o Berry, Middleton, Market Harborough. [X4137]

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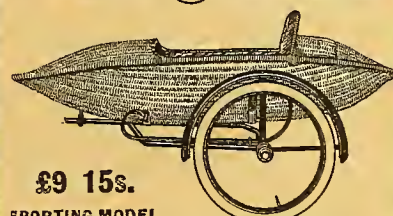


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1916 ditto, electrical model	£89 0
7-9 h.p. INDIAN, 1915, electric model, with Millford £18 18s. Sidecar, screen	£71 15
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20 h.p. FORD Van, 1915 model	£90 0
6 h.p. REX, 1912, 2-speed model	£21 15
2 h.p. TYLER, 1915, 2-speed model	£24 15
3½ h.p. TRIUMPH 1910 model	£17 15
3 h.p. LINCOLN-ELK, 1912 model	£13 15
5 h.p. INDIAN, 1915, 3-speed, finished red, beautiful condition	£55 0
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3 h.p. TRIUMPH, 1912, Philipson pulley	£26 15
3 h.p. CLYDE, M.O.V.	£4 15
4 h.p. NEW HUDSON, 1915, 3-speed model, with £13 coach Sidecar	£55 15
2 h.p. QUADRANT, spring forks	£3 15
3 h.p. LINCOLN-ELK, 1911, magneto	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn	£25 15
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7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar	£69 15
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**3 h.p. Brown**, running order, new tyre and belt; 6 gns. -11, Sun St., Waltham Abbey. [8252]

**BROWN**, 2½ h.p., seen running; must sell immediately; £5/10.—45, Church Rd., Acton. [X4254]

**BROWN**, 3½ h.p., 1912, overhauled by makers, new tyres, belt, X'all pan saddle; 14 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [8459]

## B.S.A.

**B.S.A.** New 1916 Model K actually in stock; no waiting.—Moss, Wem. [X4262]

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**B.S.A.**, 3½ h.p., 2 speeds, sidecar, in good order; £30, complete.—Meek, 254, Archway Rd., Highgate, N. [8216]

**B.S.A.** Motor Cycle and Sidecar, 4 h.p., nearly new.—J. Burrough, Steven Farm, Felstead, Chelmsford. [8261]

**B.S.A.**, 1915, chain, countershaft, coach sidecar, tyres good; £58.—Craig, 215b, Latchmere Rd., Battersea. [8482]

**LATE 1914 B.S.A.**, T.T. like new, only ridden 600 miles; bargain, £35.—2, St. Ann's Well Rd., Nottingham. [X3771]

**B.S.A.**, 1916 model K, Canoelet sidecar, not driven 300 miles; what offers?—42, Highbridge St., Waltham Abbey, Essex. [8546]

**B.S.A.** 4½ h.p. Machines from stock, chain and chain-belt drive; £64 and £62 respectively.—Wauchope's, 9, Shoe Lane, London. [8406]

**1916 B.S.A.**, chain-cum-belt, and coachbuilt sidecar; cost £82 two weeks ago, fully equipped; sacrifice £75.—L1,768, c/o The Motor Cycle. [8185]

**B.S.A.**, models H and K delivered new, also 1912 2-speed £30; generous deferred terms.—Lamb's, 151, High St., Walthamstow, and 59, High Rd., Wood Green. [8319]

**1915 4½ h.p. B.S.A.**, chain-cum-belt, and Mills-Fulford sidecar, and accessories, in perfect condition; £54; seen any time.—Bounds' Garage, High Rd., Kilburn. [8299]

**B.S.A.** Combination, 2-speed, clutch model, all chain drive, Lucas lamps and horn, coachbuilt underslung sidecar, almost new; £55.—Rose Branch, Scartho, Grimsby. [8223]

**B.S.A.**, 1913, clutch model, Lucas lamps and horn, Cowey speedometer, all accessories, overalls, etc.; seen after 6 o'clock; offers.—Loader, 92, South Park Rd., Wimbledon. [8331]

**B.S.A.** 1914½ 4½ h.p. Combination, coachbuilt Canoelet sidecar, chain drive, 2 lamps, 3-speed, lot spares, 2 lamps, overhauled, enamelled by makers May, 1916, just like new; part exchange for 2-stroke, or sell cash 55 gns., or nearest offer; trial allowed.—Willford, Grocer, Crowland, Peterborough. [X4020]

## Calthorpe.

**1915 Calthorpe-Jap**, Enfield gear, lamps, horn, etc.; £287. -£26.—Earl, 5, Heath St., Hampstead. Phone: 5287. [8543]

**CALTHORPE** Junior, 1914, 2-speed, good order; 13 gns.—Cockburn, Dorislane, Flower Lane, Mill Hill, N.W. [8303]

**CALTHORPE-J.A.P.**, 2½ h.p., Enfield 2 speeds, 800 miles, late 1915, perfect; £26/10; owner bought sidecar.—4, High Rd., Wood Green. [8246]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**1916 2½ h.p. Calthorpe-Jap** (nominally second-hand), Enfield 2-speed, run 100 miles; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0825]

**CALTHORPE**, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8286]

**CALTHORPE-J.A.P.**, 1916, latest model, 2½ h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8285]

**CALTHORPE** Motor Cycles, 1916 models.—Just arrived; 2-stroke 2-speed 31 gns., J.A.P. 2½ h.p. 2-speed 36 gns.; easy terms arranged.—Storey's, 118, St. Portland St., W. [0777]

**CALTHORPE**, latest 1916 2-speed models in stock, cash or exchange; also a few brand new 1915 models, slightly soiled, at reduced prices.—Eagles and Co., High St., Acton. [X4214]

**CALTHORPE-J.A.P.**'s, with Enfield gears, actually in stock; £37/16; deferred payments by arrangement.—Lamb's, 151, High St., Walthamstow, and 59, High Rd., Wood Green. [8314]

**CALTHORPE**, 1916 models, delivered from stock for cash and extended terms; write for catalogue and full particulars.—City Agents, Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491]

**CALTHORPE**, 2-stroke, 2-speed, 2½ h.p., with lamp and generator, only run a short distance, and condition like new; price £22/10 cash, or extended payments 2% only extra; deposit £4/10, and 12 monthly payments of £1/10/9.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [8325]



## MOTOR CYCLES FOR SALE.

## Calthorpe.

**CALTHORPE J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

**CALTHORPE J.A.P.**, 1916, 2½ h.p., 2 speeds, 2 weeks old, not done 30 miles, all accessories, including 2 electric lamps, uns scratched; cost over £40, price £35.—Harden House, Waverley Rd., Enfield. [8508]

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**CALTHORPES**, new 1916 models, 2½ h.p. J.A.P. engine, 2 speed Enfield gear, £37/16; 2-stroke models, 2-speed, £28/17/6; 2½ h.p. single speed models, £32; also the sidecar combination, fitted with twin-cyl. 4-5 h.p. J.A.P. engine, 2-speed gear, handsome light coach-built sidecar, the combination 67 gns.; exchanges or easy terms arranged.—Wauchope's, 9, Shoe Lane, London. [8407]

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**CAMPION-VILLIERS**, 2-stroke, 2½ h.p., new tyre, belt, fine order; £18; exchange Rudge, Triumph. —67, Wantage Rd., Reading. [X4191]

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**1914** 8 h.p. Chater-Precision, 3-speed, chain drive, large coachbuilt sidecar, all accessories, light car tyre, Palmer, new, a good, sound lot; £47/10; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [8558]

## Chater-Sarolea.

**CHATER-SAROLEA**, 6 h.p. twin, Bosch, B. and B., Stumey 3-speed, kick starter, Palmer cord tyres, radial castor wheel sidecar, F.R.S. head lamp, splendid order; seen any evening after 7.30; £35, or new offer.—332, Whitehorse Rd., Croydon. [8304]

## Chater-Lea.

**CHATER-LEA** No. 7 Combination, 8 h.p., mechanically perfect, tyres good; £40.—H.N., 4, Rockwood Rd., Stamford Hill. [X4111]

## Chater-Lea-Minerva.

**CHATER-LEA-MINERVA** 4½ h.p., 2-speed, F.E., and sidecar, Druids, Bosch, and B. and B., good tyres and belt, etc.; £22, or near offer.—15, Ivy Lane, Brockley. [8431]

## Clyno.

**CLYNO**, 1914½, 2-stroke, 2-speed, handle-bar clutch, excellent condition; £26.—Muscott, Mount Pleasant, Llandrindod Wells. [X4187]

**6 h.p. Clyno** Coachbuilt Combination, 2-speed countershaft, carries 4 persons; £25, or near offer.—Richardson, Parade View, Dawlish. [X3974]

**CLYNO** Late 1912 Combination, £42.—Bayford Lodge, Wellington Rd., Hatch End, Pinner. After 7 p.m., Saturday after 3, all day Sunday. [X4019]

**CLYNO** Combination, 1914, 6 h.p., 3 speeds, kick starter, 4 detachable wheels, speedometer, special body to sidecar; £55.—6, Warren St., London. [8388]

## Connaught.

**CONNAUGHT**, 2-speed, 1914, perfect; £26.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [8465]

**CONNAUGHT**, 2-stroke, 2½ h.p., in good running order; cheap, £14.—W. Bethell, Long Marston, Tring. [X3774]

**1916** Connaught Miniature, shop-soiled; £26, list £28/17.—Williams, A.J.S. Agent, Chapel, Ash Depot, Wolverhampton. [X4207]



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**MATCHLESS**, 1914, 8 h.p. M.A.G., 3-sp., chain drive, Lucas dynamo lighting outfit, 3 lamps, speedometer, 1914, 6 h.p., 2-speed, modèle de luxe, handle starting, coach-built Sidecar, just been overhauled. [78]

**TRIMPH**, 3½ h.p., 1911, 2-speed countershaft gear, chain-cum-belt, complete with wicker Sidecar; cheap at ..... [466]

**NEW HUDSON**, 1914, 6 h.p., 3-speed, kick start, complete with New Hudson coach-built Sidecar with screen, all accessories ..... [53]

**NEW HUDSON**, 1915, 3½ h.p., 3-speed countershaft, kick start, coach-built Sidecar, as new ..... [55]

**A.J.S.**, 1914, 6 h.p., 3-speed, lamps, horn, speedometer, and Millford Sidecar, as new ..... [73]

**ENFIELD** 1915 6 h.p. Combination, lamps and speed; very good condition ..... [70]

**HARLEY-DAVIDSON**, 1915, 3-speed, 7-9 h.p., Bramble Sidecar, like new ..... [68]

**HUMBER**, 1912, 3½ h.p., 2-speed, handle start, wicker Sidecar ..... [24]

**HARLEY**, 1914, 7 h.p., 2-speed, and coach-built Sidecar ..... [58]

**INDIAN**, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar ..... [65]

**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame ..... [48]

## SOLO MODELS.

**DOUGLAS**, 1911, 2½ h.p., 2-speed, spring forks ..... [22]

**CALTHORPE**, 1911, 2½ h.p., 2-speed ..... [39]

**RUDGE** 1913 3½ h.p. Multi, T.T. bars ..... [118]

**IVY**, 1915, 2-stroke, single-speed ..... [116]

**KERRY-ABINGDON**, 3½ h.p., magneto, 2-speed ..... [232]

**TRIMPH**, 1912, 3½ h.p., clutch model ..... [238]

**F.N.**, 5-6 h.p., 1914, 2-speed, as new ..... [57]

**MOTO-REVE**, 2 h.p., twin; wants tuning ..... [36]

**NEW HUDSON**, 1913, 3½ h.p., 3-speed J.A.P. engine ..... [330]

**TRIMPH**, 1912, 3½ h.p., clutch model ..... [330]

**ROYAL RUBY**, 2½ h.p., 1915, J.A.P., 2-speed ..... [328]

**TRIMPH**, 1912, 3½ h.p., clutch, Philipson pulley ..... [328]

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**BAT-J.A.P.**, 1911, 8 h.p., 2-speed, spring frame ..... [328]

**TRIMPH**, 1914, 4 h.p., 3-speed ..... [328]

**RUDGE**, 1913, 3½ h.p., multi, large tank ..... [328]

**CALTHORPE J.A.P.**, 1915, 2½ h.p., 2-speed ..... [328]

**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... [229]

## LIGHT CARS, Etc.

**G.W.K.**, 10 h.p., 4 speeds, 80 mm. tyres, 1914 model, just being repainted ..... [120]

**FORD**, 1913, 20 h.p., 4-seater, detachable wheels; make a splendid light van ..... [60]

**SIZAIRE-AUDIN** 1914 12-14 h.p. Coupé, C.A.V. large size dynamo outfit, 5 lamps, 5 detachable wheels, just repainted and overhauled, like new ..... [310]

**CADILLAC**, 1914, 20-30 h.p., 6-speed model, 7-seater, just overhauled, dynamo light and starting, just being repainted; make a very fine hire car ..... [320]

**A.C.**, 5-6 h.p., late 1913, hood and screen, lamps, all tyres new, splendid condition ..... [50]

**MINERVA**, 28 h.p., 1910, 5-seater; £6 6s. tax; just being overhauled ..... [50]

**KNIGHT** Junior, 1914, 11 h.p., sporting body, excellent order ..... [155]

**G.W.K.**, 1015, 10 h.p., special finish, domed guards, speedometer ..... [170]

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## MOTOR CYCLES FOR SALE.

## Connaught.

**CONNAUGHTS** in stock for immediate delivery miniature, standard, and 2-speed models; price from £28/17/6.—P. J. Evans, John Bright St., Birmingham. [X412]

**CONNAUGHT**, 1916, 2½ h.p., 2-speed, used once property of officer; exceptional bargain, £30.—Seen at Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [049]

**AS** New, late 1915 Connaught, 2½ h.p., 2-stroke countershaft 2-speed gear, chain-cum-belt drive, 11" tall saddle, 26x2 heavy Dunlop R.S. tyres, lamp and horn, guaranteed perfect; £35.—The Premier Motor Co., Aston Rd., Birmingham. [834]

## De Dion.

**2½ h.p. De Dion**, spring forks, B. and B. carburettor, 24" new Hutchinson tyres, splendid condition; £7/10.—133, Park Av., Barking. [X407]

## Despatch Rider.

**DESPATCH** Rider 1916 2½ h.p. 2-stroke, T.T. handle bars, 24in. wheels, very sporty model, uns scratched bargain, £28.—Dove, 154b, Cheltenham Rd., Bristol. [X424]

## Diamond.

**1916** 2½ h.p. 2-speed 2-stroke Diamond, also 2½ h.p. 2-speed Enfield gear J.A.P. model.—Wilkin Hunter's Bar, Sheffield. [X420]

## Douglas.

**DOUGLAS**, 1914, good condition, 2½ h.p., 2 speeds £32.—Wild, Ridge, Shipley. [X377]

**DOUGLAS**, 1913, T.T., 2-speed, fast; £33.—Eborn Garage, Walton St., Aylesbury. [852]

**DOUGLAS**, 1913, 2-speed, T.T.; £30; test car August.—554, High Rd., Tottenham, N. [827]

**DOUGLAS**, 1911, good order, fast; £15; first cheap secures.—Willmot, Middleton, Malvern. [X401]

**1909** Douglas, in good trim, new tyres (Hutchinson) £12/12.—Jones, Garage, Broadway, Muswell Hill. [856]

**DOUGLAS**, 1913, 2-speed, clutch, kick starter, very little used, perfect order; £37/10.—Railway Garage, Staines. [854]

**1915** 3½ h.p. Douglas, kick starter, new tyres, lamp etc., grand order; offers.—Healy, 7, Woburn Place, W.C. [855]

**1913** Douglas, 2½ h.p., clutch, horn, speedometer, good tyres; £32, no offers.—Stutfield, Grove House, Hampton, Middlesex. [833]

**1914** Douglas, 2½ h.p., clutch, kick starter, 2 speed Hutchinsons, perfect condition; £38.—Wallace Fountain Buildings, Bath. [824]

**DOUGLAS**, new, latest pattern, 2½ h.p., models for immediate delivery, including War Office flag Douglas.—Moffat, Yeovil, Tel. 50. [58]

**1915** Douglas, 2½ h.p., T.T., 2-speed, Lucas lamp speed indicator, perfect condition; £42/10.—Turner, High St., Walton-on-Thames. [822]

**1914** T.T. Douglas, 2-speed, Bosch, Amac, excellent condition, tools, sacrifice, first cheque £32 secured.—Harold Taylor, 19, Saxon St., Wrexham. [X424]

**DOUGLAS** Specialists.—Gibb, Gough, London Rd Gloucester. Gibb, the International Douglas rider winner of numerous cups and gold medals. [114]

**DOUGLAS**, late 1915, 2½ h.p., 2-speed, T.T., excellent condition throughout, Lucas lamp, spares; £4, no offers.—Neat, Ironmonger, Middlesbrough. [X41]

**1913** 2½ h.p. Douglas, 2-speed, lamps, horn, Cowe engine just overhauled, takes 2 anywhere, very fast; £30.—Sharpe, Fairfield, Kingston, Surrey. [827]

**1913½** Douglas, 2-speed, clutch, kick start, wide mud guards, extra good condition, recently overhauled, bargain, £34/10.—Jarvis, 8, Swiss Terrace, Hampstead. [X39]

**DOUGLAS**, 1914½, model T.T., 2½ h.p., 2-speed, parts in splendid condition; £38.—Rev. S. J. Fowler, Roche, Cornwall. (Mark envelope "Douglas".) [X41]

**WAR** Office Douglas, 2-speed, Bosch mag., little new perfect order, 2 lamps, horn, speedometer; £60 this season, £48.—Bunnett, 44, Rock Rd., Chislebury. [X40]

**DOUGLAS**, 1915, 2½ h.p., War Office model, excellent condition, overhauled, lamp, horn, speedometer; £45, or near offer.—Layton's Garage, Bicester Oxon. [X42]

**DOUGLAS**, 2½ h.p., 3-speed model, delivered months ago, scarcely been used, with horn, tools, lamp etc.; £52/10; guaranteed.—Wauchope's, 9, Shoe Lane, London. [84]

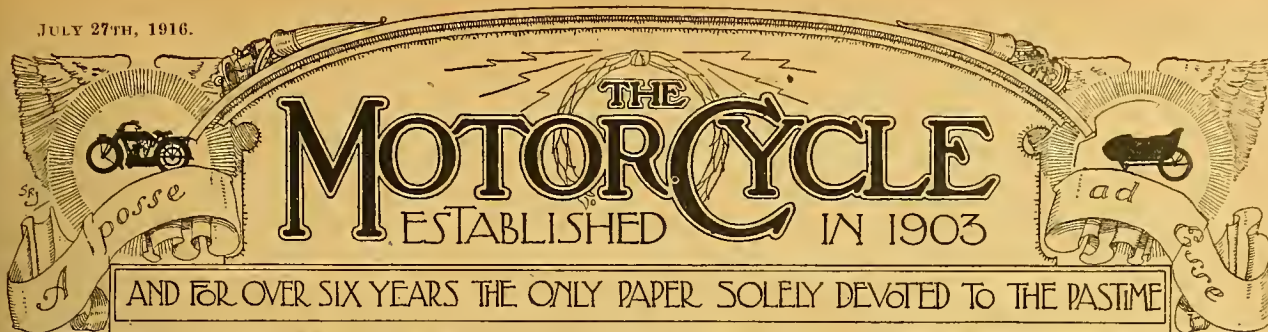
**COLMORE** Depot, Birmingham, Manchester, Leicester and Liverpool, have in stock complete range of models Douglas for immediate delivery, also full range of spares. [06]

**DOUGLAS**, 1915, Colonial model W, 3-speed, clutch, kick starter, lamps, horn, accessories, excellent condition, little used; 42 gns.—27, Seymour Rd., H. ringa, N. [85]

**DOUGLAS**, 1915, 2½ h.p., tip-top condition, low engine, done about 600, tested all the winter, Luv lighting, Klaxon horn; £45, or very near offer.—Ca Anne, Yorkshire Club, York. [X41]

**DOUGLAS**, 1915, 2½ h.p., 2-speed, footboard speedometer, lamp set, horn, purchased new 1 year, condition perfect; bargain, £46.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [06]



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## The Inexpensive Passenger Motor Cycle.

**F**ROM almost the first days of motor cycles, designers have been scheming how best to make the machine carry a second passenger. First came the trailer, with its many obvious disadvantages; but this was short-lived. Then the tandem-seated tricar was over-elaborated until it became practically a three-wheeled car, and as such was found wanting in almost every case. The sidecar, in spite of its theoretical and mechanical faults, has survived the belt-driven cycle car introduced with such a flourish of trumpets, and appears to fill the bill better than anything else at present available.

Though at first devised simply as an attachment, the sidecar has become so popular that many machines are built which are intended to have their sidecars permanently attached. This being the case, it is somewhat remarkable that these combinations are still nearly always built as two units—motor cycle and sidecar—instead as in one homogeneous whole, designed throughout to stand the strains and stresses to which the loaded vehicle is likely to be subjected on the road. It is true that brazed lugs have given place to the detachable clips which once had to be fixed with much labour to the machine, and this is a step in the right direction, but it is about as far as makers have gone in most cases, even when the sidecar combinations are supplied only as complete vehicles and not sold separately. We are not alluding here to those motor cycles which have to serve the double purpose of solo mount and sidecar machine. These come into a different category, and must be designed with these objects in view.

So long as the driver of the motor cycle remains separated from his companion and exposed to the elements the sidecar combination cannot compete with the light car for the favour of those who place their comfort in a prominent position. The occupant of the sidecar is certainly

very comfortably situated, but not so the driver, unprotected as he is from rain and dust. This is certainly a handicap, though in the matter of speed, first cost, and cheapness of running there is no doubt but that the sidecar has the advantage.

From time to time double-seated sidecars have made their appearance, and this journal has done its utmost to encourage their development. Hitherto, however, "double sidecars" have been adaptations of the orthodox sidecar outfit, *i.e.*, the power plant has been mounted into a diamond-frame bicycle, and a very wide sidecar body fitted, with the controls suitably arranged for the driver's hand.

It has been left to the fertile brain of Mr. Alfred A. Scott to design a double-seated sidecar machine or sociable intended as such from the first stroke of the pencil on the drawing board. This machine, which bristles with ingenuity and originality throughout, we are privileged to introduce to our readers this week. We venture to think that its exclusive features will be studied with the greatest interest. Apart from the "flat" frame, which seems to mark a new era in sidecar construction, the Scott sociable possesses real novelty and attractiveness in design at every turn. It strikes us as the most promising "cycle car" design yet devised, and may revive interest in the vehicle which has hitherto proved an illusion, not to say a disappointment, to hundreds.

Whether greater advantages are to be found in a vehicle with three wheels or four remains at present a debatable point. The three-wheeler is cheaper to build and cheaper to run owing to its light weight. The four-wheeler has greater stability and a better appearance, and will no doubt be the ultimate choice of most men who can afford the extra cost. It must be mentioned, however, that Mr. Scott only adopted the three-wheeler after long consideration and study of the advantages and disadvantages of the two types.



# THE MOTOR CYCLE IN MESOPOTAMIA.\*

## Carrying Despatches Through Deep Mud and Blinding Dust.

The following extracts from a long and interesting letter, dated June 1st, from impressions of the hardships, difficulties, and dangers endured by our gallant men known as a T.T. and trials rider that he needs no introduction to our readers. Egypt, as well as Mesopotamia. The deletions are by the British Press Censor.

Corporal A. J. Sproston convey some in Mesopotamia. Sproston is so well He has seen service in France and

**T**O-DAY by the decree of a merciful Providence *The Motor Cycle* of April 13th, 1916, has fallen to my eager hands. It is your Spring Number. (By the way, congratulations on excellent production during war time.) Pleasant memories are revived by your contributor's reminiscences of bygone reliability trials, old faces, old places, old successes, and failures—all concerned in chasing the elusive "gold." These recollections sustain us in a country like this, where conditions create misery and horror. Active service motor cycling, with its varied aspects and vicissitudes, has been my bit in the great upheaval, but, experienced and optimistic as I am, I was never so convinced of the inherent excellence of the present motor cycle as I am to-day. I ask friend "Ixion" to believe that, since those anxious days of Mons, I have seen few breakdowns directly traceable to faulty design or construction. The large number of mechanical casualties could almost wholly have been avoided by intelligent anticipation of, and provision for, abnormal strains and stresses by the rider. I wager that most of our despatch rider artificers will support me when I say that 75% of their labour is the outcome of neglect. On the other hand, I urge manufacturers to give us increased diameter in wheels, which will also bring about increased ground clearance; handle-bar operated clutches are absolutely essential (this point does not require discussion); a totally enclosed kick-starter; and folding crank.

### Active Service in the East.

To turn to the more personal side, I will endeavour to interest you in an extract or two from my notes, from which you may gather that we have our share of Active Service trials and tribulations. After a few pleasant months' sojourn in Egypt in charge of D.R.'s, I tired of the, more or less, strict routine duties that obtain at a big base, and, sniffing excitement, I prevailed upon my C.O. to release me to a division soon to go into action. Successful after a lot of juggling with rank, I soon saw the finish of a 150 mile train crawl, and joined the 13th Division under orders for Mesopotamia at headquarters on the sands at —. During the short stay here for refitting purposes I am on duty; weather, dull and wet. The seas of slimy mud vividly recall the earlier days of the campaign in France. The machine slithers and writhes beneath me as I pick my way around and out of the holes in the "road." Natives driving bony horses and rickety carts bear down upon one with yells and cursos. After the privations of a three weeks' journey by sea and land we arrive at —, pending a move in the direction of Kut-el-Amara to attempt the relief of General Townshend,

beleaguered there with his gallant force. To our dismay, it is thought that we (motor cyclists) will be unable to operate with our machines higher up the Tigris, so we are supplied with horses after landing in the motor cycles to store.

I will not dwell upon the limitations, bordering upon futility, of this new form of despatch carrying, but after a week or so of preparation (for the time a closed chapter) we move forward to engage the enemy. I give my notes:

### The Attempt to reach Kut.

The last day of March, an uncertain drizzle, not unlike the Scotch mist, and shutting out from view the grey, snow-capped mountains. All is now ready for the big offensive, and we spend the day idling around. At 7 p.m. we move off to march up to —. Following by the bank of the river we have not gone far when a long-promised storm breaks, sheets of water hurtle down, and then



Cpl. A. J. Sproston, whose interesting account of his doings as a despatch rider in Mesopotamia appears on this page.

for hours lightning plays around. By its flashes our horses pick their way through the heavy going. We climb in and out of Turkish trenches and gulleys, these now turned into miniature rivers and quagmires. Soaked to our skins and shivering with intense cold, we drag along through the night. Down on its knees and now upon its haunches my horse sinks, sliding and plunging through the horrors of the inky darkness. Eagerly awaited dawn breaks, exposing sheets of water over this vast terrain, fallen mules that cannot rise owing to loaded packs, and huddled groups of men in baths of liquid mud. So we cover the ten miles to —, fourteen hours of misery. No food till evening, bully and biscuits mixed with dirty water from the Tigris. Late that evening another storm, most of the fellows out in it all. I am luckier, and get invited to a tent by some kindly Indians. These coloured warriors soon get tea by aid of a Primus stove. Thus refreshed, I tumble down side by side with a hefty Sikh, and fall into the deepest sleep enjoyed lately.

Censorship restrictions prevent me from

detailing my experiences during the series of furious battles for Kut, in which, I trust, we D.R.'s played no light part. We all deplore that a result commensurate with our efforts was not secured.

### A Dust Storm.

However, I jump to May 1st, the early part of which was devoted to a visit from our Commander-in-Chief. Finished before breakfast, and then hell-devised misery breaks upon us in the shape of a south-westerly gale, creating a dust storm that blinds and stifles, bearing along blasts of scorching air. Neither nook nor cranny can be found to afford protection, and we motor cyclists drag our horses to the river, fighting a passage through sand clouds. Once again in possession of my motor cycle, I force my way over trenches up to Brigade H.Q., kicking the ground to assist the maltreated machine, and through dust, at the same time snatching a hand from the hot bars to fight the flies that assail my nose, eyes, and ears.

MAY 2ND.—Heat still terrific. We are adopting all sorts of weird adaptations in dress in order to keep cool—football type knickers, shirts worn outside to keep up a circulation of air around the body, sleeves laced off tunic or shirt at the elbow, a battered helmet smacked down over the ears giving protection to forehead and neck, all covered by a linen net to ward off flies and mosquitoes. Thanks be to Heaven that we can wander indolently down to the Tigris's picturesque banks to bathe and wash our scorched and blackened bodies.

### The Douglas Suspected.

Leisure in plenty just now, and relieved of most of the despatch work at night. The depredations of the Arabs after dark bring about an offer of — rupees to any sentry or picquet shooting or capturing one of the thieves. At midnight I am down on the warm grass in the close confines of a blanket, and my slumber is broken by the voice of a guardian of the night in whispering consultation with a *confrère* anent a suspicious-looking figure crouching down upon the other side of the trench, shades of — rupees looming large in their imaginations. They discuss the advisability of bayoneting or firing upon the intruder. Raising myself, I peer in the direction of the suspect; it is my inoffensive all-black Douglas, reclining peacefully where I dropped it. At the top of my voice, and with an adjective or two added, I acquaint the anxious ones with the nature of the suspect. They retire, wounded in pride and pocket.

A few days elapse, each one hotter than its predecessor. I am ordered by the staff to proceed on my machine to — and search the vicinity for certain units. A good breakfast, well armed, a full

\*Passed by the Censor.



**The Motor Cycle in Mesopotamia.—**

water bottle, and a trusty Douglas in good fettle for a trying ordeal. The first few miles are covered without incident. Falling in with a brigade office, I am urged to go on by another route, because within hailing distance an hour or two back one of their waggons was looted, three men and horses also taken; but getting along I see no more cause for alarm than a single Arab climbing cautiously out of a hole. Crashing and smashing along, my poor little machine is just flung about by the execrable mud heaps of the plains, plunging into trenches, and ploughing through paths of suffocating dust. Constant recourse to my water bottle, the liquid now almost to boiling point from the sun's rays, is the only method to avoid collapse. Heated chunks of air waft along, as hot as the gases exuded from the plucky little motor. When remounting after a stop, even contact with the burning saddle becomes torture to the body. This is motor cycling at 110° in the shade!

To digress somewhat, I would set out that this wonderful behaviour of the motor cycles, and the treatment I have endeavoured to describe, is part of the daily routine. Certainly the journeys undertaken are short, but the accumulated mileage covered without mishap or repair is stupendous. In addition to drawbacks, we have no tools or organisation to cope with breakages, and an all-round shortage of oil and petrol. Up to within a few days back, two machines have been carrying out the work normally undertaken by ten horses, so when a few more machines came to hand great was the joy in the hearts of the motor cyclists at the departure of the animals. I will not dilate further upon the prowess of our mechanical steeds, but to my muttons. My water supply soon gives out, and it is not long before I am in the throes of a terrible thirst (here I am afraid of the Censor). Anxiety and pain allayed as I spot in the hazy distance what proves to be part of the — Field Company. Pushing ahead, after consuming enough water

to float a Dreadnought, I run into a maze of trenches fronting the now notorious position of — (etc.). Beyond this young Achi Baba, the plain, devoid of vegetation, provides easier going, and soon I can distinguish the welcome tents of those I am out to find. A short stay and some tea. I then make a bid for my fifteen-mile journey back to camp. Home just inside two hours, tired and hungry—the finish to one of the most arduous and difficult rides I have ever accomplished.

**AN OBSERVER KILLED.**

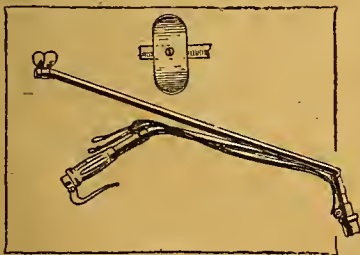
SEC.-LT. J. C. M. STEWART, Royal Flying Corps, early in July was killed while acting as an observer in an aeroplane returning from a successful bombing expedition over the German lines. Mr. Stewart was a director of Noel Paton, Ltd., and at the outbreak of the war he was forming a company for the development of his invention of a four-speed chain gear box for motor cycles.

**MAIMED RIDERS.****ALTERATIONS TO STANDARD CONTROLS.**

AFTER the war there will be numerous men, alas! minus legs and arms who will wish, if possible, to follow their old pastime of motor cycling or car driving, as the case may be. As a matter of fact, there are already a few instances of men discharged from the Army through the loss of a limb who, by the help of manufacturers, have been able to return to their old hobby. This applies in particular to car owners, but if the controls of a car can be adapted to the needs of a man deprived of a leg or an arm, surely those of a motor cycle can. The average motor cyclist is such a keen man that the loss of a limb in the service of his country is not going to prevent him from returning to his favourite pastime as soon as

a Kettering reader, Sydney Davis. He, with a friend who shares the same misfortune of having lost an arm, does a good deal of riding. Davis rides a two-stroke Sparkbrook and his friend, H. Winstone, a Douglas. Winstone has lost his left arm, and the only alteration to his machine has been the placing of the exhaust lever on the right side of the handle-bar instead of the left.

As Davis has lost his right arm, it meant the controls of the Sparkbrook being brought to the left, leaving the right handle end bare. The latter was straightened out, as shown in the sketch, and a piece of steel screwed on to provide a rest for that part of the right arm, i.e., to the elbow, which Davis still has. This leaves his one hand free for the controls.



Handle-bars of Sparkbrook, adapted for a rider who has lost his right arm below the elbow.

he can, and it is to be hoped that the manufacturer will help him by making the necessary alterations in the control arrangements.

**Many One-armed Riders.**

That the loss of an arm need not deprive a man from enjoying the delights of motor cycling has been proved more than once in the columns of *The Motor Cycle*. Another example is supplied by

**TWO ONE-ARMED MOTOR CYCLISTS WHO THOROUGHLY ENJOY RIDING.**

Recent references in our pages to motor cycling for men who have lost a limb have brought forth the above photograph from Sydney Davis, of Kettering (on the left). Both he and H. Winstone, on the right, have been riding for about two years. The machines are a 2½ h.p. Sparkbrook and a 2½ h.p. Douglas.



## OCCASIONAL COMMENTS.

By "IXION."

**False and True Ideals.**

To-day's post brought me the most original and amusing letter I have ever received from a reader. It happened to be intensely abusive, and anonymous, except in so far as the writer confessed to being a corpulent *paterfamilias* of over forty; and its main interest lay in the fact that it was a radical and bitter denunciation of the whole policy of the trade, and also of the technical press. To put its point in a nutshell, the critic complains that motor cycling is being run in the interests of people who cannot ride—duffers, elderly men, weaklings, and (he reserves his most scathing language for these) women! In other words, those who have influence in the development of the sport and industry are pushing variable gears, which render hills climbable by indifferent riders and indifferent engines; are pushing spring frames, which will attract soft-skinned hedonists into our ranks; and are generally trying to convert motor cycling into a cotton-wool sort of pursuit. The thorough-going nature of my correspondent's denunciation is evident from one sentence, "I have ridden every type of variably-g geared motor cycle built since 1903, and I despise them all!" He ends up by surmising that I am getting old, soft, and lazy, and that my two ideals are to make motor cycling as cosy and lazy as I can, in the dual interest of gilding my own labours and of getting as many readers as possible for "my paper" (wish it were mine, by the way!).

**The Dilemma.**

Unwittingly my correspondent is criticising not the policy of *The Motor Cycle* or of our leading factories, but the whole trend of modern civilisation. Life was far more strenuous in the Middle Ages, and developed a few cast iron individuals at the expense of the weaker ruck who went to the wall. 1903 marks the mediæval period of motor cycling. Only a cast iron athlete could regularly employ the motor cycles of that day for prolonged hard work; we had very few riders, but those who stood the racket could ride. To-day we have thousands of riders, most of them somewhat weakly and unskilled; when their engines get into rotten order, they climb hills by changing gear; when the engines get still worse, they pay a mechanic to tune them up; and so good riders are comparatively scarce. We are developing, as a world, on the lines of the greatest happiness for the greatest number; and if my friend despises that philosophy, he must tilt at bigger men than I am, and at vaster institutions than *The Motor Cycle*, or the industry which it attempts to serve. Until he has succeeded in revising the principles which at present influence civilisation, he will fail to reconvert commercial industries, like the motor cycling trade, into restricting their energies to producing half-rideable machines for the delight of a few eccentric stalwarts.

**Some Might-have-beens.**

On the positive side his letter was more interesting. He asks why *The Motor Cycle* and the trade have not shelved variable gears and spring frames in favour of engines that will keep really cool all the time; engine bearings that will remain perfect for three years; absolutely silent valve gears; plugs that won't pre-ignite,

yet will start as easily as the standard Lodge; 32in. wheels and 3½in. tyres; more comfortable saddles; overhead valves with detachable seatings; steel cylinders covered with copper; cooling fins right down the cylinders; outside flywheels with hollow rims full of mercury; Whittle belts made of rubber blocks; the abolition of the "harsh" chain-cum-belt; the utter condemnation of all baby two-strokes, on the ground of their high fuel consumption and general inefficiency (as compared with good four-strokes of equal capacity); the complete and final abolition of all V twins; and a variety of other fads less original in character. (One rejoices to see that, like all root-and-branch reformers, our iconoclast cannot be consistent; several of his ideals are devices for increasing his personal comfort and simplifying his labours, despite his professed yearnings for the strenuous life.)

**A Special Demand.**

On the whole, this letter, like so many others which I have received, goes to prove that there still lingers an unconquerable but limited demand for the so-called T.T. model, to wit, the simple, single-g geared roadster, with a high-efficiency engine, which makes the highest possible demands on its owner's riding and tuning skill. This demand is recognised—or was up to 1914—by most manufacturing concerns. It is the exception to peruse a catalogue which does not list a T.T. model. Yet such inclusions do not quite meet the point. They usually take the form of the standard roadster model, minus its gear box, plus a special pair of handle-bars, plus possibly a special set of cams or lighter reciprocating parts. But what the sportsmen want is a high-efficiency single-g geared model, specially thought out from lamp bracket to back mudguard.

**In Reply.**

On the main question my friend is far too slashing. There are plenty of hard riders left; in fact, there are more than ever there were. Peace-time trials show it. Anybody who has seen Gibson or Bischoff coaxing a 3½ h.p. sidecar outfit through a Six Days course knows that mechanical skill has not been slain by variable gears; anybody who saw a certain team of riders with 6¾ gears attack the Applecross hairpins in the last Scottish Trials knows what recklessly daring cornerwork is; the T.T. races are not picnics, as Jake de Rosier perceived, and some of the D.R.'s daily lives contradict all my correspondent's deductions. For the rest, motor cycling may not be on the average as sporting a hobby as once it was, but the duffers and weaklings who ride nowadays would be even less strenuous and less sporting if they were not motor cyclists; they would be sculling or playing tennis or watching professionals play footer. As it is, they are facing the problems of the road, they are burdened with the task of bending a whimsical engine to their wills; they are within the zone of infection of the speed fever. If they are less dashing and daring than the pioneer motor cyclists, they are nevertheless more of men plus the motor cycle than they could ever have been minus the motor cycle. It is nonsense to pretend that motor cycling is sapping the manhood of the nation; it would be truer to say it has played its part in salving it.

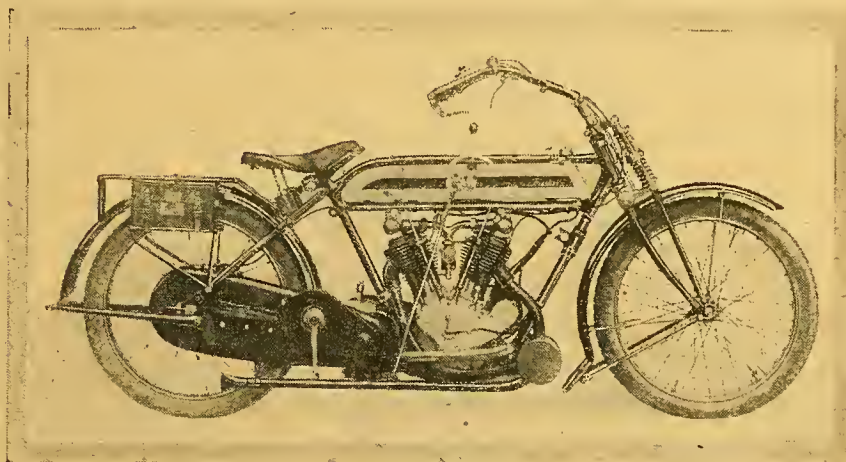


## THE 8 h.p. FRERA.

A NEW ITALIAN MODEL BUILT ON DECIDEDLY BRITISH LINES.

## FRERA FEATURES.

8 h.p. 45° Twin, 1,140 c.c.  
Overhead Inlet Valves.  
Automatic Claudel-Hobson Carburetter,  
Splittorf Magneto.  
Best and Lloyd Pump and Drip Feed  
Lubricator.  
Three-speed Countershaft Gear Box.  
Multi-disc Clutch, handle-bar  
controlled.  
Entirely Enclosed Chain Transmission.  
Kick Starter.  
26 x 3in. Tyres.



The new 8 h.p. Frera, one of the latest Italian productions. It has overhead inlet valves, while the transmission is by entirely enclosed chains. The tendency for machines of foreign origin to follow British lines is most noticeable in this mount.

detachable, complete with the valve and seating. An automatic Claudel-Hobson carburetter is used. The machine, we can well believe, is very silent, the exhaust being led first through a large expansion box, from which it passes through a long extension pipe.

## Clutch and Transmission.

A countershaft three-speed gear box, provided with a handle-bar controlled multi-disc clutch, is fitted. The chain

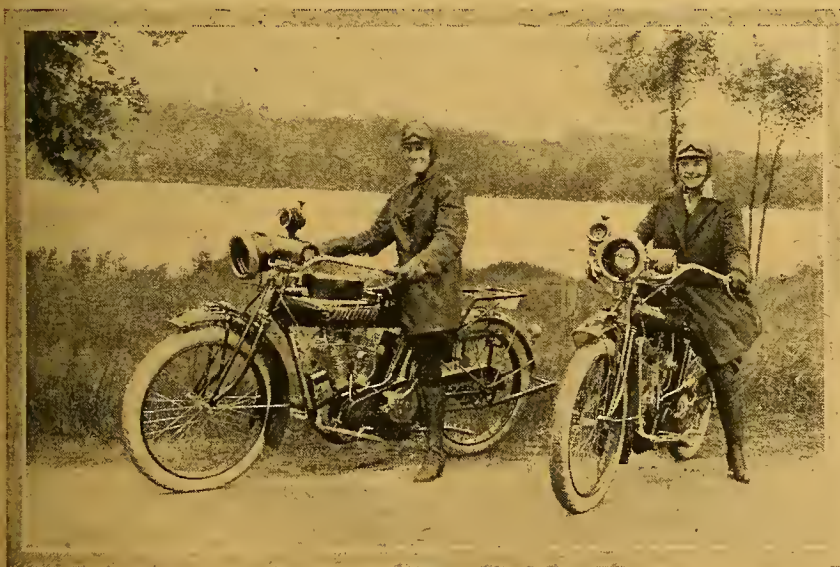
transmission is neatly enclosed in oil-tight chain cases. The machine is built specially for sidecar work, and lugs for the sidecar attachment are incorporated in the frame.

As will be seen from the illustration, the whole machine has a most business-like appearance.

This firm also make a 4 h.p. single for sidecar work and a 2½ h.p. lightweight, both of which models are used by the Italian Army authorities.

## GIRLS' PLUCKY ENTERPRISE.

Two New York Ladies Attempt a Journey Across the American Continent.



## ACROSS THE AMERICAN CONTINENT.

Miss Adeline Van Buren and her sister, Miss Augusta Van Buren, with their Powerplus Indians, on which they are attempting the 3,814 mile journey from Sheepshead Bay to San Francisco.

ON July 4th two enthusiastic New York girls started on the arduous and enterprising task of riding two motor cycles from Sheepshead Bay to San Francisco (a distance of 3,814 miles), which city, according to their schedule, they should reach by August 9th. This is the first coast to coast ride ever attempted by women, and anyone who has read of the difficulties encountered by riders on previous attempts will appreciate the magnitude of the undertaking, and, should they be successful, it will undoubtedly reflect great credit on both the reliability of the machines and the pluck, endurance, and skill of the riders.

Both Miss Adeline Van Buren and her sister, Miss Augusta Van Buren, were born athletes, and from early childhood have indulged in many different sports, including skating, swimming, horse-riding, and so on, in all of which they have been very successful. Motor cycling, however, has eclipsed them all, and for the past three years has reigned supreme in their estimation.

They both ride 1916 Powerplus rear-sprung Indians, mounted on which they are seen in the photograph. Their dress, though perhaps somewhat unconventional, is undoubtedly neat and serviceable.



## Lakeland's First Outing for Wounded Soldiers.

### A SUCCESSFUL TRIP IN WET WEATHER.

By GEORGE D. ABRAHAM,

*Author of "Motor Ways in Lakeland," "The Complete Mountaineer," "Mountain Adventures at Home and Abroad," etc., etc.*

"**W**ORSE than 'Wipers' at its wettest!" Thus spake one of the many jovial and irrepressible Tommies who participated in the first "joy-ride" of its kind in Lakeland. Everything had been beautifully planned except the weather, and few found joy at the outset from Kendal in such a downpour as even Lakeland seldom sees.

However, the party came through mist and moisture cheerfully to find shelter and dryness amongst the leafy shades on the shores of Windermere. Clouds hid the mountains, but not the smiling faces of the kindly natives, who fairly showered roses and numerous other good things on the men who had "done their bit." The fifty-odd wounded soldiers, many of them North-country sportsmen who have been shorn of arm or leg, are not likely to forget their Lakeland outing.

#### Strange Behaviour.

A midday lunch had been planned at Keswick, in that popular haunt of motorists, the Royal Oak Hotel. The way thither lay through Ambleside, along the shores of Rydal Water and Grasmere, and over the cloudy heights of Dunmail Raise. The only exciting adventure of the outing occurred at Grasmere. On one of the awkward turns the sidecar driven by F. Chadwick was run into by a motor cyclist coming in the opposite direction. Serious damage was done to the sidecar, and the driver sustained a sprained ankle, but, sad to relate, the driver of the colliding motor cycle recovered himself and rode off without even an apology. Let us hope an explanation may be forthcoming. Chadwick's machine was left behind, and its two passengers gathered up by the car in charge of Mr. Miles, of Kendal, who was official collector of derelict passengers and drivers. Ere the day was done he had a large and jovial crowd aboard.

#### The Weather Improves.

Little was seen of the grandeur of the western road along Thirlmere and its craggy surroundings on the outward run, for damp clouds filled the narrow dale, but during the two hours' halt at Keswick the mountains shed their misty mantles for a while. The sun actually shone for a few seconds of silvery gleam on Derwentwater as the long hill of Castlerigg was climbed on the return journey. Then, later, there was a chance for a few moments of seeing something of Thirlmere during the sprint along the splendid road on the east side. At a suitable place for the camera man a halt

was called, and the fact noted that the beautiful sheet of water which now supplies Manchester with water has for the first time reached its full height of fifty feet above its original level. "No wonder!" said one jocular Tommy, who had still moist memories of the morning deluge.

#### Welcome Gifts.

Then, on the south-westerly top of Dunmail Raise, came another halt, of which the natives had evidently heard rumours. A party of ladies dispensed cigarettes and various delectable fruits. A characteristic picture



The wounded soldiers enjoying the beautiful scenery under Helvellyn. The water in the background is Thirlmere.

was that of a one-legged Scotsman, with a cigar between his teeth, a cigarette behind each ear, an orange in both hands, and through it all a smile that defies description. At Ambleside there was a flowery welcome, and white heather as well as splendid roses gave obvious pleasure to the recipients. After tea came the delightful evening ride along Windermere, with the Pikes of Langdale, now almost clear, mirrored in the lake's purple depths. Kendal was reached over Banerigg and through Staveley. Though the dull weather hid much of the glory of the district, the outing was voted an unqualified success. Much of this was due to the energy of the organiser, Mr. George Braithwaite, who had gathered in the soldiers mostly from the V.A.D. hospital at Kendal. He also, on his Morgan, acted as "whipper-in" during the run. The



**Lakeland's First Outing for Wounded Soldiers.—**

excellent plan was followed of each sidecar owner providing the day's entertainment for his passenger—a capital arrangement which prevented calling on public subscription in these times when generosity has so many calls.

Nearly every well-known make of machine was represented, and several noted riders of competition

days were conspicuous. Notable amongst these was B. Jefferies, alas! shorn of one leg, but able to handle a Perry light car most efficiently. Harry Whinnerah, the well-known one-armed driver of the A.J.S., had a passenger likewise handicapped, and his joke was that, whatever trouble arose *en route*, they should be able to surmount it, for they had at least two arms between them.



A halt for a photograph on Dunmail Raise—a beautiful pass through the Lakeland mountains.

## Kick-starter on Sturmey-Archer Lightweight Gear.

**W**E have already announced the fact that after the war a two-speed Sturmey-Archer countershaft gear will be obtainable for lightweight machines. Its features were outlined in *The Motor Cycle* of March 30th, when we referred to it as the result of a trial we had been privileged to make with the gear fitted to a Sun two-stroke lightweight.

Since that time the gear has been subjected to many miles of road testing, and a kick-starter has now been added, the design being much the same as in the three-speed S.A. gear, now so largely in evidence, and embodying the same anti-backfiring arrangement. Complete with the kick-starting mechanism, which, of course, entails the use of a separate pair of gear wheels, the gear now weighs 17 lb. The action of the kick-starting pedal is controlled by a spiral spring, having six coils, one end of which is secured in a disc, having holes around its periphery. The disc being permanently held in position, it will be gathered that

the spring can be tensioned up by moving the end to the next hole.

### Unusual Method of Operation.

Another striking change in connection with the gear is the method of control, which is all arranged on the gear box itself. There are two pedals, one above the other, the duty of the lower one being none other than to press the top lever upward. To engage the low gear the top pedal is depressed, and to effect the change the lower lever, which, of course, extends an inch or two beyond the low gear pedal, forces the top pedal upward and thus engages the high gear. It will be understood that by doing away with the more usual rods and hand control of the gear, objectionable rattles, due to wear of the joints of the controlling rods, are done away with, besides which adjustment is seldom necessary. Foot control on the gear box has the further advantage of enabling the gear box to be dropped out of the frame in a few moments.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### The Low Generator.

**[?]** I should be glad to know if the Low acetylene generator is adapted for use on a motor cycle, and if it can be used with any make of acetylene lamps, and for tail as well as head light.—C.S.W.R.

Yes, the Low generator is made in a size suitable for motor cycles, and would supply sufficient gas for both head and tail lamps. No special lamps are required.

### Difficult Starting.

**[?]** I have a 6 h.p. sidecar combination which I find very difficult to start when the cylinders are cold. I have to inject a large quantity of petrol before the engine will start. I have trouble with the throttle and air levers; also, the throttle refuses to open, at times making it so that I cannot close the air, but when I have snatched the throttle open I find that there is no resistance to the air being closed.—R.H.

We should advise you to take the carburettor down, clean it, and see that the throttle and air slides are working freely; also see that the air closes properly. Any air leaks at the carburettor air slide, at the induction pipe, or carburettor unions, will militate against easy starting.

### Cooling for Stationary Engine.

**[?]** I am using a 2½ h.p. four-stroke a.o.i.v. motor cycle engine as a stationary power plant, but I am troubled with cooling the engine. I have tried several fans, the present one being the most efficient, but not good enough yet. There are eight blades measuring 3in. x 1½in., and it is driven at about six times engine speed. Can you recommend any special method or any size of fan for cooling the engine? The fan is on the valve side of the cylinder.—P.V.B.

Your overheating trouble may not be due so much to an inefficient fan as to some adjustment of the engine being wrong, such as the a.o.i. valve having too great a lift, too weak a mixture, the carburettor supplying too rich a mixture through having too large a jet or insufficient air. Adjust the carburettor in such a way that when full air is given the engine will misfire or stop. This will ensure that the mixture is not too strong. See that the valve tappet clearance is not too great; also make sure the exhaust is quite free, and not causing back pressure. We should think that your fan has too many blades. It should be quite sufficiently large, especially when driven at six times engine speed.

### The Engine as a Brake.

**[?]** In the case of a 1916 two-stroke, (1) Should the engine be used as a brake downhill? Are there any drawbacks? (2.) Can four-stroking at speeds of less than twelve miles per hour (top gear) be cured? I fancy the cause is carburation in my case, but do not know what to do. There has been flooding, which aggravated the four-stroking, but the machine had a tendency to four-stroke from the start.—F.T.

(1.) There is every advantage in using the engine as a brake when descending a hill. There are no drawbacks. (2.) It is exceedingly difficult. Most of these engines refuse to run very slowly. Probably a smaller jet would cure the difficulty to some slight extent. The flooding should, of course, be cured.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

### Cracked Exhaust Seating.

**[?]** For the second time I have had a motor cycle cylinder crack across the exhaust valve seat at the thinnest part of the cylinder wall. I am very interested to know what are the general causes of this and the best preventive course to adopt. Would over-carbonisation at head of cylinder have a tendency to make the cylinder metals of too varying thickness, and thereby strain molecules of metal when the cylinder cools down, causing the same to crack at the weakest part?—E.J.L.

The usual cause of the valve seating cracking as you describe is a faultily designed cylinder, which is unable to stand up to any undue heat. There is no preventive except not overworking the engine. Carbon deposit will not cause this trouble. You might be able to get the crack satisfactorily welded, but the better way would be to get a new cylinder.

### Fitting Oil Feed to Front Cylinder.

**[?]** I am fitting a drip feed to my front cylinder. Would you please tell me how far up from the base of the cylinder to tap the thread? Engine 4.5 h.p. J.A.P.—F.S.H.

Any point in the cylinder wall is suitable, provided that it is below the level of the piston top when the piston is at its lowest point of its stroke. Probably 1in. to 2in. from the cylinder base would be about right.

### Position of Outside Flywheels.

**[?]** Will you please inform me (1) Why the outside flywheel of a two-stroke engine is always on the near or driving side? Has the off side been tried? (2.) Is there any reason why the inside flange of a large pulley (9in. or so) should not be weighted to balance the engine and an outside flywheel dispensed with?—H.K.P.

(1.) Flywheels have been fitted on both sides. At present the Baby Triumph has its flywheel on the right-hand side. (2.) No advantage would be gained by weighting the pulley, as the engine should be perfectly balanced otherwise. On most engines your idea of combining the pulley and flywheel would not be of any use, owing to the fact that they are chain-driven to the countershaft gear box.

### Petrol Lubrication.

**[?]** I am a rider of a 2½ h.p. two-stroke, and am puzzled as to how much oil to mix with the petrol. The instructions on my tank are one-sixteenth of a pint of (T.T.) oil to one quart of petrol. Those on my friends' tank one-eighth of a pint to one quart. I have also seen suggestions of one-sixth of a pint to a quart. Another maker's measure for a 2½ h.p. two-stroke appears to contain not more than one-twelfth or one-fourteenth of a pint to a quart. These figures differ so considerably that I should be extremely glad to have your, or any of your readers', experiences as to the best and safest speed running mixture for short and for long journeys.—PERPLEXED.

The usual proportions are one-fourteenth to one-sixteenth, i.e., roughly half a pint, to one gallon of petrol. Some machines will take more, and some less. If you occasionally see smoke from the exhaust pipe upon opening out after switching off for a short distance, the quantity of oil is about right, viz., slightly on the over-lubricating side.



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is maintained by reliability, efficiency, and neatness of design.



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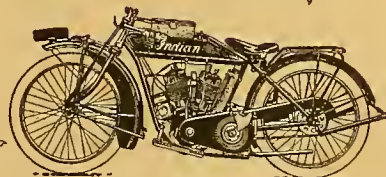
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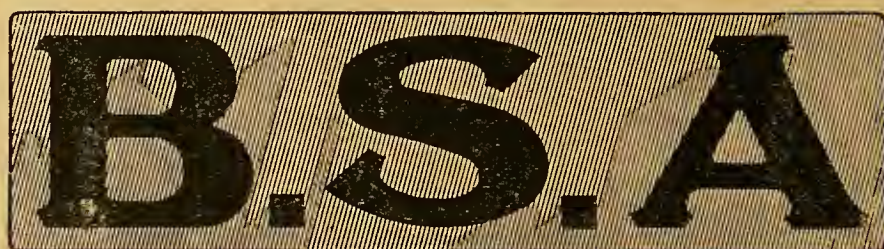
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THE BIRMINGHAM SMALL ARMS COMPANY LIMITED,  
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# "THE MOTOR CYCLE" RECRUITING SECTION.

## Requirements of the Motor Machine Gun Service.

SINCE the announcement in our last issue went to press, Mr. Geoffrey Smith, editor of *The Motor Cycle*, has received fresh instructions from the Commanding Officer of the Motor Machine Gun Service as to future requirements; applications from recruits will continue to be dealt with, and men of suitable experience with cars or motor cycles accepted for this Service. It should be noted from the particulars of enlistment detailed below that youths who have attained eighteen years of age may now be accepted. This will no doubt give pleasure to many youthful readers who have had to be rejected in the past on account of their age, and all such may now apply again, or attend one or other of the inspections.

On Tuesday next, August 1st, Mr. Smith will attend at the Coventry Recruiting Office, Masonic Buildings, Little Park Street, between 2.30 and 4 p.m., in order to examine candidates for enlistment, and on Wednesday, August 2nd, at the Recruiting Office, Stanford Street, Nottingham, between 2.30 and 3.30 p.m.

It is proposed in the near future, provided that there are a sufficient number of applications from the north country, to arrange an inspection at Manchester, but the time and date will be announced in a later issue.

The amended conditions of enlistment in the M.M.G.S. are as follow:

**EXPERIENCE.**—At least one year's motor cycle or car driving experience.

**AGE.**—18 to 40.

**ENLISTMENT.**—For duration of the war.

**MEDICALLY FIT.**—For general service abroad or for garrison duty abroad.

**PAY.**—1s. 2½d. per day, all found; the usual separation or dependant's allowance.

### Central Office for Motor Machine Gun Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

It should be noted that the present vacancies are in the Light Section. Enquiries for enlistment into the Heavy Section Machine Gun Corps (which was closed a month or two ago) still continue to reach us, though it has been stated on several occasions that this section is closed.

We receive many letters both from home and abroad, from men desirous of transferring to the M.M.G.S., but it will save time and disappointment if we mention that transfers are not possible.

In applying for enlistment into the M.M.G.S., recruits should state:

- (1.) Age.
- (2.) Experience.
- (3.) If called up and date.
- (4.) Whether fit for service Overseas.

The following men were accepted for the M.M.G.S. last week:

Brady, L. W., London.  
Chapman, J. G., Cambridge.  
Clare, J. W., Wolstanton.  
Clunie, A. S., Manchester.  
Cook, G., Chalford Hill.  
Coulthard, R., Cleator (Cumb.)  
Ferguson, R., Galashiels.  
Franks, P., Workson.  
Grace, A. D., London.  
Hunthouse, H., Newton (Derbyshire).  
Jones, H. B., Wrexham.  
Jones, T. I., Wrexham.  
Littleproud, M. B., Swaffham.  
Masters, H. G., London.  
Milward, F. T., Clevedon (Som.)  
Selleck, F. C., Bradford.  
Sidwell, E. A., Darlington.  
Thornton, E., Yardley (Birm.)  
Tippett, F., Praddon.  
Webster, F. O., London.  
Williams, E. V. O., Ellesmere.

It should be noted that all recruits for the M.M.G.S. pass through Mr. Geoffrey Smith's hands. Frequently letters are sent on by recruiting officers and others for attention, but delay sometimes means that a man is due for service before the application reaches Mr. Smith.

### A Youngster's Desire Fulfilled.

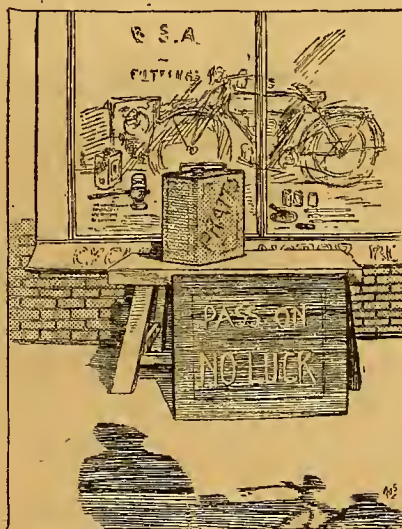
A fortnight ago we referred to the case of a youngster of eighteen who, having failed to secure local enlistment into the Royal Flying Corps, communicated with the headquarters at Farnborough, Mr. Pemberton Billing, and finally with H.M. the King. No success attending his efforts, he wrote to us. The paragraph respecting him attracted the attention of the Officer-in-charge of Trade Tests, Duke of York's headquarters, Chelsea, S.W., who wrote to us for the man's address, which we furnished, and the recruit in question—C. C. P. Marriott, Barrow Hill, Chesterfield, was last Thursday accepted for training as a fitter and posted to the R.F.C. Depot at South Farnborough.

We are officially advised that the Royal Flying Corps is open again for experienced motor cyclists between the ages of 19 and 45. Applicants must have passed for general service.

### DESPATCH RIDERS R.E. SIGNAL SERVICE.

STILL another new regulation to be observed by prospective recruits in the R.E. Signal Service is that candidates for this section must have been educated at a public school, University, or have received professional education. We have already mentioned that the new age limits are 19 to 35. Several men in the South Midland divisional area were examined by the Editor last week.

### PETROL ALLOWANCES.



A cycle agent's week-end joke (?).

machine for running to business. Asked for two gallons per week.

All are allotted six gallons.

Apparently no discrimination whatsoever has been made, and if it proves to be general throughout the country a strong protest will be the result.

Quite apart from this entire lack of discrimination, it seems rather remarkable that claims of those using their machines solely for pleasure should be dealt with before business claims.

On the petrol census forms users filled in their requirements on a monthly basis. The wording on the petrol permit form is "Total number of gallons based on a three months' supply." Thus two interpretations can be placed on the latter, i.e., that the amount given is for one month or for three months, though it is almost certainly for the longer period.

After receiving petrol permit forms, users remit to the Petrol Control Committee the licence duty, at 6d. per gallon, due on the amount of petrol allowed. Upon receipt of this duty the Committee send users a licence for the amount named.



## ORDNANCE WORKERS' HILL-CLIMB.

Sixty-five Competitors in a Hill-climb at Newnham confined to C.O.W. Badged Men.



At the starting point of the Coventry Ordnance Works hill-climb at Newnham, near Daventry, on Saturday last.

SOME slight indication of the spread of the motor cycle movement is seen in a hill-climbing contest held at Newnham, near Daventry, on Saturday last. This event, though confined to employees of the Coventry Ordnance Works, attracted sixty-five entries, though this number by no means represents the number of devotees of the motor cycle at this one works.

To Mr. J. W. Hodgson, the assistant manager of the Howitzer Department, the competition owed its initiation. A committee was formed at the works, the A.C.U. was approached, the Newnham District Council's permission obtained, and, despite difficulties faced in the way of timekeepers, petrol shortage, and hill-climbing equipment, a very successful affair was the result.

The C.O.W. workers are nothing if not 'practical, and consequently the machines came to the starting line in fine trim, and if only the riders had learned the value of a quick start, and the inadvisability of changing up too soon, the times would have been better than they were. As it was, seconds were lost in getting away, and only one or two were noticeable for perfect starts. One of these was J. Gillett (three-speed B.S.A.); another W. A. Berry, who on a single-geared 4 h.p. Triumph got away like a catapult and made a magnificent ascent; and also G. Kelsall, whose Douglas fired within three yards of the starting line, and was quickly out of sight.

The handicap was framed by the Editor of *The Motor Cycle*, who had to place men varying in experience from two weeks to twenty years (the latter period according to B. Haywood, the former Singer light car expert), whilst the power and weights of machines and riders differed in a corresponding degree.

The course measured five-eighths of a mile, a standing start being given.

In Class I. (twenty-seven entries) the first four men were within four-fifths of a second. A. J. Dixon (an old Singer rider) appeared in Class II. (eleven entries), and rode well from scratch mark.

The twins in Class III. were not so fast as the fleetest singles, the fourteen entries being represented by six Douglasses, five Indians, two Enfields, and a Motosacoche.

The fastest time of the day was accomplished by W. A. Berry (4 h.p. Triumph) in 52½s.

Single-cylinder sidocar machines showed up well in Class IV., Triumphs occupying first and second places, with a twin Hazlewood third. King had an aeroplane strut from seat pillar to gear box on his Douglas to take up the strain when using the kick starter, and a tiny lever to raise the float needle on hills.

### CLASS I.—SINGLE-CYLINDER MACHINES WITH CHANGE SPEED GEARS.

	Actual time.	H'cap
1. J. Gillett (4 h.p. B.S.A.)	62	3½
2. C. Hodgson (1912 Triumph)	67½	9½
3. F. Raven (1916 Rudge)	66	7½
4. J. W. Hodgson (1914 Triumph)	62	3

### CLASS II.—SINGLE-CYLINDER MACHINES WITH FIXED GEAR.

1. W. A. Knight (1910 Triumph)	59	12
2. *W. A. Berry (1914 Triumph)	52½	2
3. A. J. Dixon (3½ h.p. Singer)	52½	scr
4. J. Beasley (1912 Rudge)	66	9

\*Machine not according to entry form.

### CLASS III.—TWIN-CYLINDER MACHINES.

1. R. T. M. Aysbford (1912 7 h.p. Indian)	52½	5
2. G. Kelsall (1915 Douglas)	66	17
3. R. Smith (1916 7 h.p. Indian)	55½	2½
4. J. Hobson (1914 Douglas)	69½	14

### CLASS IV.—SIDECARS.

1. T. Binns (4 h.p. Triumph)	105	14
2. V. Capon (3½ h.p. Triumph)	113½	16
3. A. S. Asquith (5 h.p. Hazlewood)	120½	11
4. O. C. F. King (2½ h.p. Douglas)	146	30



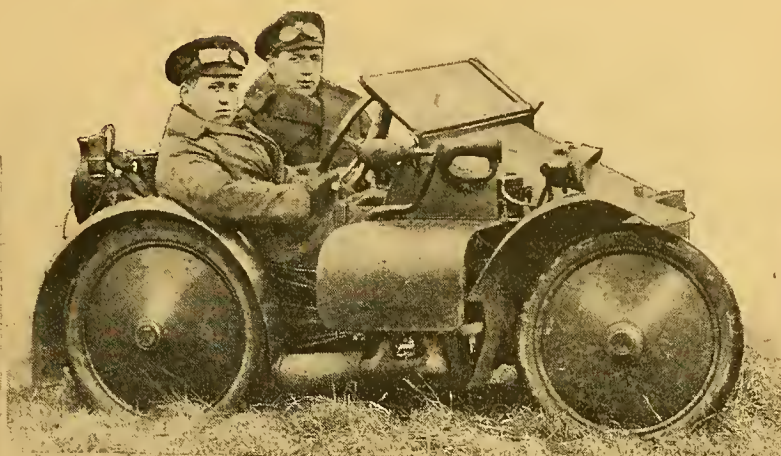
A competitor approaching the bend—the steepest section of Newnham.



# THE SCOTT SOCIABLE.

## A THREE-WHEELED PASSENGER MOTOR CYCLE OF NOVEL AND ORIGINAL DESIGN.

**SPECIFICATION IN BRIEF.**—Vertical two-stroke water-cooled engine,  $76.2 \times 63.5$  mm. bore and stroke = 578 c.c. capacity; clutch situated in fly wheel; three-speed gear, shaft drive; triangulated frame, sprung fore and aft; detachable and interchangeable disc wheels.



One of the early Scott sociables undergoing a test over rough grass tracks.

THE machine with which this article deals will create quite unusual interest in the motor cycling world not only on account of its unconventional and ingenious lines, but because it bids fair to fill the gap which the four-wheeled cycle car has as yet failed to fill. The fact that the machine is the invention of Mr. Alfred Scott, whose originality and ingenuity have been so well exemplified in the Scott two-stroke motor cycle, has already gone far in creating a feeling of

curiosity and interest towards the new three-wheeler, a brief description of which appeared in *The Motor Cycle* a few weeks ago.

When our first article was published circumstances did not permit our giving more than a brief outline of the principles followed in the construction of the machine, but the accompanying illustrations represent the vehicle on the lines on which it has since been developed as a touring car. Though improvements

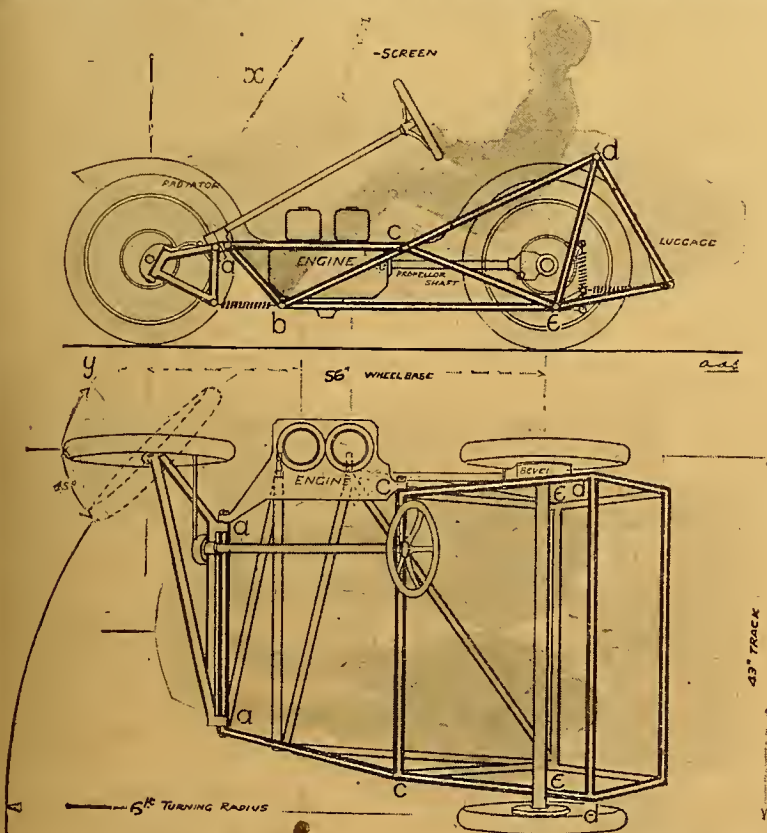
will probably be made, ere conditions permit its manufacture on a large scale, the vehicle must not be regarded merely as an experiment. It was designed in the first place as a machine gun carriage, for which it is particularly suitable on account of its mobility, stability, and remarkable quickness in operation. As such it has undergone an unusually severe road test, having covered a distance of over 15,000 miles with a load equivalent to that of four eleven-stone passengers. With this load it has successfully climbed Sutton Bank, Red Bank, Kirkstone Pass (from Ambleside), Kidstone Pass, and several equally severe gradients.

The Scott three-wheeler includes so many novel and interesting features, even down to the smallest points of its construction, that to do justice to its designer we cannot possibly describe the machine fully in one issue; we propose, therefore, to deal later with those points in its design which offer peculiar advantages over existing practice.

### Why Three Wheels?

The production of this machine has been governed by certain deciding factors. In the first place it was necessary to produce a machine which presented the advantages—cheapness in production and in maintenance—of the sidecar outfit, but without the disadvantages of the latter. It must, therefore, provide adequate protection for both occupants, it must be light, otherwise it could not be cheap to run, it must be speedy, easy to handle, and cheap to manufacture.

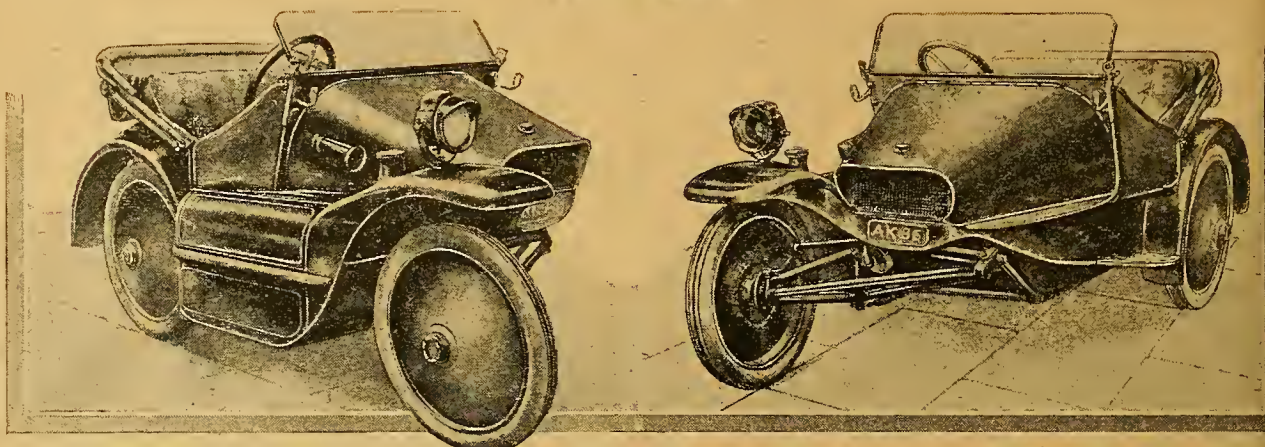
The question, "Why three wheels?" will probably be often asked. The answer is that three-wheel construction adapts itself to triangular framework, and a triangle is infinitely stronger than a rectangle. With this point we intend to deal fully in our next issue, when it will be explained how the advantages of the three-wheel design so far outweighed its disadvantages as to leave no doubt in the mind of the inventor as to which design to adopt. In adopting four-wheel design one would have to give up advantages which have been proved in sidecar use, and adopt principles which have many times been abandoned.



CHASSIS  
SCOTT CAR

PAT. NOS. 24045 1914  
1294 1915  
11707 1915





THREE-QUARTER VIEWS OF THE NOVEL TWO-STROKE TWIN-CYLINDER THREE-SPEED SCOTT SOCIABLE.

The front guard serves as the petrol tank.

The radiator is carried in the fore part of the body.

#### The Frame.

The frame is a tubular structure throughout, and is distinct from motor cycle practice in that no brazed junction lugs are used. The frame is built up out of a number of eye-headed tube lengths, which are assembled so as to form a series of triangular structures, held at their pivot apex joints by nut and bolt fixings. The complete frame can be dismantled and packed away in the form of a bundle of tubes, which, by reference to a plan, can be reassembled to form a complete chassis.

The design of the frame is such that the tube lengths are subjected only to direct compression and tension, intermediate bending stresses, which would cause fatigue of the metal, being avoided by the application of the load only at the apices of the triangle structures.

The complete chassis may be described as consisting of the following units:

1. Bundle of eye-headed tubes, from which the frame is assembled.
2. Swing bracket, which takes the place of spring forks.
3. Back axle, complete with three radius rods.
4. Power unit, with gear box, etc., integral.
5. Four interchangeable wheels (one spare).

#### Front Wheel Spring Bracket.

The springing centres upon one system—the use of coil springs, which are cheaper, lighter, and have a greater range of action than laminated springs.

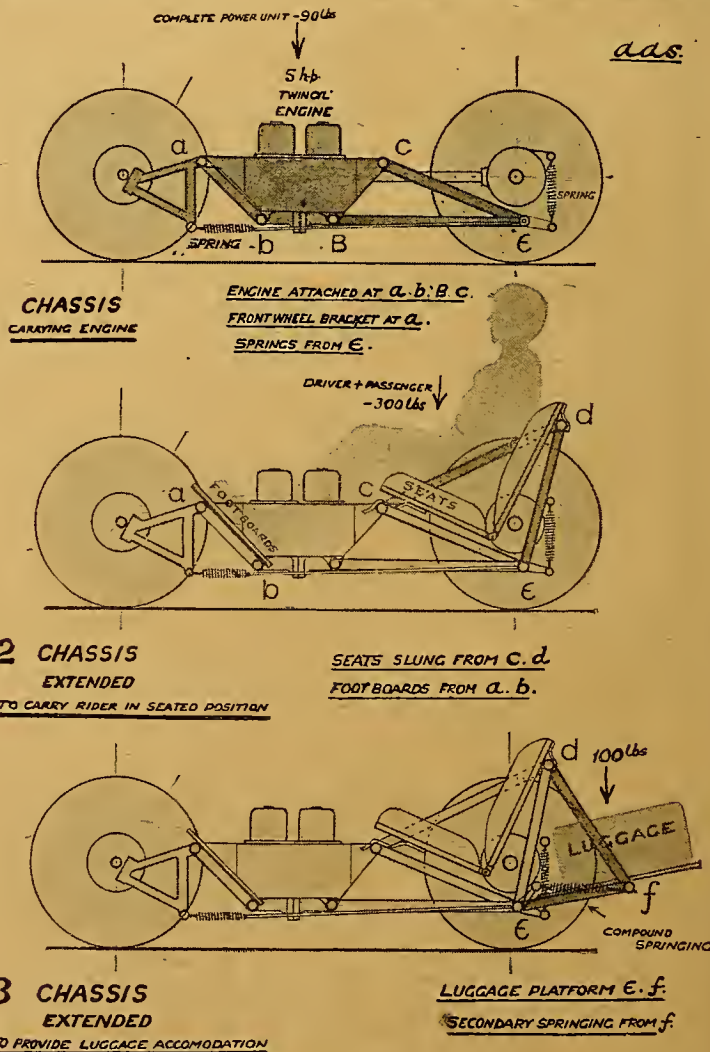
On reference to the plan of chassis, it will be seen that the front wheel swings on a steering head, which is mounted at the apex of a triangular bracket, the latter being pivoted at its base *aa* to the chassis. Viewed in elevation, the action of the bracket is that of a bell crank lever, the position of the springs being clearly shown in the upper view.

It will be seen that this construction gives immense lateral strength, so that it is impossible to twist the steering head, while slackness in the pivoted bearings *aa* would not greatly matter, since the bearings are in constant thrust. Thus chatter would not occur, even though the bearings became excessively slack by long wear, neither would this slackness

affect the steering. The arrangement would appear to have the advantages of the spring fork without its disadvantages, and mechanically it is much superior to the latter.

The back axle, which is very strongly stayed, complete with bevel box and expanding brakes, is a unit in itself.

Since the use of coil springs has been decided upon, the back axle is deprived



DEVELOPMENT OF CHASSIS (ENGINE SIDE) SCOTT CAR



**The Scott Sociable.—**

of the usual attachment to the frame afforded by laminated springs, which ordinarily restrain all side movement; consequently this movement must be prevented in some other way. This is achieved by the employment of three separate radius rods, forming, as it were, a three-point attachment for the rear axle. One acts as a propeller casing, and extends between the bevel box and the engine; its companion, of the same length, extends from the left-hand brake drum (sidecar wheel) to a bracket on the chassis; while the third lies across the frame, being pivoted to the bevel box on the one side and to the apex of the frame, close to the sidecar wheel, on the other. The two first members provide for fore and aft alignment, while the cross member takes up the side strains.

The rear springs are attached by means of a bell crank lever, there being two pairs of springs to each wheel. The action is such that the motion of each pair of coil springs is varied, and the period of recovery is also varied, so as to damp out all effects of bouncing, etc. In other words, the action of the road wheels is transmitted first to one pair of springs, which act as shock absorbers for the other pair. This system affords each wheel a more extensive motion than would be possible were laminated springs employed.

**Policy of Braking.**

The first machine was fitted with brakes acting together on the rear wheels, but on the later models the brakes have been independent. It was found in practice that when the brakes were applied to both rear wheels with the engine shut off, the engine exercised a marked braking effect on the driving wheel, and this upset the balance of things, since the sidecar wheel was not similarly influenced. The double brake was abandoned, therefore, for a system whereby the foot brake operates only

on the sidecar wheel, while the hand brake operates on the driving wheel. In ordinary use the action of the foot brake is counterbalanced by the braking effect of the idle engine, the hand brake being reserved for emergencies and for application when the machine is standing.

Both brakes are Ferodo-lined, internal expanding. Rod controls are employed, and no springs are used, the internal expanding ring being a spring in itself.

**Steering.**

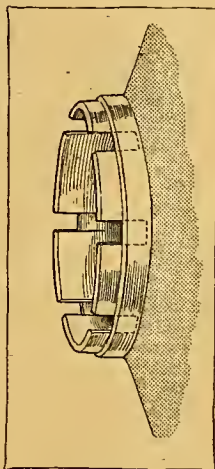
Steering is by gear pinions contained in an aluminium box, and great care has been taken to ensure the castor wheel effect of

ordinary motor cycle steering, the peculiar advantages of which will be described in a succeeding article. The wheel is dished out, and allows the steering pivot to be placed so that a line passing vertically through its axis passes centrally through the tyre.

The steering wheel is so arranged that it will tilt upwards out of the driver's way when mounting and dismounting.

**Engine and Wheels Offset from Frame.**

In order to attain proper distribution of weight, the power unit must lie approximately midway between the steering and driving wheels, and this has led to a mode of construction by which both engine and wheels are carried offset from the frame.



Method of fixing the Scott detachable wheel. The outer ring is a loose collar.

On the face of things, this may appear an insecure method of mounting the engine, and so indeed it would be were it not for the ingenious triangular construction of the engine supports. These are so arranged that no side strains are imposed, the tubes being subjected only to direct compression and tension. Consequently, there is no danger of fatigue in the tubes, and this would rapidly occur were the framework mechanically incorrect in design. We may add that whether the engine be running under load or free the security of the attachment is manifest by the absence of vibration.

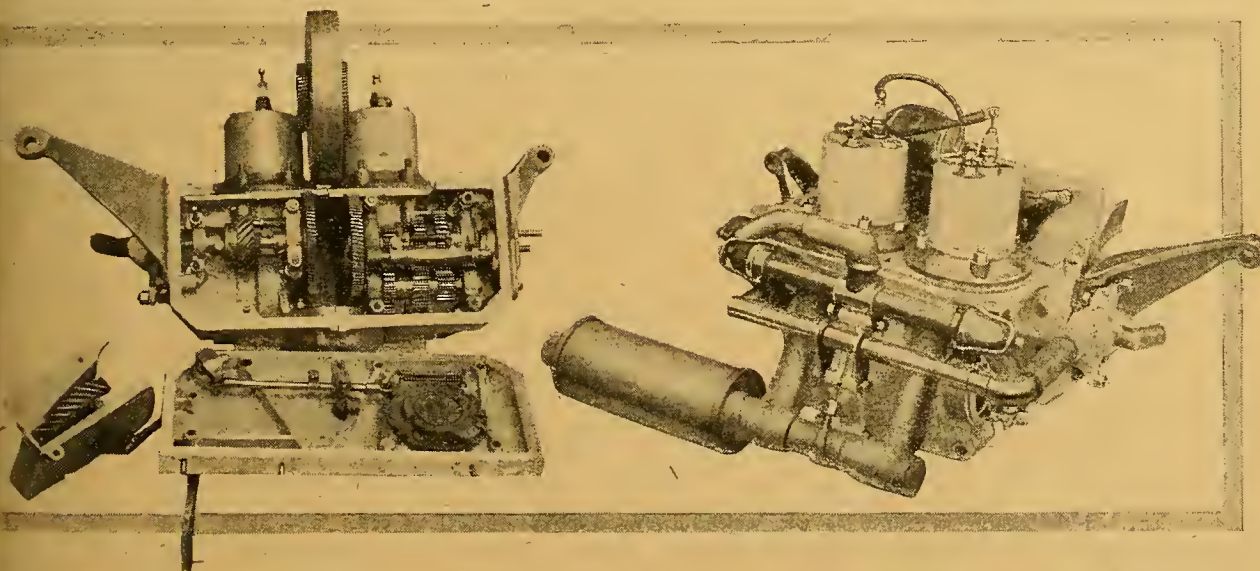
**Detachable Wheels.**

All wheels are interchangeable, and a very neat arrangement is employed for their quick detachment. The hub cap is provided with castellations, into which a tyre lever can be easily inserted. The act of inserting the lever pushes back against the tension of three flat springs a collar which is mounted on the cap. This releases the ratchet arrangement which ordinarily prevents the cap from unscrewing, and after giving the lever a few turns the wheel can be withdrawn. The whole process of changing a wheel occupies only a minute or so, and is a perfectly clean undertaking.

**Power Unit.**

The engine is a two-cylinder two-stroke, having a bore and stroke of 3in. x 2.5in. (578 c.c.), the bore being  $\frac{1}{16}$ in. larger than that of the Scott motor cycle engine. It is rated at 5 h.p., and its high efficiency is chiefly due to the employment of a rotary inlet valve (patent No. 1,290, 1915).

One important point with regard to this engine is that all joints are made by simply replacing the cylinder—that is to say, the one joint between the cylinder and the aluminium crank case casting performs not only its usual function, but covers also the exhaust and transfer connections, which, in usual practice, demand separate jointings. How this is accom-

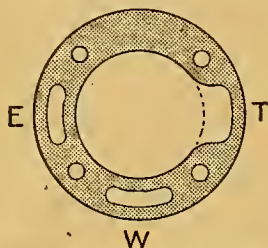


Both sides of the power unit. (Left) Cover plate removed, exposing the gear box. The flywheel has been removed in order to show the skew-cut pinions which drive the load shaft and the auxiliary shaft. The gear-changing mechanism is seen in the lid of the inspection plate. (Right) General view of the power unit, which is rated at 5 h.p.



**The Scott Sociable.—**

plished is clearly shown in the sketch, which is a plan view of the flange face on to which the cylinder is bolted. E, T, and W represent exhaust, transfer, and water



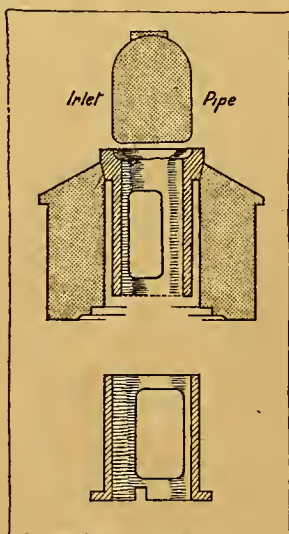
W  
Flange face on which the cylinder  
beds.

E. Exhaust. T. Transfer. W. Water.

respectively. The exhaust passes from the engine into a channel contained in the crank case casting, the silencer pipes being taken direct from the lower portion of the crank case casting. Likewise, special water ducts are contained in the crank case, and the water is fed to the cylinder from below, being taken away by a water jacket connection. The engine, therefore, presents a very clean and simple appearance. The danger of leakage is also very much reduced, one large joint only being depended upon.

**Rotary Inlet Valve.**

The rotating inlet valves are contained in and form part of the crank case doors, and the induction pipes are connected to them by a ground ball joint. The valve

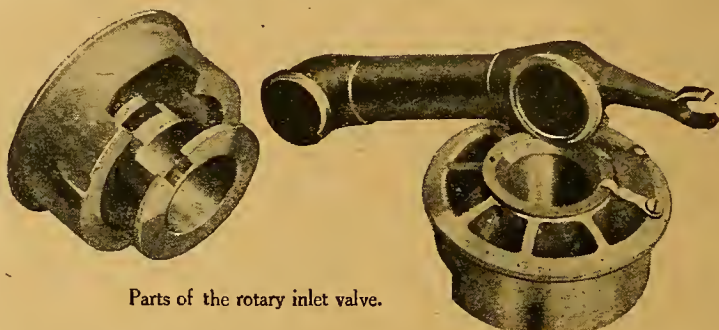


Part section of the rotary  
inlet valve.

consists of a case-hardened steel sleeve, which rotates on a phosphor bronze boss. Both the sleeve and the boss are provided with ports, so that when the sleeve rotates on the boss these ports come opposite each other at a given point in the revolution, and the charge is drawn through. It is practically impossible for leakage past the valve to occur, since not only the crank case compression but also the weight of the rotating sleeve tend to hold the gas-tight joints together.

The sleeve is driven round by a pin projecting from the end of the crank.

This system gives more perfect crank case compression than it is mechanically possible to obtain by the usual method, and it is not necessary to weaken the cylinder by the inclusion of a third port, only the exhaust and transfer ports being swept by the piston. These are placed at exactly opposite sides of the cylinder, and their position is so arranged that the angularity of the connecting rod causes the piston to bear on the transfer port side of the cylinder during the com-



Parts of the rotary inlet valve.

pression stroke, so that the tendency for the gas to leak by the piston at this important juncture is much reduced. Mr. Scott considers this to be a most important point, since it prevents falling off of power as the cylinder becomes worn. Skefko bearings are used where possible, and the big ends of the connecting rods are provided with double roller bearings.

**Petrol Lubrication.**

The working of the rotary inlet valve is much assisted by the petrol lubrication, this system having been adopted on account of its simplicity, and for the more plausible reason that the engine is found to give better results when lubricated in this way than when the hand pump feed, originally fitted, was used.

**Water Cooling.**

Water circulation is assisted by the use of a centrifugal pump, and the water jackets consist of aluminium sleeves which slide over the cylinders. Rubber joints are provided at the base to prevent leakage and to allow for unequal expansion. These aluminium covers are held down by the nipples in which the sparking plugs and compression taps are screwed, the nipples passing through the aluminium jackets into the cylinder heads.

**Transmission.**

The flywheel is situated midway between the cranks, and it contains the clutch. On either side of it are pinion wheels, having a 10° spiral drive, and one of these is driven through the clutch, while the other is fixed to the crankshaft. The former, which revolves with the engine only when the clutch is engaged, conveys the drive to the gear box, while the other, which always revolves with the engine, drives the magneto and also a shaft which works the water pump, and on which the engine starter operates.

The gear box is integral with the crank case, and a one-third reduction is

obtained between the engine and the loadshaft. The gear box is so designed that the only sliding feather is on the high gear dog clutch, i.e., where it is subjected to the least load. Three forward speeds are provided, a reverse being unnecessary, since the machine can be turned in its own wheelbase. By a simple arrangement it is made impossible for the driver to engage the clutch till the gears are properly home, and similarly it is impossible to move the gear lever till the clutch is fully disengaged.

Though this arrangement renders the gears practically foolproof, the writer is inclined to question its advantages from the point of view of the more or less experienced driver.

**Engine Started from the Seat.**

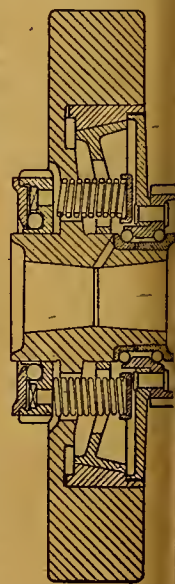
At the driver's right hand is placed a lever, giving ample leverage, by which the engine is started. The lever operates a quadrant which engages a gear wheel on the auxiliary shaft, and, since the teeth on these two members are skewed, the tendency is for the quadrant to force the gear wheel away from it when pressure is applied. This it does, thereby engaging the ratchet, so that no springs are required except for returning the hand lever.

From a normal position at the driver's seat the petrol can be turned on, the engine primed (if necessary), the carburetter flooded, and the engine started by a pull at the hand lever!

**Clutch.**

The clutch is a particularly novel and interesting piece of work. It consists of three members, a central cone, which is free to slide on the shaft; an inner steel ring, which is split to permit it to expand, and the flywheel itself. When the clutch is home the split ring is firmly held between the flywheel and the inner cone, and it is this ring which conveys the drive to the loadshaft.

The action of the clutch is as follows: As the clutch is slowly



Sectional view of  
the clutch embodied  
in the central fly  
wheel.

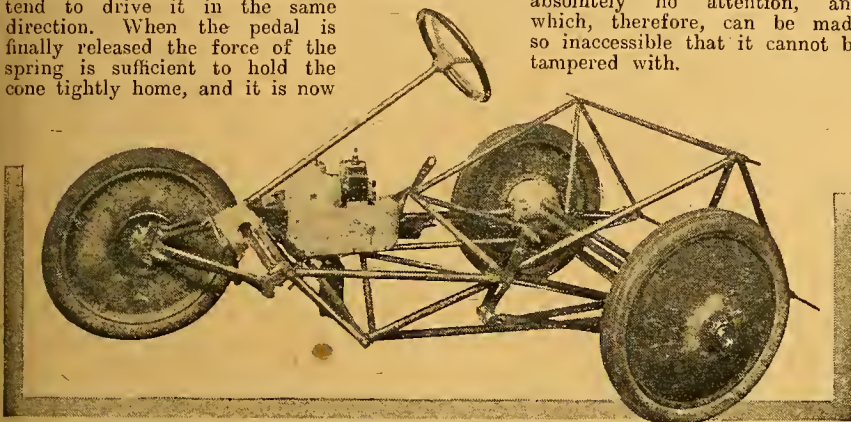


**The Scott Sociable.—**

engaged the internal cone comes slowly into contact with the expanding ring, and the friction between the bevelled surfaces slowly takes up the drive. As the pedal is still further released the ring begins to expand till its outer face comes in contact with the flywheel, which will still further tend to drive it in the same direction. When the pedal is finally released the force of the spring is sufficient to hold the cone tightly home, and it is now

practically impossible for the inner ring to rotate independently of the members between which it is held.

This clutch is extremely sweet and progressive in action, yet it can be made to grip instantly when required. It is the outcome of long experiment aimed at producing a type of clutch which requires absolutely no attention, and which, therefore, can be made so inaccessible that it cannot be tampered with.



The Scott chassis, the triangulated construction of which is rendered clear in this view.

**Points of Importance.**

As will be seen from our illustrations of the complete machine, very ample provision is made as regards mudguarding, the vehicle being as comfortable in every way as a touring car. Since the chassis is designed to withstand all stresses, the very lightest bodywork can be employed. The framework may appear to consist of an unnecessary number of tubes, but there is no superfluous tube in its whole construction. Appearances, moreover, are deceptive, since the complete framework is considerably lighter than that of a motor cycle and sidecar. The weight of the fully loaded vehicle is 5-6 cwt., or approximately half that of the alternative four-wheeler.

As regards the transmission, it will be observed that every working part is properly enclosed, while the inventor seems to have left us nothing to adjust. The clutch is contained in the crank case. Not even a corner glimpse of it can be obtained, while the shaft drive is calculated to prove most dependable.

H.M.B.

[Further articles on the mechanical details of the Scott Sociable and its road tests will appear in subsequent issues.—Ed.]

## Huge Crowd Witness High-speed Motor Cycles.

THE annual 300 mile motor cycle race was held at Dodge City, Kan., on the 4th inst. The race, which has now developed into one of the principal American motor cycling events, is held on a dirt track of two miles to the lap. The event attracted a crowd of

spectators estimated to number 20,000 or more.

The race was won by Irving Janke, on an eight-valve racing Harley-Davidson, who covered the 300 miles in the wonderful time of 3h. 46m. 36s., which equals a speed of 79½ m.p.h. In so doing

he broke the American record by 10m. 9s.

On the same day racing was held at Sheepshead Bay, where the Harley-Davidson again was successful in winning the two miles American championship.

(Top centre) A bunch of competitors just after the start in the 300 mile race at Dodge City.



(Bottom centre) Irving Janke, the winner, and Roy Weishaur, who was third, both mounted on eight-valve Harley-Davidsons.



Irving Janke (eight-valve Harley-Davidson), winner of the Dodge City 300 mile race at 79½ m.p.h.



Red Parkhurst (eight-valve Harley-Davidson), winner of the two mile American championship at Sheepshead Bay.





### TIME TO LIGHT LAMPS

SUMMER " TIME.

July 27th	...	...	9.25 p.m.
" 29th	...	...	9.22 "
" 31st	...	...	9.19 "
Aug. 1st	...	...	9.18 "

### Hoisted with one's own Petard.

It is rather amusing to note that one of the daily papers that took such a prominent part in the "pleasure" motoring campaign of a few months ago is now showing great alarm at the petrol restrictions. Doubtless the owners of the paper in question are now anxious as to the extent to which they will have to reduce the mileage of their motor delivery vans.

### The Admiral Arbuthnot Trophy Fund.

The most recent subscriptions received by the A.C.U. for the Admiral Arbuthnot Trophy Fund are the following:

Godfreys, Ltd.	...	£2	2	0
Joseph Lucas, Ltd.	...	2	2	0
E. M. P. Boileau	...	10	0	0
H. J. Johnson	...	5	0	0

The total sum of subscriptions received and promised stands at present at £57 1s.

## SPECIAL FEATURES

A REMARKABLE SIDECAR (Illustrated).

THE MOTOR CYCLE IN MESOPOTAMIA.

ORDNANCE WORKERS' HILL-CLIMB (Illustrated).

### The Petrol Position.

The Petrol Committee are making frantic efforts to get all the notices out by August 1st. The prospect for the civilian user does not look promising at the present time owing to the demands by the military during the present offensive having been so enormous; at one time it was doubtful if any petrol at all could be supplied to the private owner. All motor cyclists, except doctors, commercial travellers, veterinary surgeons, etc., will receive the same allowance, no matter what demands they have made, namely, two gallons per month, three monthly licences being issued. The licences are nominally available for three months—that is to say, not more than six gallons may be purchased in that time—but if the rider does not use his machine sufficiently often to ensure his consumption of the three tins during the three months, he may still purchase the balance left on his card over an extended period. On receipt of the note stating that the motor cyclist is entitled to receive six gallons in three months, he need not, unless he likes, send for his card or ticket, but may wait until such time as is convenient for him to do so.

### The Latest Ruse?

We are informed by Mr. H. Blofeld, of the Woodlands, Sydenham Hill, S.E., that a man in the uniform of an officer called on him to inspect a nearly new 3 h.p. Royal Enfield that he had advertised for sale. The prospective purchaser, who intimated that he held a commission in the Northumberland Tyneside Fusiliers, requested a trial run, which was granted. Since then Mr. Blofeld has seen neither man nor machine.

### A Midland Sidecar Outing for Wounded.

The sidecar run for wounded soldiers arranged by Mr. W. H. Carson, of the Coventry Excelsior Co., in conjunction with Mr. Fulford, of sidecar fame, was carried out on Saturday last in a very successful manner, the glorious weather contributing to the general enjoyment of the proceedings. The soldiers were taken from Coventry hospitals through typical Warwickshire scenery to Aston-le-Walls, a little village near the Edge Hills. Mr. Fulford's home is at Aston-le-Walls, and he had enlisted the sympathy of the clergy and residents of the district, the result being a very enjoyable tea and entertainment. The return journey was then commenced.



ORDNANCE WORKERS' HILL-CLIMB. J. Gillett (4h.p. B.S.A.), winner of Class 1, for single-cylinder variably-geared machines. He is shown crossing the finishing tape, the gradient here being about 1 in 6.





COVENTRY ORDNANCE WORKS  
HILL-CLIMB.

F. Raven (3½ h.p. Rudge), third in Class I.,  
at the cross roads on Newnham (see p. 78).

#### Another "Scooper."

The side-by-sidecar, the sidecar double, the sociable sidecar (call it what you will) has arrived! A runabout, designed throughout as a double-seated car, has been evolved and exhaustively tested by Mr. Alfred A. Scott, and the first illustrated description of it appears in the current issue of *The Motor Cycle*.

#### Originality in Sidecar Design.

The Scott sociable possesses more original features than any war time motor cycle yet produced, though there are a number of new designs at present undergoing test "behind the scenes." Of which more anon.

#### An Extensive Test.

The new Scott car, which is bound to create a sensation, has been tested in Government hands, and its total mileage on the road before the final design was settled upon amounts to something in excess of 15,000.

#### Naval Officers and Petrol Licences.

We have received several letters from Naval officers, who, owing to absence on duty, have not had an opportunity of filling up their petrol forms, and now do not know whether they will be able to obtain supplies. We should advise all such to fill up the necessary forms at once and state the reason of the delay. It will be very hard lines if they are debarred from obtaining their fair share owing to the circumstances outlined above.

#### "I'll have the Month."

A Bolton motor cyclist, summoned for driving to the danger, etc., at Blackpool, defended himself on the ground that his exhaust lever snapped, and to avoid a char-à-hanc he threw the gear into free position. He was about to dismount when the machine sideslipped, and he fell striking against a woman. He explained that it was a pure accident. A fine of £3 and costs, in addition to costs of witnesses, was imposed. When defendant asked What is the alternative? he was told a month's imprisonment, and his reply was, "Well, I'll have the month." "We shall want the machine," said the Clerk. "All right," was the reply. "I'll bring the machine, and I will appeal."

#### The Motor Skicycle.

A reader suggests that the motor-propelled "scooter" described in our last issue would be useful for busy departmental managers and others in getting about quickly from one part to another of a large works!

#### The National War Funds.

At the week-end the principal war funds stood as follow:

The Prince of Wales's National Relief Fund (£3,353,000 distributed)	£5,930,933	0	0
British Red Cross Fund .. ..	4,106,860	0	0
Tobacco Fund .. ..	110,698	16	10
The Queen's Work for Women Fund .. ..	170,093	13	9

#### Police Activities at High Wycombe.

In view of the recent fine of £2 for having a movable lamp, imposed by the Wycombe magistrate on the driver of a War Office model Clyno motor cycle equipped with a regulation Lucas lamp, it may interest the police authorities there to know that there is a small fortune awaiting them in fines and confiscated lamps if they can spare the valuable time of one of their constables to look out for the several hundred similarly equipped War Office machines now running around the country. They are all finished in khaki, too!

#### Wounded Soldiers' Sidecar Picnic organised by Ladies.

It would be difficult to conceive a more enjoyable outing than that which took place on Saturday last at Eastcote Park. The hosts were the ladies attached to Messrs. Bourne and Hollingsworth, of Oxford Street, W., and they saw to it that the wounded soldiers who were their guests wanted for nothing. The ladies had secured the assistance of about fifty motor cyclists in order to transport the wounded to the venue of the picnic, and it was quite an interesting sight to see the sidecars parked in the enclosure.

#### Despatch Riders in the Irish Rebellion.

The official despatch of General Sir J. G. Maxwell dealing with the Irish rebellion contains a tribute to the work of motor cyclists. The following quotation shows that the despatch riders undertook dangerous work: "I wish to acknowledge the great assistance I received from ... the Civilian and Officers' Training Corps motor cyclists, who fearlessly carried despatches through streets invested with snipers."

#### Motoring While They Can.

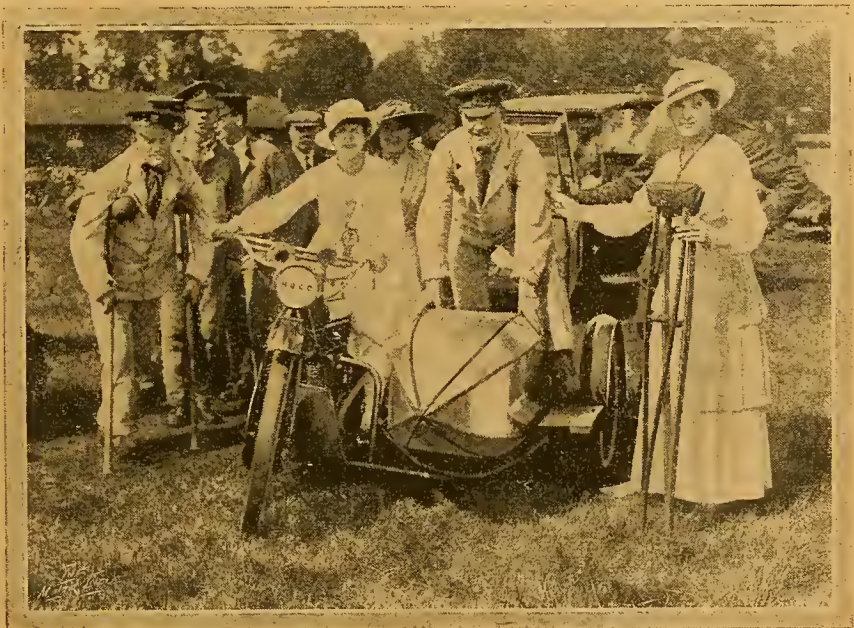
The advent of real summer weather and the near approach of limited petrol supplies resulted in a large amount of motor traffic on the main roads over the week-end. Many motor cyclists are making full use of their machines while they can get a fair amount of petrol. After August 1st many will have to be contented with much shorter runs.

#### Cycle and Motor Trades' Benevolent Fund.

A special meeting of the Executive Committee has decided to issue the usual autumn appeal to the trades by means of a presidential letter, the course adopted during the last two years, instead of by a dinner. Of fifty-seven councillors who replied to the circular seventeen were in favour of a banquet, twenty-eight against, while twelve preferred to leave the matter to the committee.

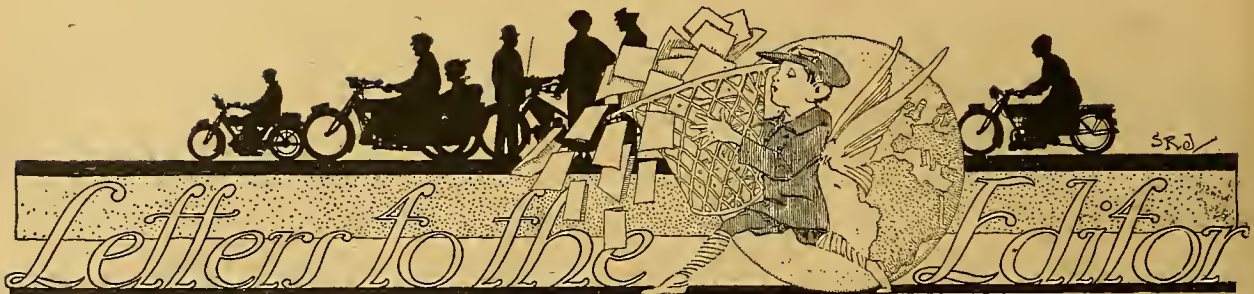
#### "Six Gallons for Three Months."

During the past few days the words that have been on all motor cyclists' lips are the above. Everyone appears to be having allotted the same amount, whether he uses his machine for business or pleasure. For instance, Mr. T. Goldsworthy-Crump, district surveyor of the Taunton Rural District Council, has been allotted this apparently standard amount, though he asked for twelve to fifteen gallons per month.



Some of the hostesses and guests at the Eastcote Park wounded soldiers' picnic, referred to in a paragraph above.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### How to Clean Overalls.

Sir,—Overalls can be cleaned by scrubbing with Fels Naphtha soap and sponging with clean water. A better job can be made by soaking and rubbing with this soap, drying in the open air. My motor coat, which would have been cast aside as useless, has just taken a new lease of life.  
F.C.H.

#### Courtesy!

Sir,—We hear so many complaints of the high-handedness of the police that an instance to the opposite extreme may be of interest. I was driving a 7.9 h.p. Harley-Davidson combination through Guildford the other evening, and in entire forgetfulness of ten-mile limits, I dropped into second gear and came up that hill nearly all out. I was neither blinding nor showing off, but I do like to swing a machine up a sharp pimple like Guildford at a good speed. Nearly at the top, out steps the man in blue; then I realised what a fool I was. Judge of my surprise when, after accusing me of coming up the hill at nearer forty miles than ten, he urged me to be more careful in future, etc., etc.! I thanked him for his courtesy, and drove on in absolute amazement. I think motorists should know when the police treat them well, and take extra precautions on those occasions to observe the law.  
AUBREY HARRIS.

#### A Butcher's Sidecarrier.

Sir,—I saw in a recent issue of your paper several motor cycle business turn-outs. I enclose you a photograph of my turn-out with two live lambs in the box.

The cycle I am riding is the big 4 h.p. Norton, chain and belt drive, which I consider has no equal for pulling power and *real* hard wear. I have an intimate friend in the motor cycle trade, so I have had the pleasure of riding various makes, but never one that has equalled mine. This machine has been in use every day for the last seven months, delivering goods every morning over very hilly and shockingly bad roads, but it keeps up its work marvellously. I fetch all manner of live stock, and have had five pigs nine weeks old in the box. I have gone on long journeys into Wales at week-ends. The box can be detached in about three minutes and a pleasure sidecar attached. The front of the box is fitted with a lid as a receptacle for carrying tools, etc.

I used to keep a horse, but I found the motor cycle was cheaper, less trouble, and far more speedy. I do the round in about one-third the time, and that alone is something in these short-handed days. I live amongst the Cheshire hills, on the borders of Derbyshire, but the Norton climbs them all with perfect ease. The carrier was designed and built by T. Linuster, of Macclesfield.

W. JACKSON.

#### Sidecars as Taxis.

Sir,—Your article in last week's issue on the sidecar de luxe has made me wonder why, in these days of petrol economy, motor bicycles and sidecars are not being used occasionally in place of taxis.  
W. G. ROBERTS.

#### Distribution of Weight in Sidecars.

Sir,—In looking through some back numbers of your excellent paper I noticed a letter from Mr. A. J. Sheppard, in your issue of June 29th, which I had not noticed before. I trust Mr. Sheppard is not rejoicing in what he must think a "significant silence." His letter is interesting, but rather self-contradictory. He begins by saying that he has tried scientific distribution of weight, but, discouraged by the erratic steering, discarded it in favour of the slipshod un-mechanical method.

Then follows a most interesting and unique list of measurements. He states that "the line of sidecar axle" is 4in. in front of the back axle of the machine. Does he not know that the sidecar wheel and driving wheel should be coaxial, and should pivot about the same point when turning corners? A most enlightening experiment for Mr. Sheppard would be to turn a right-hand corner on a sandy surface and note the furrow ploughed by his sidecar wheel.

Then he actually admits that he has broken "the back bottom stay on which the sidecar chassis is fixed" "even" with the weight distributed in his novel method. He says the front of the seat is 14in. in front of the sidecar axle. This is not very helpful to one unacquainted with the length of the seat.

What is the life of a tyre on his sidecar wheel? I have written to my friend, Mr. Corke, who has been driving the outfit described in my previous letter, and you will no doubt hear from him in due course.

H. ST. V. ADDENBROOKE.



The sidecarrier mentioned in the letter from Mr. W. Jackson.





*Write for a copy!*

It will interest and  
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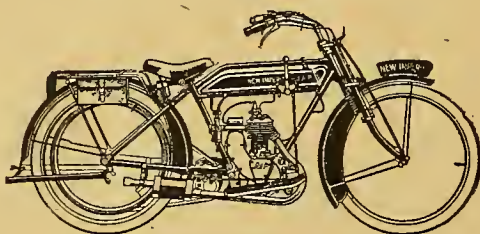
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**A Praiseworthy Ambition.**

Sir,—I am a Tommy from the Dardanelles, just resting at a convalescent camp near Manchester through trying to stop a shell out there.

I would like to get into communication with a patron of your well-known paper, *The Motor Cycle*, residing in the Manchester district, who would care to teach me to manage a motor cycle. The reason I ask this favour is because I want to transfer into the Signal Service for further service in France.

T. BARDLEY.

**Petrol Permits.**

Sir,—Is it possible to explain on what system the petrol licences are being issued?

I made application for twelve-fifteen gallons per month, which is my average consumption, and have received a notification that I have been allotted six gallons for three months! My machine is used almost entirely for public work, and it is impossible properly to supervise a district of this size (Taunton) without a motor.

A friend of mine who uses his machine for occasional visits to the golf course has had the whole of his application granted. He applied for two gallons per month, and gets all he asked for!

There must be hundreds of others situated the same as myself, and to whom rapid and cheap transit for professional and business purposes is an absolute necessity.

T. GOLDSWORTHY-CRUMP,  
District Surveyor.

**Petrol Consumption with Automatic Carburetters.**

Sir,—In your issue for July 6th "Ixion" weighs the pros and cons of the two-lever and one-lever carburetters. Now he has left one type of carburetter out. I refer to the car type fitted with a properly designed hot air intake, viz., the Claudel Hobson. Some months back in his "Occasional Comments," "Ixion" remarked that he was taking delivery of a machine, the description of which left no doubt as to it being an A.B.C.  $3\frac{1}{2}$  h.p. 180° twin. He also gave a semi-promise to give the readers of *The Motor Cycle* the results of his tests with regard to petrol consumption, speeds, hill-climbing, etc.

Now the A.B.C. motor cycle, with its startling, yet sound, innovations, appeals to me, as it must appeal to many other readers of your interesting paper, and as this machine is fitted with the Claudel Hobson carburetter plus a well-designed hot air intake, it seems only fair to this type of carburetter and machine that "Ixion" should give his experiences.

F. MASON, M.T., A.S.C.

B.E.F.

[The article in question is in type and will appear when space permits.—Ed.]

**Spring Frames and Freak Hills.**

Sir,—I have been interested in the remarks made lately in *The Motor Cycle*, firstly by Mr. Abraham, secondly by "Ixion," and thirdly by Mr. Abraham and Mr. Bethwaite.

I fancy, through reading "Ixion's" weekly outbursts, that what he does not know about hill-climbing, freak or otherwise, is not worth knowing, in spite of the doubt expressed by both correspondents last week.

Mr. Bethwaite seems to share the opinion of Mr. Abraham, viz., that on very rough ground rear springs accentuate the roughness, whilst on moderately rough ground they damp out the roughness. This on the face of it is ridiculous.

What actually happens on a freak hill or elsewhere is that, when the rider meets an obstacle—a piece of rock or anything else—the rider is lifted, as Mr. Bethwaite rightly says. Yes, but not so far as he would be if he had a rigid frame, for the springs are compressed thereby, and on passing the obstacle the springs push the wheel down into the hole immediately (there is no chance then of wheel spin), and the rider and machine are let down gently and without rebound (if the springs are leaf springs, as are generally adopted); consequently there is no need for gymnastics.

Lest Mr. Abraham or Mr. Bethwaite should think I am as much a novice as they think "Ixion," let me hasten to say that, though I have figured in no trials or public events of any description, I have done much freak riding, and generally alone for the love of it. I know upper Wharfedale in Yorkshire and its environs pretty well, having

explored them on a P. and M., a Scott, and an Indian (rear sprung) in turn, and I did best on the Indian simply because of the spring frame.

A. ROBINSON.

**Sir R. K. Arbutnot's Sportsmanship.**

Sir,—Recent references to the late Sir R. K. Arbutnot as a motor cyclist emphasise the fact that he was the first amateur in one of the Tourist Trophy races in the Isle of Man, but other feats of his may be aptly recalled to memory at this time, when a memorial to his name and fame is being established.

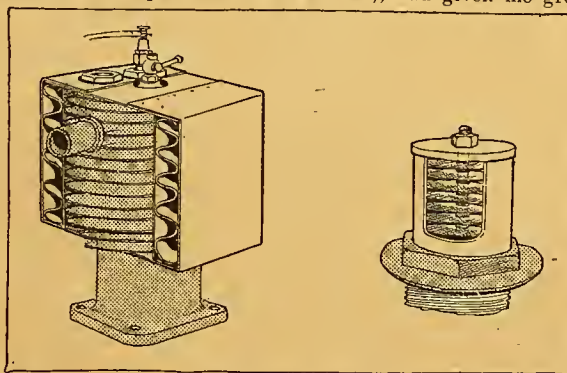
He was, for example, the absolute winner in 1910 of the Jarrott Cup, presented in connection with the annual competition from London to Land's End and back—a journey in which not speed and speed alone, but accurate judgment as to speed, precise punctuality, and faultless running to the watch bring men to the front places. And in the somewhat similar, though less arduous, competition, also organised by the Motor Cycling Club, from London to Edinburgh, the late Admiral figured as a medal winner, on more than one occasion using brief leave from his ship when in northern waters to train some five hundred miles to London, merely for the fun of motor cycling forthwith back to Edinburgh with the club at Whitsuntide.

His fondness for road trials was more pronounced even than his keenness for racing, and on this side of his motor cycling activity he received, deserved, and, I believe, enjoyed, a very cordial and widespread appreciation of his sportsmanship.

F. T. BIDLAKE.

**Cooling Devices.**

Sir,—Some time ago Capt. Lindsay, R.A.M.C., gave a description of a Norton machine of his, and mentioned a cooling device. My own machine, a 1913 4 h.p. Singer and sidecar (a two-speed and clutch model), had given me great



satisfaction, but was inclined to get a little hot. I therefore designed a copper radiator, and should be very glad to hear from Capt. Lindsay how it compares with his.

Briefly, it consists of a sheet of  $\frac{1}{4}$  in. copper, cut to fit the cylinder head, and having two holes cut in it, to accommodate the valve caps. It is then bent at right angles to follow the fins, which it touches, and again bent at right angles and slotted, to go between the valve springs and the cylinder. Another piece is made of J section, so that it projects an inch from the first piece of copper, and a piece of sheet copper is deeply corrugated and placed in this space. The whole is securely riveted together. I think the sketch makes the construction plain.

I also drilled and tapped the exhaust valve cap, and fitted a  $\frac{3}{8}$  in. brass rod in it (copper was unobtainable). On this rod I fixed twelve pieces of copper gauze of a fairly thick mesh, separated by pieces of copper tubing. The whole was enclosed in a piece of thin copper tube, which had a wide slot cut down it fore and aft to let the air through. The top of the rod is threaded, and a piece of strip brass is bolted on to hold the copper tube down (see sketch).

Both these devices have proved satisfactory, and have improved hill-climbing and reduced oil consumption. I find, as Capt. Lindsay does, that the radiator will remain cool enough for the hand to remain on it while running, but when the machine is at a standstill the radiator becomes very hot. With a following wind the radiator seems to have very little effect.

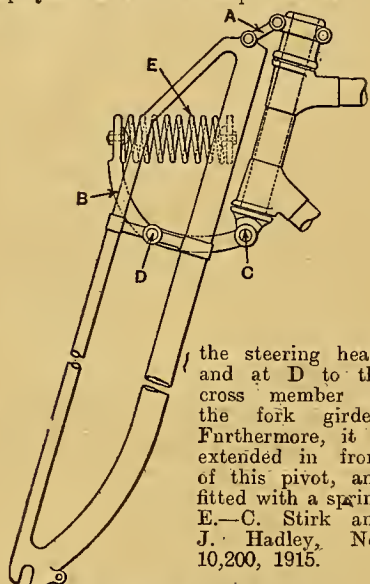
L. P. PRIOR, Sec.-Lt., London Regt.





### Spring Fork Improvement.

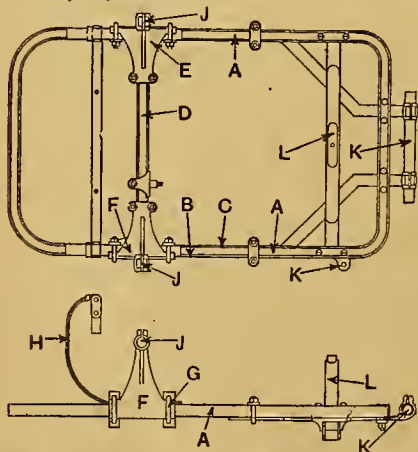
In place of the usual parallel side links upper and lower central links A B are employed. The link B is pivoted at C to



the steering head, and at D to the cross member of the fork girder. Furthermore, it is extended in front of this pivot, and fitted with a spring E.—C. Stirk and J. Hadley, No. 10,200, 1915.

### A Wooden Sidecar Frame.

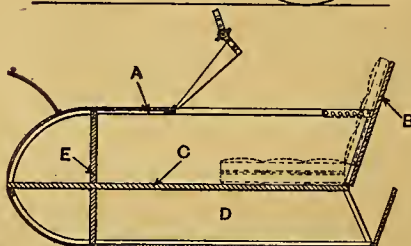
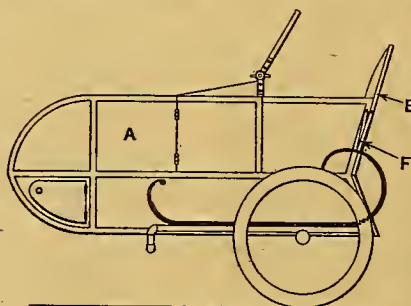
The novel suggestion here advanced is that the sidecar chassis be formed of a main member A of wood, bent to shape, and reinforced by metal flitch plates B C on either side. The axle member D is similarly formed, and is attached at both ends to the member A by tenoning, and is further secured by metal brackets E F. These brackets are secured by clips G, and serve to clamp the rear springs H, whilst each bracket also is formed with a split socket J—one for the sidecar wheel and the other for the attachment to the motor cycle. At the front further attachment means K are provided, and a transverse spring L is carried, which supports the front of the body.—H. S. Harvey, No. 8,875, 1915.



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### A Useful Sidecar.

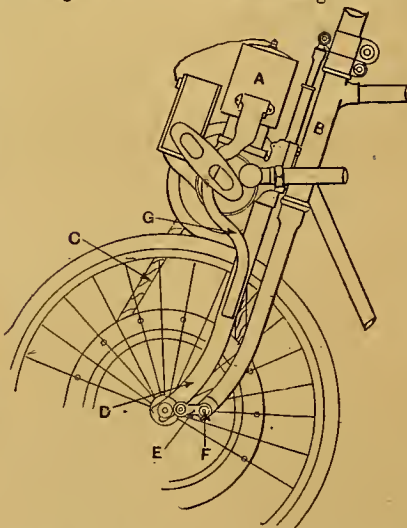
This sidecar has been designed to afford considerable carrying capacity for luggage, and at the same time to serve for use as a bed. The body A is provided with a hinged back B, which can be lowered into a horizontal position when desired for sleeping. The luggage carrying boot does not extend right to the front, but is



parted off at E, so that two separate compartments are formed for the carriage of smaller articles. Doors are fitted where required, and pivoted metal straps F are provided to support the hinged back B when in the horizontal position.—A. Timpe and W. A. Mercer, No. 11,855, 1915.

### An Auxiliary Attachment.

This attachment resembles a Werner motor cycle, the engine A being mounted in front of the head B, and driving the front wheel through a belt



C. The feature of the invention, however, is the fact that the engine, etc., is carried upon a spring fork D attached by links E to the ordinary fork end F. The exhaust pipe is shown at G.—A. and E. Kruger, No. 9,092, 1915.



### London Firm's Extension.

Godfreys, Ltd., have secured a large garage near their headquarters in Great Portland Street, W., and are prepared to store motor cycles for riders wishing to leave their machines in safe custody for extended periods.

### New Midland Repair Works.

We are informed that an engineering repair depot is being opened in Coventry by Mr. George Pilkington, who was with the Rex Co. for a long period. The title and address of the concern are George Pilkington and Son, 123, Allesley Old Road, Coventry.

### Delivery Delays.

Owing to the extremely congested state of the railways, difficulties are being experienced by C. Binks, Ltd., in delivering promptly their new fuel. The firm tell us that they have instituted a special department to deal with this new branch of their business, and that fuel is despatched on the same or the day following receipt of order, but in spite of this delays occur for the reason mentioned.

### Magneto Repairs.

The Rimbaken Co., of Manchester, has recently been placed under Government control, but the repairs and spare department is still able to give prompt attention to orders, and undertakes to return any magneto with a fully-guaranteed repair within forty-eight hours of its receipt.

### A New Tyre Filler.

"Puncturene" is the name given to a preparation for the repair of all inner tube leaks. It is inserted in the tube via the valve in liquid form. We are told that it is not injurious to rubber, and that when an inner tube is charged it will last for twelve months. Puncturene is marketed by Mr. S. Bakes, Little Horton, Bradford, Yorks.

### Reviews.

The Graded Road Maps of England. Section 47. Lancashire. Gall and Inglis. 1s. 8d. An exceedingly clear map of undoubted value to the motor cyclist. Black triangles show the positions of the serious hills, the purple lines indicate tramway lines, yellow lines the fast and good roads, and the blue lines roads which are exceedingly rough and hardly worth attempting except for a definite purpose.

### The Easting Sidecar Hood and Screen.

We are informed that a company is in course of formation to place on the market the Easting sidecar hood and screen, described in our issues of July 6th and 13th. Central offices will be opened very shortly in Birmingham, and it is hoped to commence deliveries within a week or two. In the meanwhile communications should be addressed to Mr. C. A. Easting at 59, Abbey Road Warley Woods, Birmingham.



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PEDAL CYCLE, 26 or 28in., 1½, 1¾, 1½, 6/-.

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Cyclists' own tubes fitted with Detachable Joint. 1½, 2/3; 2, 5/-; 2½, 5/-; 2¾, 6/-; 3, 7/-; 3½in. 8/-.

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Testimonial.

Gentlemen, Highgate.  
Please send me a Rich Tube. I must mention the one I tried and have in use since 1911 is still acting splendidly, and I am now transferring the present one to the front, and fitting a new one to the back. They are a boon.

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**YOU CUT YOUR FUEL BILL IN TWO**

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## 49/-

plus 10% extra  
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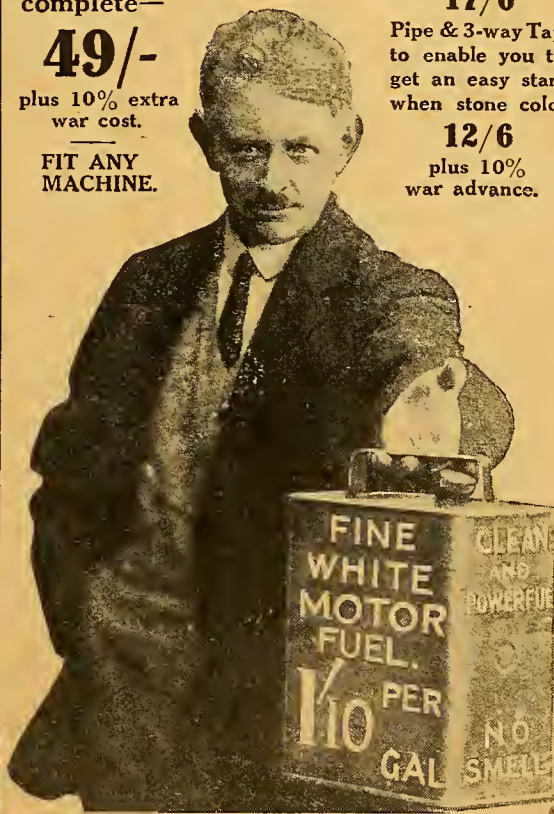
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have such perfect vapourising properties that they enable you to use fuel at 1/10 per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at 2/9 a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

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## A Question of Choice.

The importance of "Choice" is demonstrated nowhere on the motor cycle so emphatically as in the Control Fittings.

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## BOWDEN BRAKES, CONTROLS & WIRES, etc.

—the Specialities that—by virtue of their strong design, careful manufacture, and beautiful finish—bear an unrivalled reputation for Reliability and Durability.

Made in a comprehensive range to cover every possible need, "BOWDEN" Tyseley, Fittings are thoroughly tested before leaving our works, to ensure the highest possible efficiency in service.

Write us at once for copy of our new 48-page Art Catalogue—brimful of illuminative BOWDEN information.

The Bowden Brake Co., Ltd.,  
Tyseley, . . . Birmingham.

# Tyseley

R.H.S.

In answering these advertisements it is desirable to mention "The Motor Cycle."

B23



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## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

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**A BINGDON** King Dick, 3 1/2 h.p., 2-speed, free engine, sidcar, good order; £35.—26, Shepherd's Bush Rd., London. [8794]

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**A.J.S.** New 1916 6 h.p. Combination on the premises waiting.—Moss, Wem. [X4675]

**A.J.S.**, 4 h.p., 1915, first-class condition, all accessories; £60.—Dan Gwy, Weymouth. [8799]

**1916 A.J.S.**, 2 1/2 h.p., 3-speed; £58; early delivery.—Williams, Chapel Ash Depot, Wolverhampton. [X4696]

**A.J.S.** Latest 6 h.p. Combination, hood, screen, etc., brand new, in stock.—A. J. Young and Co., Ltd., Newmarket. [8632]

**A.J.S.**, 4 h.p., Lucas lamp and horn, machine perfect; owner joined Flying Corps; price £60.—Banks, Clifford St., Yorks. [8689]

**1916 2 1/2 h.p. A.J.S.**, 3-speed, speedometer, very little used, as new; 50 gns.—Julians, Broad St., Reading. 'Phone: 1024. [X4701]

**A.J.S.**, 2 1/2 h.p., late 1915, about 800 miles, as new, tyres unpunctured; cost over £60, with equipment.—W. Blackham, Optician, Blackburn. [8631]

**1916 A.J.S.**, 2 1/2 h.p., 2-speed, hand-controlled clutch, in perfect condition, ridden under 100 miles, as new; £56.—Robinson's Garage, Green St., Cambridge. [8746]

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'Phone—766.

Telegrams—"Perfection."

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MORGAN de Luxe, M.A.G. engine, hood	£127 0
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ROYAL RUBY, 2 1/2 h.p., 2-speed, 2-stroke	£36 10
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ROYAL RUBY, 6 h.p., 3-speed, shop-soiled	£67 0
REX, 6 h.p., Kick start, and Rex Sidcar	£71 0
WILLIAMSON Cy-cl-ca, W.C. Douglas engine	£126 0

### 1916 (U.S.A.) EXCELSIOR.

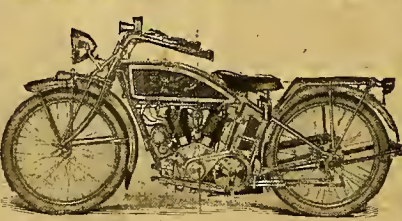
7 h.p., twin, 84 x 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

A few late 1915 new 7 h.p. 3-speed models, with electrical equipment, at pre-tax price of £71 10s.

Exchanges quoted. Easy payments arranged.

We are Sole Yorkshire distributors. Liberal terms to trade.

Coachbuilt PERFECTION SIDECARS to suit, £13 10



### SOLO MACHINES.

1915 2 1/2 h.p. 2-stroke 2-speed IVY	£26 10
DOUGLAS, 1914, single gear, chain-belt	£20 10
1914 6 h.p. 3-sp. CLYNO, detachable wheels	£39 10
1913 3 1/2 h.p. ROVER, Grado gear	£27 10
1913 2 1/2 h.p. PRECISION lightweight	£15 10
1912 3 1/2 h.p. ZENITH-GRADUA	£26 10
1912 3 1/2 h.p. 2-sp. BRADRDY, chain drive	£29 10
CHATER-LEA-J.A.P., 6 h.p., 3-speed	£33 10
ENFIELD, 2 1/2 h.p., twin, chain drive	£17 10
RUDGE, 3 1/2 h.p., F.E., good order	£19 19
EXCELSIOR, 3 1/2 h.p., 3-speed, Druid forks	£17 10
KERRY, 3 1/2 h.p., magneto, Saxon forks	£9 15
P. & M., 3 1/2 h.p., 2-speed, very smart	£24 10
TRIUMPH, magneto, spring forks, new tyres	£14 10
MOTOSAGOCHE magneto lightweight	£9 15
F.N., 2 1/2 h.p., 2-speed, shaft drive	£17 10
REX, 1910, 3 1/2 h.p., 2-speed, handle starting	£17 10

### SIDECAR COMBINATIONS.

6 h.p. (new) REX Sidette; reduced to	£71 0
1916 5-6 h.p. COVENTRY EAGLE Combin	£72 10
1915 7 h.p. HARLEY-DAVIDSON and S'car	£64 0
1914 6 h.p. ARIEL, chain drive, and Sidcar	£45 0
1914 7-8 h.p. 2-speed INDIAN Combination	£53 10
1914 6 h.p. REX Sidette, almost as new	£49 10
1913 6 h.p. 2-speed REX and Sidcar	£43 10
1913 3 1/2 h.p. 2-speed TORPEDO and Sidcar	—
QUADRANT, 7-9 h.p. 2-speed, twin, chain drive, and coach Sidcar. Fine lot	£45 10
1912 3 1/2 h.p. 2-speed PREMIER and Sidcar	£33 10
1909 3 1/2 h.p. 2-speed TRIUMPH and Sidcar	£26 10
J.A.P., 8 h.p., F.E., and coach Sidcar	£17 10

### MISCELLANEOUS.

RENO 15 h.p. 4-cylinder Touring Car	£65 0
1913 MORGAN, 8 h.p., repainted, as new	£37 10
BRAMBLE Coach-built Sidcar (new)	£14 14
WILLIAMSON Sidcar, as new	£9 15
1915 REX Coach Sidcar, with apron (new)	£12 10
New Mechanical Horns; usual price 25/-	£11 11
WANTED, 1915 G.P. Morgan, Sunbeam Combination, and Douglas.	—

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## MOTOR CYCLES FOR SALE.

### A.J.S.

**A.J.S.** 1912 6 h.p. Twin Combination, coachbuilt sidcar, a good outfit; £40.—Tuke and Bell, L Motor Dept., Carlton Engineering Works, High E Tottenham, N. [78]

**LATE** 1913 6 h.p. 3-speed A.J.S. Combination, excellent condition, Lucas lamps, speedometer, coachbuilt sidcar; accept £52 cash; trial.—Wm. Elsd, Bank, Matlock. [X46]

**A.J.S.**, 6 h.p., 3 speeds, 1914 1/2 combination, with c.c. engines, detachable wheels, Watford trip speedometer, horn, lamps, etc., coachbuilt sidcar, with screw condition as new; price 80 gns.—Apply, W. Groves, Church St., Edmonton. [X4]

**A.J.S.** 6 h.p. Combination, 1916, with Lucas dyno lighting and horn, 1,500 miles careful use, w span wheel complete, a perfect outfit; any expert animation; property of naval officer; £95 for on sale.—Lieut. Chapman, R.N.R., A.M.O., Cromarty, N (D) [X46]

### Alldays.

**1914 3 1/2 h.p. 2-speed Alldays** Matchless, excellent condition; £33.—Parker and Son, St. Ives, Hun [80]

**COLMORE** Depot, 31, Colmore Row, Birmingham can supply immediately all models of All [00]

**ALLDAYS**, 1914, 2-stroke, all accessories, wants justment; £14, or offer.—Allen, 66, Whitton 1 Twickenham. [80]

**ALLDAYS** Allon, 2-speed, new; special bargain; £38/17 cash; gradual payments 2%—Referee Co. Co., 332, High Holborn. [00]

**1915 2 1/2 h.p. Allon**, 2-stroke, 2 speeds, free, on condition; 25 gns., or exchange 1915 2 1/2 New Imperial-Jap.—Selbie, Edenburg, Sheringham. [X46]

**ALLONS**, single-speed, 2-speed, and 2-speed clutch models actually in stock, £36, £42, and £45 respectively; also 1915 Model de Luxe 40 gns., and 2-stroke clutch model, heap accessories, ridden 500 miles, £38/ deferred payments arranged.—Lamb's, 151, High Walthamstow, and 50, High Rd., Wood Green. [80]

### Anzani.

**ANZANI** 6 h.p. Twin Sporting Bike, very fast; £11 Silver, 45, Ashburnham Rd., Bedford. [X46]

### Ariel.

**ARIEL** 1913 Coach Combination, 3 speeds; £32/ or exchange.—11, Luna Rd., Thornton Heath, S [80]

**ARIEL**, 3 1/2 h.p., 2-speed, with sidcar, excellent order; bargain, £20.—Newham, 225, Hamn smith Rd., W. [80]

**1912 3 1/2 h.p. Ariel** and Phoenix wicker sidcar, speeds, hub gear, good condition; £50.—Fors son, City Freeman's School, Brixton, S.W. [80]

**ARIEL** 1913 Combination, 3 1/2 h.p., 3 speeds, clutch new tyres and tubes, speedometer, P. and H. lamp £32/10.—Bryant, 146, Tressillian Rd., Brockley. [80]

**COLMORE** Depot, 31, Colmore Row, Birmingham have in stock for immediate delivery all models of Ariel motor cycles, with or without sidcars. [00]

**ARIEL**, 3 1/2 h.p., Empire sidcar, variable pulley, 1 engine, new tyres, Rom combination back, going order; £24, or near offer.—Point House, 118, B lever Rd., Wormwood Scrubbs. [80]



# MOTOR CYCLES FOR SALE.

## Ariel.

TEL 8h.p. Twin Sidecar Combination, Enfield 2-speed gear, handle starting, splendid condition, speedometer, horn; £45; seen any time.—110, Ashau High Rd., New Cross, S.E. [8743]

## Auto-Wheels

ALL Auto-Wheel, in running order; £6.—Whitmore, 46, Cotton Rd., Nuneaton. [X4333]

ALL Auto-Wheel, 1914, new, shop-soiled only; £8/10.—Moreton, Motor Dept., St. Dennis, Cornwall. [X4598]

UTO-WHEEL, with numerous spares, tools, complete with controls and fittings, for tricycle, used only, really new; £8.—Robinson's Garage, Green Cambridge. [8755]

UTO-WHEEL, 1915%, B.S.A. model de luxe, complete B.S.A. gent's cycle, 23in. frame, cost £50, under 200 miles, quite unscratched; take £19, offers.—See below.

UTO-WHEEL, B.S.A., 1915%, as new, perfect, £8/10; another similar, £7/10; also one at 10.—Seen running at Geo. Smith's, 268, Lavender, Clapham Junction. 'Phone: Battersea 1271. [8618]

## Bat.

ATS in stock, latest 4-5h.p., 2-speed, 60 gns.—P. J. Evans, John Bright St., Birmingham. [X4636]

AT-J.A.P., 8h.p., 2 speeds, and clutch, with C.B. sidcar, excellent condition; £32.—Pomeroy, Chem-Thornton Heath. [8761]

AT, 5-6h.p., 1914, 3 speeds, countershaft, all in good condition, very fast; £40; exchange 3½h.p.—York Rd., Wandsworth. [8802]

13-14 Bat-Jap 8h.p. Combination, spring frame, clutch, countershaft gear, perfect order; £45.—ues, 15, Carnarvon Rd., Bristol. [X4661]

A.T. Motor Cycle (1914), and luxurious sidcar, in good going order, has run less than 4,500 miles, class accessories; £50 cash (cost £102).—J.W.M.G., Hayne Rd., Beckenham, Kent. [8942]

## Blackburne.

LACKBURNE, 1914, 3 speeds, handle-bar clutch, does 80 m.p.g.; 35 gns., including 6 gallons oil.—Troward, 78, High St., Hampstead. 'Phone: 2. [8841]

LACKBURNE, 3½h.p., 1915, 3 speeds, and h.b.e. clutch, lamps, horn, etc., excellent condition; £48. vlam and Co., 197, London Rd., Croydon. 'Phone: 9. [8691a]

## Bradbury.

RADBURY, 4h.p., 2 speeds, in good order; £17/10.—6, Warren St., London. [8929]

12 Bradbury, fitted Lloyds 2-speed gear, excellent order; £25.—Parker and Son, St. Ives, Hunts. [8868]

RADBURY, 1915, 4h.p., 2-speed, free engine, coach cigar sidcar; £25.—29, St. Leonard's St., Bow. [8896]

p. Bradbury, 1914, 2-speed, kick starter, complete with sidcar; £39/10.—Porter, Waratah, Hookley, ex. [8885]

14 5½h.p. Bradbury, 3 speeds, wicker sidcar; £35; cash or easy terms.—R. E. Jones (Garages), Swansea. [8822]

RADBURY, 4h.p., free engine, pedal start, new tyre, new condition; £26.—Colmore Depot, 31, more Row, Birmingham. [X4509]

RADBURY, 2½h.p., re-bushed, new tyres, mag., B. and B. and about £10, for higher power, or sell 16, Carlyle Rd., Manor Park. [8644]

14 Bradbury 4h.p. Combination, N.S.U. 2-speed gear, free engine, splendid condition; £35.—fin, 149, Fort Rd., Bermondsey. [8616]

14 6h.p. Bradbury Combination, 3 speeds, first cheque £46; also 1915 6-8h.p. Rex-Jap ditto, speeds, £30.—Motor, 13, Linacre Rd., Willesden. [8770]

EST Sidecar Combination Offered.—4h.p., 1915 Bradbury combination, 3 speeds, tyres good, fully guaranteed; any trial; £31 secures, worth £42.—H. Millard, Epsomfield. [X4654]

14 4h.p. Bradbury, 2-speed countershaft, chain drive (new chains), kick starter, Dunlop tyres, excellent, Phoenix coachbuilt sidcar, low, easy to drive, essories; £38/10.—356, Lordship Lane, E. Dulwich. [8825]

14 6h.p. 3-speed Bradbury Coachbuilt Combination, as listed in 1914 Bradbury catalogue at 5, model de luxe sidcar, enamelled dark blue, mounted, large size head lamp, tail lamp, and horn, rehauled and guaranteed perfect; £52.—The Premier Motor Co., Aston Rd., Birmingham. [8922]

## Brough.

ROUGH, 1915, 3½h.p., horizontal twin, countershaft 2-speed, 60 m.p.h.; £46.—17, Hamilton Terrace, N.W. [8727]

## Brown.

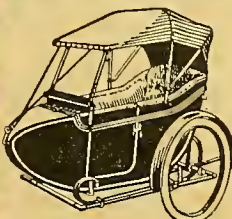
Gns.—Brown m.o.v. Twin, strong, fast, tyres good, coil.—Railway Garage, Staines. [8898]

## B.S.A.

S.A., new 1916 model K in stock; no waiting.—Fitch, Chatteris. [8824]

# CORONET SIDECARS.

We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28x3in. tyre and four point attachment.

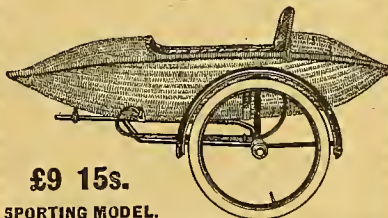


FROM  
£10 15s.

Send for Illustrated Catalogue describing these well-known Sidecars.

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£9 15s.

## SPORTING MODEL.

### 1916 HARLEY-DAVIDSONS.

We can give Immediate Delivery, and we will make a big allowance for your old machine.

### CASH OFFERS WANTED.

4 h.p. WOLF-J.A.P., 1915, 3-speed, chain drive, with 113 coach Sidcar .....	£42 15
7-9h.p. PREMIER, 1914, 2-speed countershaft, with 113 105, new coach Sidcar .....	£49 15
6 h.p. REX, 2-speed, magneto .....	£11 15
2½ h.p. DOUGLAS, 1910 .....	£13 15
2½ h.p. MINERVA, magneto, variable gear .....	£9 15
7-9h.p. INDIAN, 1915, 3-speed, electrical model, and 115 Montgomery Sidcar .....	£69 15
1916 7-9 h.p. HARLEY-DAVIDSON .....	£80 15
1916 ditto, electrical model .....	£39 0
7-9h.p. INDIAN, 1915, electric model, with Milford 118 185. Sidcar, screen .....	£69 15
8 h.p. ZENITH, 1913, Zenith gear .....	£29 15
2½ h.p. WOLF, 1916, 2-stroke, 2-speed .....	£33 10
20 h.p. FORD Van, oew, 1916 model .....	£130 0
20 h.p. FORD Van, 1915 model .....	£90 0
2½ h.p. TYLER, 1915, 2-speed model .....	£24 15
2½ h.p. TRIUMPH, 1910 model .....	£16 15
3½ h.p. LINCOLN-ELK, 1912 model .....	£13 15
5 h.p. INDIAN, 1915, 3-speed, finished red, beautiful condition .....	£49 15
2½ h.p. ENFIELD, 1912, 2-speed .....	£15 15
3 h.p. CLYDE, M.O.V. ....	£4 15
4 h.p. NEW HUDSON, 1915, 3-speed model, with 113 coach Sidcar .....	£55 15
2 h.p. QUADRANT, spring forks .....	£3 15
3 h.p. LINCOLN-ELK, 1911, magneto .....	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidcar, lamps, and horn .....	£25 15
2½ h.p. PREMIER, 1912, 3-speed model .....	£16 15
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidcar .....	£69 15
3½ h.p. HUMBER, 1911, 2 speed .....	£17 15
2½ h.p. MATCHLESS J.A.P., 1910 .....	£10 15
1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps .....	£89 0

### MISCELLANEOUS BARGAINS.

Bosch Magneto, 50/-; B. and B. Carburetter, 12/6; Amac Carburetter, 12/6; New 20/- Brass Electric Sidecar Lamps, 5/6; Ditto Tail Lamps, 5/6; approval; New Spare Valves for Harley-Davidsons, 3/9; Bosch Magneto for twin Rex, 55/-; Douglas Carburetter, 10/6; Late Model Senspray Carburetter, 12/6; New 26x2½ or 2½ Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); Druid Forks, 20/-; 2 h.p. Clement-Garrard Engine, with carburetter, 32/6; 1911 Rex, less engine, with 2-sp., £10; Lightweight Coach Sidcar, new, £7 15s.; New Coach Sidcar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburetter taken in exchange).

## BOOTH'S MOTORIES, PORTLAND PLACE, SKIRCOAT ROAD, HALIFAX.

'Phone: 1062.

Close at 6 p.m.

# MOTOR CYCLES FOR SALE.

## B.S.A.

B.S.A. New 1916 Model K actually in stock; no waiting.—Moss, Wem. [X4674]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

B.S.A., 1915, countershaft model, 3-speed, free engine and chain drive; £47/10, including accessories.—Wauchope's, 9, Shoe Lane, London. [8845]

1916 B.S.A., chain-cum-belt, and coachbuilt sidcar; cost £32 two weeks ago, fully equipped; sacrifice £75.—11,768, clo The Motor Cycle. [8185]

B.S.A. Late 1914 Combination (coachbuilt), 3-speed countershaft, chain-cum-belt drive, lot of spares; £50.—Reeve, 90, Barnsley Rd., Goldthorpe, near Rotherham. [X4590]

B.S.A. 1915½ Chain Drive Coachbuilt Combination, Terry's links, Lucas lamps, Klaxon, plating like new; £62, or exchange twin.—Dormor, Burge House, Buxton. [X4623]

B.S.A., 1914 (late), model K, 3-speed countershaft, kick starter and superior coachbuilt sidcar, all in splendid order, usual accessories; £52.—J. Harold Joell, 51, High St., Redcar. [8906]

B.S.A., 1914, 3½h.p., 2-speed, clutch, fitted up ready to ride away, beautiful condition; solo £35, with sidcar £49/10.—Geo. Smith, 268, Lavender Hill, Clapham Junction. 'Phone: Battersea 1271. [8622]

1916 B.S.A., model H, February, with Phoenix sporting sidcar, accessories; cost £78, accept, £65; done 50 miles; lightweight part.—Particulars, offers, J.B., 12, Alphon Place, Wichefield, Hants. [8675]

B.S.A.'s.—Our large contract with them enables us to give promptest delivery of models H and K, also in stock a 1915, Lucas accessories, magnificent equipped, beautiful order, 60 gns.; and 1912-3 free engine model, with sidcar, £55; liberal extended payments if desired.—Lamb's, 151, High St., Walthamstow and 50, High Rd., Wood Green. [8715]

## Burford.

BURFORD-VILLIERS 1915 2-stroke Motor Cycle, nearly new; £25.—228, Pentonville Rd., King's Cross, London. [8833]

## Calcott.

CALCOTT, 1913, 2½h.p., Brampton gear, good order throughout, £16, or exchange with cash for 1915 or 1916 New Imperial lightweight.—72, St. Augustine Rd., Southsea. [8757]

## Calthorpe.

CALTHORPE, 1915, J.A.P. engine, Enfield 2 speeds, £25; another at £22.—6, Warren St., London. [8934]

1915 Calthorpe-Jap, 2½h.p., Enfield 2-speed, in excellent condition; £25.—Newham, 223, Hammersmith Rd., W. [8834]

CALTHORPE, 2½h.p., 2-stroke, 2-speed, Dec., 1915, lamps, horn, tools, etc., almost new; £27.—J. Bernards, 17, Oummaney Rd., New Cross. [8861]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

1916 2½h.p. Calthorpe-Jap (nominally second-hand), Enfield 2-speed, run 100 miles; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [8825]

CALTHORPE, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Stimpson, and Co., 11, Hammersmith Rd., London. [8865]

CALTHORPE-J.A.P., 1916, latest model, 2½h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Stimpson, and Co., 11, Hammersmith Rd., London. [8864]

CALTHORPES, all 1916 models, ex-stock, wholesale and retail.—List from special agents, Geo. Smith, 268, Lavender Hill, Clapham Junction. 'Phone: Battersea 1271. [8623]

CALTHORPE Motor Cycles, 1916 models.—Just arrived; 2-stroke 2-speed 31 gns., J.A.P. 2½h.p. 2-speed 36 gns.; easy terms arranged.—Storey's, 118, Gt. Portland St., W. [0777]

CALTHORPE, latest 1916 2-speed models in stock, cash or exchange; also a few brand new 1915 models, slightly soiled, at reduced prices.—Eagles and Co., High St., Acton. [X4626]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

CALTHORPE-J.A.P., 2½h.p., 1915, in perfect condition, used only 5 weeks; cost £39 with accessories, accept £27 cash, complete.—Seen 101, Gt. Portland St., W., or write Owner, 248, Upland Rd., Dulwich. [8718]

CALTHORPE-J.A.P.'s with Enfield gears, 5 models actually in stock, £37/16; also a 1916 single-speed shop-soiled model, bargain, £25/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [8710]

CALTHORPE, 2-stroke, 2-speed, 2½h.p., with lamp and generator, only run a short distance, and condition like new; price £22/10 cash, or extended payments 2½ only extra deposit £4/10, and 12 monthly payments of £1/10/9.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [8325]



## MOTOR CYCLES FOR SALE.

## Campion.

**CAMPION-VILLIERS**, 1915, 2½ h.p., sound light-weight, extra good engine; £20; approval any where; satisfaction guaranteed.—Layton's Garage, Bicester, Oxon. [X4679]

**MARVELOUS Bargain**—4 h.p. Campion and side-car, 5-speed, lamps, all accessories, tyres good, climb anything; must sell instantly; £22/10, lowest; first cheque or caller secures.—Webb, Jeweller, Chesterfield. [X4657]

**1914 8 h.p.** Campion-Jap, countershaft gear, clutch and kick-starter, Bosch mag., 650×65 Dunlop Voiturette tyres, special Phoenix 2-seater sidecar, with large comfortable body and extra strong chassis, lamps, and horn: £52.—The Premier Motor Co., Aston Rd., Birmingham. [8924]

## Chater-Fafrir.

**CHATER-FAFRIR**, 3 h.p., accumulator, good tyres, new belt, running; £26.—25, Colegate St., Norwich. [X4547]

**CHATER-FAFRIR**, 3 h.p., in excellent condition and order; £9/10; exchange with cash higher power; Fairlight, 22, Katherine Rd., East Ham. [8808]

## Chater-Lea.

**6 h.p.** Chater-Lea, clutch, coach sidecar, m.o.v.; £22.—180, Clapham Park Rd., S.W. [8703]

**8 h.p.** Chater-Lea Coach Combination, hood, screen; any trial; £50.—241, Brighton Rd., Croydon, Surrey. [X4309]

**CHATER-LEA 8 h.p.** No. 7 Combination, excellent condition, guaranteed, speedometer, lamps; £50, near offer.—24, Rolfe Rd., Charlton, S.E. [8649]

**6 h.p.** Chater-Lea Coachbuilt Combination, 3-speed countershaft, all chain drive, Bosch, E and B, lamps, wind screen, etc.; £35.—24, Keir St., Barnsley. [X4650]

**CHATER-LEA Motor Cycle**, 1913, 8-10 h.p., with new coachbuilt sidecar, on special sprung chassis, handle starting, twin-cyl., 3 speeds, multiple clutch, Bosch mag., Stewart speedometer, 7in. Rushmore head lamp, large Service generator, Service push-horn, and watch; £50.—Easton, 15, Long Acre, W.C. [8817]

## Clyno.

**CLYNO 6 h.p.** Coachbuilt Combination, 2-speed, free, kick starter; £32/10.—85, Suffolk St., Poplar, E. [8826]

**CLYNO Combination**, 1914, 6 h.p., 3 speeds, kick starter, 4 detachable wheels, speedometer, special body to sidecar; 50 gns.—6, Warren St., London. [8937]

**CLYNO 5-6 h.p.** Twin, 2-speed, coach sidecar, screen, horn, lamps, and spares; £37/10; trial by appointment.—Stewart, 123, Crescent Rd., Alexandra Park. [8778]

## Connaught.

**CONNAUGHT**, 2½ h.p., 2-stroke, footboards, complete; £20.—Colmore Depot, 31, Colmore Row, Birmingham. [X4535]

**CONNAUGHT**, 1914, variable ignition, Knight's patent lubricator; 18 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [8839]

**CONNAUGHTS** in stock for immediate delivery, miniature, standard, and 2-speed models; prices from £28/17/6.—P. J. Evans, John Bright St., Birmingham. [X4633]

## Dalm.

**DALM**, 2½ h.p., 2-stroke, 1915, 3 speeds; £25, bargain.—11, Luna Rd., Thornton Heath, S.E. [8724]

## Despatch Rider.

**DESPATCH Rider** 1916 2½ h.p., 2-stroke, T.T. handlebars, 24in. wheels, very sporty model, unsretched; bargain, £28.—Dove; 154b, Cheltenham Rd., Bristol. [X4242]

## Douglas.

**DOUGLAS 1915 Model U**, 2½ h.p., 3-speed; £45.—Stour Cycle Depot, Stourbridge. [X4672]

**DOUGLAS Motor Bicycle** for sale, 1916.—Hare, Alfred Lodge, Tottenham Lane, Hornsey. [X8722]

**1914 2½ h.p.** Douglas, 2-speed, lamps, perfect condition; £36.—H. Wright, Arlesey, Beds. [8945]

**1913 Douglas**, 2½ h.p., 2-speed, tyres, belt new, little use; £31.—Victor, 80, Hantley St., N.W. [8875]

**DOUGLAS 1915**, 2½ h.p., in perfect condition, lamps, etc.; £45.—Pigot-Disney, E. Molesey, Surrey. [8759]

**DOUGLAS 2½ h.p.**, 1914, first-class condition, little used; £37.—Gregoire, 198, Foster Hill Rd., Bedford. [8825]

**DOUGLAS Motor Cycles** in stock, 1911, 1912, 1913, 1914, and 1915; £16 to £45.—6, Warren St., London. [8938]

**DOUGLAS**, late 1914, 2½ h.p., 2 speeds, like new, any trial; £40; after 5 p.m.—Housekeeper, 15, Austin Friars, E.C. [8828]

**1913 Douglas**, 2½ h.p., clutch, horn, speedometer, good tyres; £32, no offers.—Stutfield, Grove House, Hampton, Middlesex. [8330]

**1914 2½ h.p.** Douglas, T.T. model, specially fast, Amac, Lucas lamp set; £34.—William Nixon, Brampton, Cumberland. [X4612]

**DOUGLAS**, late 1915 model W, perfect order, and with accessories; £45.—Colmore Depot, 31, Colmore Row, Birmingham. [X4497]

**1915 2½ h.p.** 2-speed Douglas, good as new, and accessories; £46; seen any time.—Bounds' Garage, High Rd., Kilburn. [8687]



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## Douglas.

**1915 2½ h.p.** Douglas, 2-speed, long exhaust, Bink Lucas set, knee-grips, etc.; 40 gns.—23, R.F. Villas, South Farnborough. [866]

**DOUGLAS**, 1915, 4 h.p., coachbuilt sidecar, lamp and horn, very good condition throughout; £5.—Dan Guy, Weymouth. [871]

**1914 2½ h.p.** 2-speed Douglas and accessories, in perfect condition; £38; seen any time.—Board Garage, High Rd., Kilburn. [861]

**1914 Douglas**, Bosch, speedometer, lamps, generator overhauled, tools, spares, all as new; £36.—6, 147, White Hart Lane, Barnes. [81]

**DOUGLAS**, 1914, 2-speed, fully equipped, speedometer, absolutely perfect, only done 2,000 miles; 40 gns.—29, Wilbury Av., Hove. [86]

**DOUGLAS**, 1914, 2½ h.p., clutch, kick starter, speedometer and watch, good condition; £38.—20, Richmond Rd., Gillingham, Kent. [X46]

**DOUGLAS**, new, latest pattern, 2½ h.p., models 1 and 2, immediate delivery, including War Office blue Douglas—Moffat, Yeovil. Tel.: 50. [58]

**DOUGLAS**, 1913, 2-speed, clutch, kick starter, footboards, wide mudguards, just overhauled, with accessories; £32, bargain.—Moss, Wem. [X46]

**DOUGLAS Specialists**—Gibb, Gough, London E. Gloucester. Gibb, the International Douglas rider winner of numerous cups and gold medals. [11]

**DOUGLAS**, 1915, 2½ h.p., War Office model, excellent condition, overhauled, lamp, horn, speedometer; £45, or near offer.—Layton's Garage, Bicester Oxon. [X46]

**LOOK Here**—Late 1914 Douglas, very fast, 2-speed, new, all accessories, knee-grips; £36 secure used very little; 1915 model £29.—H. Millard, Chesterfield. [X46]

**DOUGLAS**, 3½-4 h.p., 2-speed, clutch, kick start, accessories, little used, new condition; accept 20 or lightweight and cash.—Cox, 1, Stockton Rd., Canterbury. [X47]

**1914 T.T. Douglas**, very little used, new tyres, including one spare, lamps, all accessories a spares; £40.—Oram, 20, Caddington Rd., Crickley, London. [87]

**COLMORE Depot**, Birmingham, Manchester, Leicester and Liverpool, have in stock complete range of Douglas for immediate delivery, also full range of spares. [100]

**DOUGLAS**, 1916 (March), 2½ h.p., T.T., 3-speed, lamp, knee-grips, new overalls, goggles, miles 400, one puncture; £47/10.—Godfrey, Bank, Tipperary. [X42]

**DOUGLAS**, 1913, single speed, engine, tyres, excellent condition, P.R.S. lamp, spares, fast, reliable machine; £24.—Hardman, 24, Farnham, East Finchley. [X46]

**DOUGLAS**, 1913, 2½ h.p., run less 200 miles since war, excellent condition; owner returning P.O. £35. Write or call, Lt. Saunders, Heather View, Ford, near Farnham. [81]

**DOUGLAS**, 2½ h.p., 2-speed, kick starter, clutch, 11 engine, enamelling, plating, tyres excellent, electric lighting installation; £45.—Edward Hands, Burn Walks, Loughborough. [X46]

**1916 Douglas**, War Office model, 2-speed, footboards, semi-T.T. bars, latest pattern, brand new, only in stock, immediate delivery.—Robinson's Garage, Green St., Cambridge. [81]

**1913 Douglas**, 2½ h.p., model W, clutch, kick start, footboards, touring bars, 2 lamps, horn, etc., condition engine perfect; £33/10.—Robinson's Garage, Green St., Cambridge. [81]

**DOUGLAS**, 1910, capital condition, engine just overhauled, Amac, P. and H. lamp, new heavy iron and tube, new belt, spare valve, springs, etc.; £16/10.—Rhodes Elph, High St., Yarm-on-Tees. [X46]

**DOUGLAS**, 2½ h.p., 2-speed, recently stove enamel grey, £15 just spent making good as new, in speedometer, horn, footboards, Palmer cord and Da heavy; 30 gns. Phone: Bonsfield, Brixton 459.—6, Crespiquy Park, Denmark Hill, S.E. [81]

## Enfield.

**ENFIELD**, 3 h.p., 1914; £35.—1, London Chelmsford. [81]

**ENFIELD 6 h.p.** Coach Combination, all on; bargain; £48.—Leighton's, Wood Green. [81]

**COLMORE Depot**, 31, Colmore Row, Birmingham for immediate delivery of Enfields. [100]

**ENFIELD**, 3 h.p., 1914, 2-speed, chain drive, perfect condition; bargain, £28.—Hayes, Aylesbury. [X46]

**ROYAL Enfield**, 6 h.p., coachbuilt sidecar, with B. 332—Holder, Green St. Green, Orpington. [X46]

**ENFIELD Combination**, late 1914, beautiful condition, Lucas equipped; 60 gns.—Moss, Wem. [X46]

**ENFIELD**, 2½ h.p., all-chain drive, twin engine; —Colmore Depot, 31, Colmore Row, Birmingham. [X46]

**ENFIELD**, 1916, 6 h.p., very little used, well up, new condition; 72 gns.—51, Burnt Ash Lee, S.E. [81]

**ENFIELD 2½ h.p.** Twin, Bosch mag., new tyres, belt; £8.—Myland and Co., 197, London Rd., Croydon. Phone: 2379. [100]



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#### Enfield.

**ENFIELD 1915 8h.p. Combination.** Lucas dynamo  
lighting set, speedometer, horn; £80.—Withers,  
Tansy Close, Cleat, Worcs. [X4673]

**ENFIELD 1916 6h.p. Combination.** latest model, just  
arrived from works; 50 gns.—Wilkins, Simpson,  
and Co., 11, Hammersmith Rd., London. [8662]

**ENFIELD 1916 Combinations,** delivery from stock;  
exceptional exchange quotations; extended pay-  
ments.—Layton's Garage, Bicester, Oxon. [X4678]

**ENFIELD, M.A.G. 3½h.p. twin, 1915,** indistinguish-  
able from new, Enfield gear, handle start, acces-  
sories; £35.—14, Dodbrooke Rd., W. Norwood. [8858]

**ENFIELDS actually in stock for immediate delivery,**  
6h.p. combinations, 3h.p. and 2½h.p. models, ready  
to drive away.—P. J. Evans, John Bright St., Birming-  
ham. [X4635]

**1913 Enfield 6h.p. Combination,** coach sidecar, re-  
cently overhauled and body re-painted, complete,  
lamps, etc.; £45.—Butterworth, Primrose Mills, Old-  
ham. [8705]

**ENFIELD Combination,** late 1914, hood, sereen,  
speedometer, 2 new tyres, spare valves, chains,  
tubes, etc., accessories; £60.—2, Barfield Rd., Leyton-  
stone. [8872]

**ENFIELD, 1916;** immediate delivery of latest 6h.p.  
combination; now in stock; 90 gns.; make sure  
of this now.—Wilkins, Simpson, and Co., 11, Ham-  
mersmith Rd., London. [8663]

**ENFIELD 1916 6h.p. Combination.** Lucas dynamo  
set, Watford speedometer, spring handle-bars, wind  
screen; £80; owner called up.—Cox, 22, Orchard Rd.,  
Kingston-on-Thames. [X4544]

**ENFIELD, 3h.p., 1916,** latest model, just arrived  
from works; immediate delivery; make sure of  
this now; 55 gns.; we are Enfield specialists.—Wilkins,  
Simpson, and Co., 11, Hammersmith Rd., London. [8666]

**LATE 1915 6h.p. Enfield Coachbuilt Combination,**  
wide mudguards, etc., 650x65 Palmer cord and  
Dunlop light car tyres, in new condition; any trial;  
£63.—The Premier Motor Co., Aston Rd., Birmingham.

**ENFIELD 6h.p. Combination,** bought Feb., 1916,  
lamps, horn, screen and cover, overalls and all  
spares, little used, splendid condition; £68; in after  
7.30 p.m.—Rae, 30, Manchester Rd., Clapham Common,  
S.W. [8679]

**ENFIELD Combination, 1916 (late), 6h.p., ridden**  
under 800 miles, dynamo lighting; cost £110,  
take £85 quick sale, no offers, a real bargain.—Geo.  
Smith, 268, Lavender Hill, Clapham Junction,  
Battersea 1271. [8624]

**ENFIELD 1913 6h.p. Combination.** speedometer,  
F.R.S. and sidecar lamps, watch, tools, new spare  
tyre, and various other spares, all in splendid condi-  
tion; owner joined up; bargain, £40.—5, Queen's Av.,  
Minswell Hill. Phone: 221 Hornsey. [8864]

**ENFIELDS.—Birmingham agent, P. J. Evans, 87-  
91, John Bright St.** Immediate delivery all  
models, including lighting set combination, special 6h.p.  
with hood and screen, and standard 6h.p. combination;  
also 3h.p. standard and sporting models, and 2½h.p.  
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ally in stock, 92, 90, and 55 gns. respectively;  
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and screen, valuable accessories, mileage 1,950, 95 gns.;  
also 1916 6h.p. hood, screen, Lucas accessories, mil-  
age approximately 1,000, £95; generous deferred pay-  
ments.—Lamb's, 151, High St., Walthamstow, and 50,  
High Rd., Wood Green. [8712]

#### F.N.

**F.N., 1912, 5-6h.p., in splendid condition,** just over-  
hauled; £22.—Newman, 181, New King's Rd., Ful-  
ham, S.W. [8661]

**F.N., 1911, 5-6h.p., drop frame, new gears and tank,**  
T.T. bars, tyres good; £19/10.—Gill, 32, Derwent-  
water Rd., Acton. [8893]

**F.N., 1912, 5-6h.p., Bosch, clutch, tyres and condi-  
tion good; £25; exchange lightweight and cash.**  
Phone: 9962 Well.—Jarrett, 130, Bnahill Row, E.C. [8943]

**F.N., 4½h.p., 4 cyls. and sidecar complete,** lamps,  
etc., just overhauled and in good condition.—  
Rowland Motor Co., 16, Haverstock Hill, Chalk Farm,  
N. [8815]

**F.N., 5h.p., 1913, 2-speed, h.c.h. clutch, mag. cut-out,**  
Binks latest 3, kick starter, speedometer, new  
cover, excellent condition, underslung sidecar, excellent  
reasonable sale; nearest offer £33, together or separate.  
—Sunningdale, Reigate. [8699]

#### Grandex.

**1916 Grandex, 2½h.p., 2-stroke, 2-speed, demon-  
stration model; price £29.—Dove, 154b, Cheltenham  
Rd., Bristol. [X4241]**

**1915 Grandex-Jap, 2½h.p., 2-stroke, 2-speed, very  
fine condition; £24.—Newham, 223, Ham-  
mersmith Rd., W. [8836]**

#### Harley-Davidson.

**1916 Harley-Davidsons in stock.—Parker and Son,  
St. Ives, Hunts. [8865]**

**HARLEY-DAVIDSON, new, 4h.p., shop-soiled;**  
£52/10.—Cleale and Sons, Chelmsford. [8615]

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biton. [8894]

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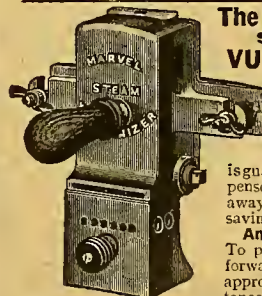
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1915 2½ h.p. NEW IM- PERIAL-J.A.P., 2-speed	28 15	10 15	32/3
1912 3 h.p. P. & M., 2-speed, and coach Sidecar.....	33 15	13 15	35/10
1915 2½ h.p. EXCELSIOR, 2-speed, and clutch...	36 10	10 10	46/7
1914 6 h.p. A.J.S. and Canoelet, hood and screen.....	70 0	25 0	80/8
1915 4 h.p. DOUGLAS Com., fully equipped.	68 0	48 0	37/3
1914 8 h.p. ZENITH, c/shaft, and Sidecar...	62 0	18 0	78/10
1913 3½ h.p. ARIEL, 3-sp. and Sidecar.....	40 0	10 0	53/9



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## Harley-Davidson.

**B**RAND New Harley-Davidsons.—See below.

**M**ODEL F, 7-9h.p., 3-speed; £68.—The Premier Motor Co.

**M**ODEL J, 7-9h.p., 3-speed, with dynamo electric lighting outfit; £75.—The Premier Motor Co.

**T**HE ABOVE are guaranteed brand new; standard specification and standard equipment.—The Premier Motor Co., Birmingham.

**S**PECIAL Gloria Sidecars, to match; 19 and 25 gns. You save £17 by purchasing your new combination direct from the recognised H.D. experts. Delivery carriage paid to any address.—The Premier Motor Co., Aston Rd., Birmingham. [8352]

**H**ARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

**H**ARLEY-DAVIDSON, 1915, and coachbuilt sidecar, good tyres, accessories, in perfect order; £68.—Vincent Motors, Rugeley. [X4490]

**H**ARLEY-DAVIDSON, 7-9h.p., 11F, late 1915, run under 2,000 miles, good condition; £55.—Ogilvie, Langham Hotel, London. [8862]

**H**ARLEY-DAVIDSON, late 1915 twin, done under 2,000 miles, as new; £55.—Potter, 33, Birdhurst Rise, Croydon. Phone: 1328 Croydon. [8791]

**H**ARLEY-DAVIDSON 7-9h.p. Twin, done under 250 miles, perfect condition; £58/10 to clear.—McAdams, Motor Engineers, Middlesbrough. [X3605]

**C**OLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**H**ARLEY-DAVIDSON, 1915, Model 11F, 7-9h.p., 3-speed, and special Canoelet sidecar, enamelled to match, overhauled, and in good condition; £65.—The Premier Motor Co., Aston Rd., Birmingham. [8925]

**H**ARLEY-DAVIDSON, 1915 model F, mileage 1,100, also H.D. sidecar (Feb., 1916), mileage 300, whole combination as new; no reasonable offer refused.—Charles Walker, 13, Grape St., Shaftesbury Av., W.C. Regent 5895. [8706]

**H**ARLEY-DAVIDSON Combinations actually in stock, £101/15 and £110, or solos £80/15 and £89; deferred payments if desired; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [8714]

**H**ARLEY-DAVIDSON, 1914, 2 speeds, clutch, kick starter, horn, lamps, speedometer, watch, glass, etc., with 1916 Montgomery coach sidecar, wind screen, luggage carrier, all in perfect condition, mileage 4,000; £55, no offers.—3, Scholars Rd., Chingford. [8902]

**H**ARLEY-DAVIDSON, the silent grey, 1916 models, immediate delivery from stock, with Gloria, Millford, or Canoelet sidecars; two only 1915 electrically equipped models at pre-Budget price, £76/13. Write or call.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

## Hobart.

**2**3h.p. Hobart, 3 speeds, fine engine, perfect; £25.—Willsher, Berwyn, Bexhill. [8645]

**H**OBART 3-speed 4h.p. Twin, and 9 gn. Gloria sidecar, all accessories; any trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [0832]

**H**OBART-VILLIERS, 1915, 2½h.p.; we have an extra fine sample, exceptionally fine engine, good appearance, well tried; £21; approval anywhere.—Layton's Garage, Bicester, Oxon. [X4680]

## Hopley.

**H**OPLEY, 5-6h.p., 2-speed, and clutch handle start, and coachbuilt sidecar; £20.—Colmore Depot, 31, Colmore Row, Birmingham. [X4503]

## Humber.

**H**UMBER, 2½h.p., Bosch, fast, and reliable; £12.—P. Clark, Sunbury, Middlesex. [8676]

**19**11 Humber, 3½h.p., single speed, good condition and tyres; £16.—77, Brockley Rise, Forest Hill. [X4609]

**H**UMBER, 3½h.p., late 1911, 2 speeds, sidecar; any trial; £20, or exchange solo.—10, Milton Rd., Bow, E. [8878]

**H**UMBER, 2-speed, all accessories, 3½h.p., done 500 miles, almost new; 25 gns.—736, Holloway Rd., London. [8374]

**3**1h.p. Humber and Sidecar, 2 speeds, handle starter, 2 speed order; £25.—Box 641, c/o The Motor Cycle. (D) [X4512]

**19**11 Humber, sidecar, 2-speed, 3½h.p., spares, good condition; £20.—Nobbs, Sandford, Braughel Rd., N. Finchley. [8887]

**H**UMBER, late 1911, 3½h.p., N.S.U. gear, overhauled, new piston, tyre; £20, offers.—Harrison, 41, Grove, Hammersmith. [8751]

**19**15 Humber, 3½h.p., 2-speed, clutch, had very little use, condition as new, new heavy tyres; £30; also sidecar cheap.—Greetham, Millon, Cumberland. [X4495]

## Indian.

**I**NDIAN, 1916, 7-9h.p., T.T., almost new; £55.—6, Warren St., London. [8930]

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**C**LUTCH Model T.T. Indian, 1914, 7-9h.p.; see Rice £35.—1, London Rd., Chelmsford. [89]

**I**NDIAN 1913 T.T., 2 speeds, clutch, cane side perfect order; £36.—320, High St., Poplar, E. [89]

**I**NDIAN, 1915, 7-9h.p., 3-speed, and Indian sidecar, complete outfit; £60, exceptional bargain.—Below.

**I**NDIAN, 1915, 5h.p., 3-speed, semi-T.T., complete with accessories; £48.—Elice and Co., Ltd., Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [89]

**I**NDIAN, clutch model, late 1915, 7h.p., and accessories; £40.—Colmore Depot, 31, Colmore Row, Birmingham. [X4]

**19**15 Sh.p. Indian, 3-speed, and Swan sporting car, in perfect condition; £65.—H. W. Arlesley, Beds. [89]

**19**15 Sh.p. 3-speed Indian and coachbuilt sidecar, accessories; £63.—W. Jackson, 18, Smeaton Barrow-in-Furness. [89]

**7**-9h.p. Indian Racer, clutch, only run 500 miles, condition, lighting set; £50.—98, Nags Head Ponders End, Middlesex. [89]

**19**15 7h.p. T.T. Indian, done under 900, as new, Lucas lamp and horn; £47/10.—Wright, N.Y.M.C.A., Tottenham Court Rd., London. [89]

**I**NDIAN 1914 7h.p. Coachbuilt Combination, 2-speed, clutch, speedometer, fine condition, new sidecar or write, L., 162, Gt. Portland St., W. [89]

**I**NDIAN, 1915, 5h.p., 3-speed, kick starter, head and tail lamps, Dunlop tyres, Lucas 150 gns.—Julians, Broad St., Reading. Phone: 11 [89]

**I**NDIAN 1913 Combination, 2-speed, clutch, start; £56, a bargain.—Geo. Smith, 268, Law Hill, Clapham Junction. Phone: Battersea 12 [89]

**I**NDIAN Powerplus, 7h.p., 3-speed, T.T., rigid model, Dunlop tyres; £75; in stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [89]

**I**NDIAN Powerplus, 7h.p., 3-speed, and spring dynamo lighting set, 2 lamps, horn, and meter; £90.—P. J. Evans, John Bright St., Birmingham. [89]

**19**16 7h.p. Indian, model F, Powerplus, 3-speed, spring frame, speedometer, with sidecar; £105, price £90; brand new.—Ayscough, Penarth, Penarth. [89]

**I**NDIANS—Model C, 7h.p., in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [89]

**I**NDIAN M.C., with sidecar, 5-6h.p., 1915, in condition, only run 6 weeks; £55 cash, or can be seen 101, Gt. Portland St., W., or write 248, Upland Rd., Dulwich. [89]

**D**ISC-WHEELED 7-9h.p. Indian, 2-speed, electrically equipped, late 1914, touring and racing speedometer, does over 70 m.p.h.; 48 gns.—Tr 78, High St., Hampstead. Phone: 5392. [89]

**I**NDIANS.—Birmingham agent, P. J. Evans, John Bright St. Immediate delivery ex-stock 3-speed standard and sporting models, with and out sidecar; price £70; sidecars from 11 gns. [89]

**19**15 7-9h.p. Indian Combination, in new cor tyres unscratched, spring frame, electric speedometer, 1,200, all accessories and £78/10.—Oram, 20, Caddington Rd., Cricklewood don. [89]

**19**16 Powerplus 7-9h.p. Indian Combination, speed, clutch, spring frame, dynamo horn, speedometer, voltmeter, de luxe sidecar, as new; £80; guaranteed.—Wauchope's, Lane, London. [89]

**19**15 7-9h.p. Indian, guaranteed perfect, frame, 3 speeds, T.T. bars, speedometer, starter, etc., tyres perfect, spares, 1,700 mile trial here; cost £78 November, accept £58 cash. Lieut. Tilt, E.N.A.S., Felixstowe. [89]

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**I**NDIANS in Stock.—Latest models, Powerplus combinations, Sporting Powerplus 3 speeds Standard 7h.p. overhead inlet combination lighting set, The famous 5h.p. 3-speed double mount.—P. J. Evans, John Bright St., Birmingham. [89]

**I**NDIAN, red, 5h.p. Tourist Trophy, 3-speed, kick start, 8 months old, only complete miles, practically new Dunlops, 2 lamps, speedometer, horn, usual tools, all in splendid condition; very fast machine; bargain, £48.—54, Chichester. [89]

**I**NDIAN, 7-9h.p., De Luxe sidecar (late 1911) light and horn, extra lamp sidecar speedometer, watch, special hood, Triplex wind core plate spares (including battery and inner tube) tools, only done 1,000 miles, unscratched, and easily smart; cost over £120, accept £85; appear Athens, Bowes Rd., Walton-on-Thames. [89]



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N. 2-stroke, 2-speed (Villiers 2½ h.p. engine), fitted with Stewart speedometer, mechanical horn, lamps, generator, in nice order and condition; cash price or on extended payments 2% only extra; deposit £12 monthly payments of £11/4/2.—Wm. Whitehead, Queen's Rd., London, W. [8324]

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ES 1916 Combination, 4½ h.p., lamps and horn, new; £67/10.—Dan Guy, Weymouth. [8798]

ES No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

MORE Depot, 261, Deansgate, Manchester, have a stock complete range of James motor cycles. [0803]

6 James 3½ h.p. Twin, shop-soiled only, complete with accessories; £58.—Colmore Depot, 31, Colborne, Birmingham. [X4499]

5 4½ h.p. James, 3-speed gear, Millford, only done 2,000, in perfect order; 58.—Spurgeon, 12, Ton-Rd., Maidstone. [8883]

p. James Combination, 3-speed gear, free engine, and kick-start, almost new, latest model, hand-turnout; 70 gns.; guaranteed.—Wauchope's, 9, Lane, London. [8844]

ES 3½ h.p. Twin, 1914, 3-speed countershaft, hand clutch, kick starter, speedometer, mechanical accessories; £40; called up.—Mitchell, 200, Mal-d, Brockley, S.E. [8673]

6 3½ h.p. Twin James, hand and foot controlled clutch, 3 speeds, lamp set, not done many miles, chains, and condition perfect, 95 m.p.g.; £53.—Leon Rd., Kingston, Surrey. [X4614]

5 2½ h.p. 2-speed James Lightweight, perfect mechanical order, appearance as new. Brooks saddle, Lucas lamps and horn, C.A.V. mag.; gain, £32.—The Premier Motor Co., Aston Rd., nham. [8926]

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5 3½ h.p. Twin Lea-Francis, 2-speed countershaft, kick starter, perfect condition throughout; £41. ers, Brigade Hdqts., Elvedon, Thetford. [8822]

## Levis.

6 Levis Popular; £32; in stock.—Williams, Chapel Ash Depot, Wolverhampton. [X4668]

IS, 2½ h.p., new, done 500 miles, lamps, horn, etc.; £25.—S., 41, Ash Rd., Stratford. [8740]

IS 2½ h.p. 1915 Popular, all accessories; £21.—Kingsford, 22, Platt's Lane, Hamstead. [8812]

Levis, 2½ h.p., fine condition; will accept £23/10. Lowe, 80, Sycamore Rd., Handsworth. [8653]

IS Baby, 1916, cost £32, soiled, price £26, bargain.—120, Carlgate Bridge, Retford, Notts. [8654]

MORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from [0804]

IS Popular, new; special bargain; cannot repeat: £28 cash; gradual payments 2%.—Referee Co., 332, High Holborn. [0764]

IS 1916 Popular Model, 2½ h.p., slightly shop-soiled, special bargain, £29.—Wilkins, Simpson, Co., 11, Hammersmith Rd., London. [8667]

Y Levis, late 1915, excellent condition and appearance, not used during winter months; £24, or less.—Tom Korn, 7, Victoria Place, Epsom. [8737]

5½ Levis Popular Model, thoroughly good throughout, perfect hill climber, fully equipped; price £35; Auto-wheel part exchange—156, Dalmally Rd., ydon. [8911]

IS 2-stroke Motor Cycles, latest 1916 models.—ole London and district agents. Cars and Motor es Ltd., 175-177, Shaftesbury Ave., London, W.C. 2; 1432 Regent. [0711]

IS (3), second-hand, 1915, £26, £24, and £22; all perfect, only want seeing.—Further par- as from Geo. Smith, 268, Lavender Hill, Clapham on. Phone: Battersea 1271. [8620]

ES—Three Populars, £32, and two No. 1's with onfield gears, £47/10; actually in stock; deferred yats by mutual arrangement.—Lamb's, 151, High althamstow, and 50, High Rd., Wood Green. [8711]

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COLN-ELK, 1911, Sh.p., B.B. Bosch, new tyres, elt; must sell; £14.—397, High St., Lewisham, E. [8872]

4 3½ h.p. Lincoln-Elk and sidcar, perfect condition, 3 speeds, speedometer, etc.; £35.—Ford, 83t., East Grinstead. [X4664]

5 4½ h.p. Lincoln-Elk and Watsonian sidcar, guaranteed not done 1,000 miles, as new; £49. nham, Chemist, Olney. [8900]

COLN-ELK, 3½ h.p., 1914, single speed, just thoroughly overhauled, and guaranteed perfect to £20.—31a, Broomfield Rd., Chelmsford. [X4692]

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ZENITH, 1918, 8½ h.p., clutch model, with Gradua gear, speedometer, head lamp, back lamp, and horn. 36

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ALON, 1915, 2½ h.p., 2-st., 2 speeds CATHORPE-MINOR, 1914, 2 h.p., 3-speed. 31

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ZENITH, 1918, 6 h.p., with Gradua gear, head lamp, back lamp, horn, Cowey speedometer, and Canoelet spring sidcar. 40

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M.A.C.-ENFIELD, 1914, 8½ h.p. twin, two speeds and kick starter, headlight set, horn, rear lamp, and coach-built sidcar. 42

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MATCHLESS Combination, 1915, 7-h.p. M.A.G., 3 speeds, many extras, including Pillion seat, mileage 4,260, just like new; £80.—Tarry, 102, High St., Bromley, Kent. [6807]

MATCHLESS, 3-speed countershaft, 7 h.p., kick start, 1915 Empress sidcar, accessories; £65; part exchanges considered.—"Bramlea," Charlton Rd., Shepperton-on-Thames. [8800]

MATCHLESS, 1913, 6 h.p., twin belt, Lucas head lamp, Dunlop extra heavy tyre, 2-speed gear and hand clutch, kick starter, and sidcar; 45 gns.—Julians, Broad St., Reading. Phone 1024. [X4129]

MATCHLESS, 1913, and sidcar, 8 h.p., 2 gears; under 7,000 mileage; owner at Front since 1914; condition guaranteed, many accessories and spares; £50 cash, or nearest offer.—Williams, Langdale, Hulton, Essex. [8609]

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MAXIM 4½ h.p. Twin, m.o.v., mag., drip feed, Saxon forks, built 1916, low, fast; £18.—275, Romford Rd., E. [8728]

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2½ h.p. Minerva, Amac, m.o.v.; sacrifice £5.—George, 300, Portobello Rd., Kensington. [8905]

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MOTO-REVE 2½ h.p. Twin, guaranteed perfect order; bargain, £10, offers.—Graham, 27, Wandie Rd., Upper Tooting. [8882]

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MOTOSACOCHE 1913 3½ h.p. Twin, Enfield gear, does 70 m.p.g.; 26 gns., including 8 gallons petrol.—Troward, 78, High St., Hampstead. Phone: 5392. [8840]

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NEW Hudson, 1913, 4½ h.p., 3-speed gear, clutch, kick starter, footboards, with accessories; £29.—Moss, Wem. [X4618]

NEW Hudson 4 h.p. Combination, 3-speed, kick start, new Dunlop covers, 1913 model; £33.—Chirnev Harpenden. [8607]

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NEW Hudson, 1913, 3½ h.p., 3-speed, and clutch, cane sidcar; £29; seen by appointment.—James, 257, Friern Rd., Dulwich. [8892]

NEW Hudson, 3½ h.p., 1912, and sidcar, perfect order, 3-speed, and clutch, new covers; £29/10.—Jordan, Builder, Staines. [8492]

1915 3½ h.p. New Hudson, coachbuilt sidcar, 3-speed gear box, new condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0821]

1913 (late) 4 h.p. New Hudson and Sidcar, in splendid condition; £35; take lightweight in part payment.—Newham, 223, Hammersmith Rd., W. [8835]

NEW Hudson, 2½ h.p., 3-speed, free engine, clutch, kick starter; sell £25, or exchange with cash for higher power.—T. McDonald, 7, Lower Appleton Rd., Widnes, Laacs. [8682]

NEW Hudson, 1913, 4 h.p., 3 speeds, clutch, kick start, in splendid order throughout; £27/10, absolute bargain; sidcar if required.—3, The Mewa, Victoria Rd., Clapham, S.W. [8741]

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NEW Imperial, 1915, lamps, horn; £26, or offer—322, Green Lanes, N. [8721]

NEW Imperial-Jap, 1915, single-speed, only run 500; £22.—Chirnev, Harpenden. [8606]

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NORTON Combination, 1915-16, Sturmeys counter-shaft gears, coachbuilt sidecar, fully equipped and perfect, does 70 m.p.g.; 69 gns., including 8 gallons petrol.—Troward, 78, High St., Hampstead. Phone: 5392. [8842]

## O.K.

O.K., 2h.p., 2-speed, good condition; £22.—Bridger, 18, Beaumont Av., Richmond. [8738]

O.K., 1914, 2h.p., 2-speed countershaft, in good condition; £19.—Chalkin, Snodland, Kent. [X4690]

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P. and M., 1912 model, bought new Feb., 1913, 2-speed, wicker sidecar, only done 7,000; price £32.—Chirney, Harpenden. [8605]

1914 3 1/2 h.p. P. and M., 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [0721]

P. and M., 1913, 3 1/2 h.p., 2-speed gear, new coachbuilt sidecar, full outfit, in good condition; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7990]

1914 3 1/2 h.p. Phelon and Moore, 2-speed gear, kick start, chain drive, Lucas lamp set, 1 gn. horn, Cowey speedometer, excellent tyres, engine guaranteed perfect; £42/10.—Robinson's Garage, Green St., Cambridge. [8745]

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PEUGEOT, 6 1/2 h.p., N.S.U. 2-speed, free, Mills-Fulford side-entrance quick detachable sidecar, new tyres; £20.—Beazley, Laurel Av., Twickenham. [8876]

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3 1/2 h.p. Premier, free engine; £18/10.—Grove, 224, 2 Fore St., Upper Edmonton, London. [8784]

PREMIER, 3 1/2 h.p., T.T. engine, perfect; must sell; £25, or offer.—101, Tooting Bec Rd., S.W. [8732]

1914 3 1/2 h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 3 1/2 h.p., and sidecar, 2-speed, free engine, Lucas lamps, horn, tools; genuine bargain, £22.—Jukes, 10, Victoria St., Wolverhampton. [X4332]

2 1/2 h.p. Premier, 1913, thoroughly overhauled by 2 makers, first-class condition; £16.—P. A. Smith, Bradfield Villa, Rannids, Wellingborough. [8678]

PREMIER, 1912, 3 1/2 h.p., clutch model, a splendid and powerful machine; bargain for quick sale, £17/10.—3, The Mews, Victoria Rd., Clapham, S.W. [8742]

PREMIER, 1913, 3 1/2 h.p., 3 speeds, clutch, Canoelet sidecar, Lucas lamp set, speedometer, electric rear lamp, luggage grid, Dunlops, Kempshall tyres; £35.—102, Eleanor Rd., Hackney. [X4605]

## Quadrant.

3 1/2 h.p. Quadrant, 3-speed, clutch model; £25; guaranteed.—Wauchope's, 9, Shoe Lane, London. [8848]

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RADCO, 2 1/2 h.p., 2-stroke, practically new; £17, no offers.—14, Doddbrooke Rd., W. Norwood. [8857]

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23 Calthorpe-Jap, 2-speed £37 16  
4 Calthorpe-Jap Comb'n £70 7  
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2 O.K. Junior, 2-speed... £33 1 6  
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Another 3 h.p. 1915 ENFIELD, 2-speed... £38 10  
3 1/2 h.p. PREMIER... £12 10  
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4 h.p. BRADBURY, 2-speed... £23 0  
3 1/2 h.p. HUMBER and Sidecar... £28 0  
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1916 G.W.K., automatic lubrication, as new, very special car... £180 0

ALEXANDER & CO.,  
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272-274, Gt. Western Rd., GLASGOW.

## MOTOR CYCLES FOR SALE.

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RADCO, 1915, 2-stroke, in first-class condition, ha used; £18, a real bargain; ready for the owner called up.—B.C., 15, Bridle Lane, Regent St. [8]

## Rex.

REX, 3 1/2 h.p., wicker sidecar, F.E., Bosch, good condition.—Jones, 50, Halidon St., Homerton, N. [X4]

REX, 1910, 6h.p., 2-speed, torpedo wicker sidecar, lamps, etc.; £18/10.—Toms, Catherine St., L. [8]

3 1/2 h.p. Rex Motor Cycle and 40 gallons of petrol, £25 the lot.—Motor Broker, 32, Manors C. Newcastle. [X]

REX Twin, 5.6h.p. T.T., clutch, 1912, condition running without fault; £21.—14, Doddbrooke W. Norwood. [8]

LATE 1912 5.6h.p. Rex Twin, coachbuilt sidecar, £32/10; cash or easy terms.—R. E. Jones (Garages), Swansea. [8]

REX 1913 1/2, 6h.p. Sidette, twin, speeds, horn, 1915 50 m.p.g., heavy Dunlop unpunctured covers; —Silver, King St., Reading. [8]

REX 2 1/2 h.p. Lightweight Motor Cycle, new cylinder and piston, good tyres, £11; wanted, a H.R. gear starting handle.—Wright, 69, Welbeck Hall. [X]

REX 6h.p. Combination, 1912-13, 2 speeds, free engine, handle starting, overhauled and re-built last Autumn, scarcely used since, new Kempshall non-skid, spare new Dunlop rubber-studded, new Bull belt and spare belt, large toolbox on luggage on full kit of tools, jack, lamps, horn, in very good condition; £35.—Carter, 101, Wellesley Rd., Ilford. [8]

## Rex-Jap.

REX-J.A.P., 1913, 6h.p., 2-speed, free engine, sidecar; sell cheap.—29, St. Leonard's St., [8]

1913 Rex-Jap Twin, 8h.p., in first-class condition well-made sidecar complete; good lights taken in part exchange.—S. E. Neale, Wootton R. Marlborough, Wilts. [X]

## Rover.

ROVER, 1913, 3 1/2 h.p., free engine, in nice condition; £25.—6, Warren St., London. [8]

ROVER, 3 1/2 h.p., 3-speed gear, all perfect; £35, complete.—Colmore Depot, 31, Colmore Row, Birmingham. [X]

ROVER and sidecar, slightly used; cost £90, £26/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X]

T.T. Rover, 1916, 3 1/2 h.p., Philipson pulley, tools, in condition as new; £49.—Wauchope Shoe Lane, London. [8]

1915 Rover, countershaft 3-speed gear, perfect condition throughout, all accessories; price £40.—Bowler, H.A.C., Canterbury. [8]

ROVER Motor Cycles, 3-speed countershaft in stock for immediate delivery; no waiting, more Depot, 261, Deansgate, Manchester. [8]

ROVER, 1912-13, 3 1/2 h.p. Armstrong 3-speed clutch, in excellent condition, enamel and like new; £28.—Clayson, 27, Bridge St., Northampton. [8]

ROVERS in stock for immediate delivery: countershaft, £66/10; T.T. 3 1/2 h.p., with 1 son pulley, £56.—P. J. Evans, John Bright St., Birmingham. [8]

ROVER Combination, 3 1/2 h.p., 3-speed, £55/10, meter, 3 lamps, 2 generators, new condition spares, Dunlops; 42 gns.—9, Compton Av., Cam Lane, Islington, N. [8]

ROVER, 1914, 3 1/2 h.p., T.T. model, an excellent fast and well-preserved machine, good in way; approval with pleasure; £36; bargain.—L Garage, Bicester, Oxon. [8]

ROVER, 1913, 3 1/2 h.p., clutch model, complete set, horn, etc.; £26, no offers; lightweight exchange.—Geo. Smith, 268, Lavender Hill, Ch. Junction. Phone: Battersea 1271. [8]

IDEAL Sidecar Combination.—Late 1913 Rover speed model, guaranteed perfect order and condition, used very little during war, very fast and full; £36 secures this wonderful bargain.—Brown cester Rd., Chesterfield. [8]

1915 Rover, countershaft 3-speed, 1,200ft. F.R.S., Watford speedometer, horn, rear etc., 1916 Canoelet model D4, hood and screen cage carrier, apron, and wings, absolutely 1916/5/10.—Lawrence, Builder, Carey St., Reading. [8]

## Royal Ruby.

ROYAL Ruby in stock for immediate delivery with the famous 2 1/2 h.p. 4-stroke J.A.P. countershaft 2-speed gear, Dunlop tyres, etc.; £1. The Premier Motor Co., Aston Rd., Birmingham. [8]

## Rudge.

1912 3 1/2 h.p. Rudge, free engine, good condition.—R. E. Jones (Garages), Ltd., Swansea. [8]

RUDGE, 3 1/2 h.p., free engine, all in good condition; offer.—455, York Rd., Wandsworth. [8]

3 1/2 h.p. Rudge Multi, I.O.M. model, late 1914 32 ometer; £38/10.—47, London St., Gloucester. [8]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## The Petrol Allowances.

**T**HE petrol licences which have been issued to motor cyclists mean a great curtailment in the use of motor cycles. Half a gallon a week is an extremely meagre allowance, though motor cyclists are lucky in having the most economical form of motor conveyance extant; and they will be able to cover a mileage which should, if they so desire, equal or even exceed that of car owners, who are to have one and a half to two gallons of spirit allotted to them for use during the same period.

Needless to remark, very few are convinced of the necessity of such drastic limitations, and consequently motorists do not take kindly to the new scheme. Many, especially the pleasure riders, would have preferred a more liberal supply during the summer months, even at the expense of total prohibition at the end of September, but this would not have suited those who ride throughout the year for business or professional purposes. A certain amount of rest is absolutely necessary to busy men, and those who have been lucky enough to take their holidays before the petrol permits came into force have been able to journey in a most pleasurable manner, viz., by road. Now, however, a motor cyclist must go to his holiday resort by train, which is not in the interests of economy, as train fare is much in excess of the cost of riding a motor bicycle.

A good deal of dissatisfaction exists in the car world by reason of owners having received different allotments though their estimated requirements were the same, and the purposes for which the petrol was required also tallied. Among motor cyclists the main grumble is the very small amount issued, and business men have good cause for complaint. Commercial travellers, road surveyors, and tradesmen, as well as men engaged exclusively on war work, in the course of which it is necessary for them to cover considerable distances, have all been treated on the same level as joy riders. Why, therefore,

were they asked to state the purpose for which they required the petrol?

## Conserving Petrol Supplies.

**A** WEEK or two ago we dealt with the method of bench testing motor cycle engines at the A.J.S. factory by coal gas, and suggested that other manufacturers might well follow suit in order to conserve the supplies of petrol. A reader followed with a statement that every specimen of a certain aeroplane engine uses up thirty-two gallons of petrol during its test. We, therefore, drew the attention of the Petrol Control Committee to this subject. The reply received from the secretary is as follows:

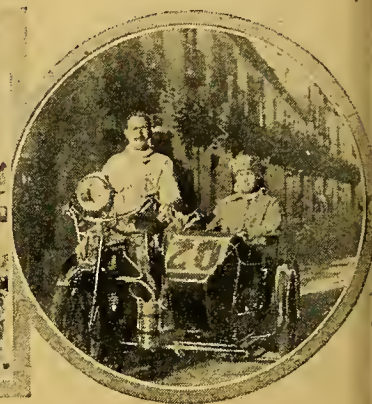
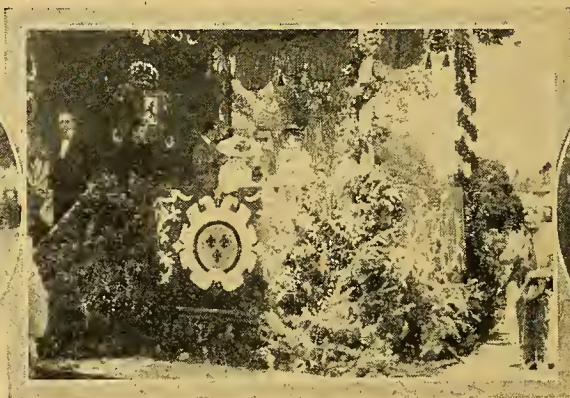
"I am to express the thanks of the Committee for the suggestion contained in the articles in *The Motor Cycle* of July 13th, referring to the use of coal gas as an economical means of testing motor engines, and, further, for the publicity given to the suggestion."

Whilst the above is satisfactory as far as it goes, we would have preferred that the Petrol Control Committee had been able to state definitely that it was taking active steps to bring the matter strongly to the notice of engine makers. If the suggestion is good, then official action should be taken without delay. There is nothing really new in the idea, and no doubt every engine maker is acquainted with the possibilities of using coal gas. What is necessary is that the Committee should display sufficient energy to go out of its way to bring the uses of coal gas for bench testing engines directly to the notice of the managers of the largest engine-making concerns. There are many other sources of waste into which we need not go, such as the ceaseless parade of empty lorries on our main roads which often pass other empty lorries going in the opposite direction. It would not require much organisation for one lorry to do the transport work of two in cases of this kind.



# The King of Spain Witnesses a Sidecar Race.

A Well-contested 130 Miles Road Event.



## ROAD RACING IN SPAIN.

Winner of the 130 miles championship sidecar race. A Harley-Davidson machine and Dunlop tyres.

H.M. the King and Queen of Spain in the Royal box.

The James representative, who, with his wife as passenger, "toured" round the course.

A 130 miles road race for sidecars, held in Spain on July 17th, was honoured by the presence of royalty. A special stand was located near the replenishing pits, and H.M. King Alfonso, Her Majesty the Queen, and some of their children were present during the race. His Majesty also showed his interest in the proceedings by presenting a cup, which was won by a Harley-Davidson team, the riders being I. Iiviria, Marti, and Landaluce.

The course consisted of two circuits of the Guadarrama and Navacerrada course (total distance, 130 miles). This entails two big climbs of 4,500 and 5,000 feet respectively. The starting point was at the Puerta de Madrid.

There were sixteen starters, and the first man went off at 8.30 a.m. It was a glorious day, and there were many spectators. The sun was very hot, and consequently the race proved a good test for the tyres. The Dunlops fitted to the winning machines came through splendidly. The Dunlop Co. only opened a Spanish branch in October, 1914, and, naturally, they are pleased with the good showing their tyres are making.

The few neutral countries in Europe should, by reason of the fact that they are able to hold motor cycle races during the war, produce many good riders to compete in International events hereafter. We refer in particular to Holland and Spain.

## Eking out the Petrol.

Six Gallons in Three Months the Standard Allotment.

List of Articles dealing with Petrol Substitutes.

NOW that every motor cyclist, for whatever purpose he uses his machine, appears to have been granted a permit to use six gallons of petrol in a period of three months, attention will be more than ever drawn to means whereby this quantity may be made to suffice as long as possible. Extra air valves and smaller jets will not be of much use to the majority of users, who certainly use more than half a gallon a week; the only hope for the great majority is to try substitutes. There are one or two new fuels that have been placed on the market during the past six months, and the results of tests with them have been described in *The Motor Cycle*. Paraffin has been tried by many readers, and they have given their experiences in our correspondence columns. With the adoption of such severe petrol restrictions it would not be out of place, therefore, to give the dates of the issues in which have appeared experiences of users with these petrol substitutes. It will be seen from a study of these results that, by careful experiment, it is possible to obtain nearly as good results as with petrol.

### PARAFFIN AND PARAFFIN PETROL MIXTURES.

February 17th, 1916, page 153.	May 18th, 1916, page 480.
March 2nd, 1916, page 216.	May 25th, 1916, page 504.
March 23rd, 1916, page 226.	June 8th, 1916, page 548.
March 30th, 1916, page 307.	June 15th, 1916, page 571.
April 13th, 1916, page 359.	June 22nd, 1916, page 592.
May 11th, 1916, page 456.	

### SPOTS.

May 25th, page 501, and June 1st, page 524.

### BINKS.

April 27th, 1916, page 399.  
May 18th, 1916, page 465.  
June 8th, 1916 page 538.

Although not making a great difference, there are one or two points that should be watched in order to avoid wasting any petrol or petrol substitute.

In these days every little helps. For instance, many machines might take smaller jets with little loss of power. Extra air devices should be tried if not already fitted, and all leaks avoided. Then it is surprising the number of people who do not turn off the petrol just previous to stopping in order to use up all the petrol in the float chamber, so preventing it being wasted through evaporation should the machine be left standing for a time.



## OCCASIONAL

## COMMENTS

By 'IXION'

Sydney R. Jones

**Stranded with Expired Permits.**

Imaginative motor cyclists are enquiring what will happen when a rider whose petrol permit is exhausted for the time being gets stranded by the roadside for want of fuel, through a petrol leak or through overestimating the distance which his remaining supply will carry him. Obviously, the Government cannot cater for our errors of judgment or our misfortunes. If it did, astute riders of uncertain morals would get stranded every time they went out, and fall back on the emergency regulations. We shall have to choose between chance generosity, or storing our machine in the nearest farmshed and coming for it when the next permit falls due, or carrying a supply of some unofficial fuel, such as paraffin or Binks, on which engines can be started and run if they are hot when the attempt is made.

**A Bonniksen Next Time.**

I always believe in keeping on good terms with the police, and when one of the local constables accosted me the other day as I was referring to a map, I demonstrated the many novelties on my A.B.C. to him, as he evidently had a smattering of mechanical knowledge. Suddenly his eye spotted my Watford speedometer, which on all A.B.C. machines is calibrated to 80 m.p.h. for reasons which need not be laboured here. He looked at me very meaningfully, and said, "I see I must keep a special eye on you!" I have not owned a Bonniksen speedometer yet, but unless memory betrays me, their needles go round and round the dial *ad lib.* instead of registering such accusing digits as "80." Anyhow, I ask Mr. Bradshaw if he considers it wise or kind to give his customers away to the police so completely. I feel quite nervous now whenever I go out. When I get my "C" model A.B.C. after the war, I shall specify a speedometer calibrated in kilometres, and I can then explain to any too interested policemen that eight French kilometres go to one English mile, or some such lie. It can only be a matter of weeks before that constable catches me doing a mild 30 m.p.h. up our local pimple on second gear ( $9\frac{1}{2}$ ); and as the exhaust is healthy under those conditions, I am sure to be charged with doing 60 m.p.h., and fined accordingly. [Better get one calibrated in Russian versts, or Greek parasangs; after the war some of our police will know what a kilometre is.—Ed.]

**Choose your Load Carefully!**

The very day on which I perused the special side-carrier number of *The Motor Cycle* I viewed a smash which has a moral. A certain dealer in antiques has looted his local town bone-dry of Lowestoft, Chippendale, Toby jugs, Morland prints, and all those other treasures for which he is accustomed to pay such wee

sma' sums to ignorant owners, and extract such gigantic cheques from wealthy Americans. So he next commenced to hunt the local countryside, and found that some of the farmhouses and cottages, which had long remained in the tenancy of one family, were perfect treasure houses. After wearing out a pony and trap, he invested in a motor cycle and sidecar, extended his range, tapped new sources of supply, and kept his window and coffers well replenished. At last Nemesis attacked him. He had paid his third visit to a cottage, wherein resided a genuinely antique old lady, short of ready money, but nevertheless the obstinate possessor of a glass case of old china which made his mouth water. Having an old age pension and simple wants, she was loath to part with her heirlooms, though ignorant of their value. But at last war prices began to squeeze her a little, and the third call saw Treasury notes pass, and the china transferred to the sidecar. *En route* home Quinney took a left-hand corner too fast. The china certainly looks older than ever, but barbed wire entanglements of rivets all over its surfaces have hardly enhanced its value.

**Cleanable Sparking Plugs.**

Several correspondents with large boxes of odd sparking plugs worth a sovereign or two, and only requiring a thorough clean to restore their pristine efficiency, endorse my demand for a really cleanable plug. One of them, an electrical engineer, writes very learnedly of the weakening of the spark due to leakage over the surfaces of insulators which are not really filmed with black carbon, but merely stained brown, or roughened, or becoming porous. He failed to obtain even a faint spark in air from a pair of comparatively new 4s. 6d. plugs of the fixed insulator type. So he took them entirely to pieces, cleaned them meticulously, inserted fresh asbestos packing, and tested them in a Wheatstone bridge testing set, when the insulation proved perfect, and the plugs are now behaving better than ever. Speaking as an ignoramus in these matters, it appears to me that the joint between the barrel and insulator is merely a compression joint. The amateur motor cyclist is necessarily trusted with the maintenance of many compression joints, *e.g.*, at his valve seatings, valve cap seats, sparking plug washers, and compression taps. Why should we not be trusted with one more? Is there some abstruse electrical justification for the scrapping of thousands of plugs annually simply because they are difficult to clean? Or is it with the plug makers as it is with the mustard firms? The latter make their profits from the mustard we leave on our plates; do the plug makers reap their shekels from the soiled plugs which we scrap, because for lack of detachable insulators it is a fearsome job to clean them?

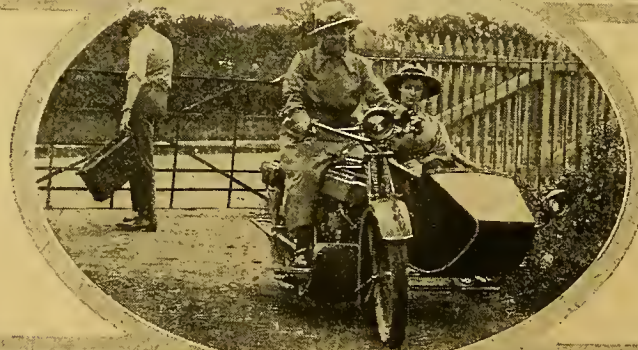


## The Great Utility of a Motor Cycle.

**M**ARKET gardeners and fruit growers in all parts of the country, and particularly in the Vale of Evesham, have long discovered that the motor cycle is indispensable to them. Rapidity of movement between their offices and various plantations, markets, and railway stations is essential if they are to keep up with the rush of present day business transactions.

This year, with the great shortage of labour, the necessity of possessing rapid means of locomotion is more pronounced than ever, but during the last few months a new factor has appeared in gardening centres which has further emphasised the utility of the motor

(Top) A lady gardener conveys her employer from one holding to another on an Enfield outfit.

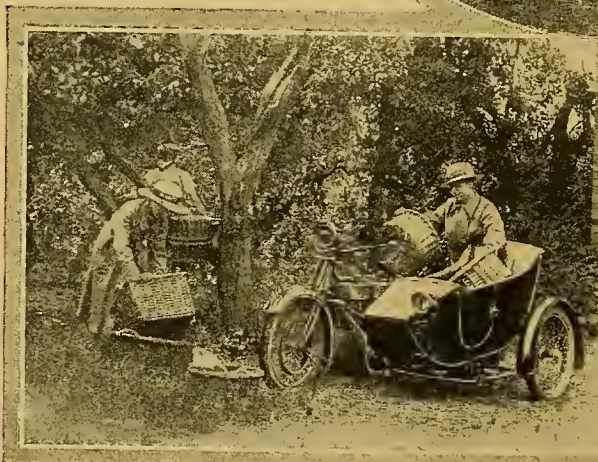


### How it Helps Lady Gardeners.

cycle. The factor is the advent of the well educated town girl, who from purely patriotic motives has thrown herself heart and soul into the work of producing and marketing the fruit and vegetables which the Vale of Evesham produces in such large bulk. Without her help local growers would be unable to consign to the customers those delicacies which are so necessary for perfect health. Many of the Evesham growers occupy land in various districts, some lying miles from the town.

It is here that the motor cycle is peculiarly adaptable. The push bicycle takes too much out of one, especially in bad weather, to be always advantageously used if the girl's work lies some miles from her residence. A motor cycle with sidecar

(Oval) Two lady market gardeners arrive at the scene of their labours on a sidecar.



The Enfield outfit is useful to collect empties.

The sidecar being used for carrying hampers.

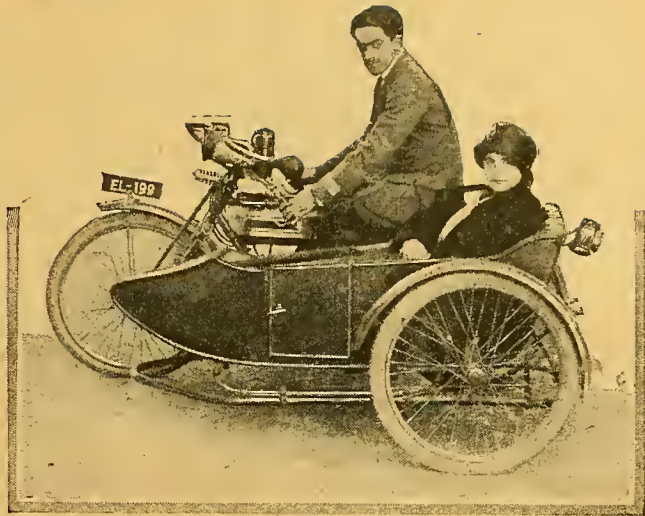


**The Great Utility of a Motor Cycle.—**

attachment will take two or three workers to their destination in next to no time, while there is plenty of accommodation for lunch and tea, and, if necessary, for the various implements to be used in the course of the day's work.

Again, the employer frequently finds it necessary to communicate with another plantation some two or three miles distant, and what would occupy a horse and cart half an hour can be done by the lady motorist in five or ten minutes. And just now the old adage "Time is money" is more true than ever before. It not infrequently happens that important packages of fruit have to reach the railway station quickly, and no vehicle is quicker or safer than the motor cycle. For the carriage of empties from one part of the holding to another this means of conveyance is most useful and expeditious. In fact, in every department of the market gardener's business the motor cycle sidecar combination is invaluable, and those who have not seen for themselves the extent to which it is used in the neighbourhood of Evesham would hardly believe that it has become so indispensable.

MARY HARTLEY-SMITH.



A member of the Doncaster M.C.C., Philip G. Robinson, who now holds a commission in the R.F.C. The photograph was taken before Robinson received his appointment, and shows himself and Mrs. Robinson on their Triumph sidecar. With this machine Robinson did a good deal of Government work previous to joining the R.F.C.

## KINKY BILL (2).

Ho, yus, we 'as our little larfs when business ain't too brisk; F'r instance, there's a pal o' mine 'oo's always on the frisk. A-thinkin' out some new kybosh for pullin' feller's feet, 'E diddled me a dozen times, but Kinky got 'im sweet.

Aye, pinned 'im on 'is 'ind legs, too, and didn't let 'im go Until I'd 'ad me little grin at 'im for once; wot 'o! You see 'e tried to be a bit too smart with Kinky Bill, So Kinky ups and goes for 'im an' puts 'im through the mill.

You may remember 'ow we 'ad a picnic in a ditch Alonger Black Marias tryin' to give us both the stitch. A good deal went to glory from ole Kinky Bill that day; Regatters ain't much use to me—not that sort, anyway.



Four generations of Williamses, of Nottingham, on a Campion. The driver may be remembered by some of our readers as "Uncle Sturmev" of T.T. fame, the Sturmev-Archer gear expert, who died suddenly some time ago.

The saddle pin was squiffy, so I made a wire noose To 'old the saddle on the bar, and left some 'angin' loose. With that and other makeshift jobs I gets back to me base, And there I meets this pal o' mine, a chap called Funny Face.

Of course, 'e 'ad to 'ave a snack at Kinky Bill and me— "Charles Chaplin 'as arrived at last to see the fun," ses 'e. "Poor Charlie thought 'e do a T.T. stunt an' see it all; But fell off in a 'hurry when 'e 'eard the bugles call."

"That must 'ave took some thinkin' out," I ses; "but any'ow, This broken-winded motor bike 'as saved me life just now. "The silly fool," ses Funny Face, "and is 'e livin' still? 'Is number's up at last then," and 'e collars Kinky Bill.

'E never twigged that copper wire which I'd put there to 'old The saddle tight (and which was 'anging' down, as you've bin told).

Well, that was what up-ended Mister Bloomin' Funny Mug, The other end of it, you see, got tangled in the plug.

So when 'e starts the engine up and goes on foolin' round, Pretendin' to be wild because we got 'ome safe and sound, One cylinder was firin' and the other 'ad a "short," Which sent the current through the wire, an' so gave me some sport.

For on jumped Funny, with a grin—the last 'e 'ad, you bet— And caught a most surprisin' shock that 'e won't soon forget, It froze 'im on the saddle, fairly stuck 'im on like glue; 'E couldn't move a muscle, and 'e didn't 'arf look blue.

"That blots yer copybook," I ses. "Switch 'orf, you fool," 'e shrieks; "The perisher's a-sendin' streaks o' lightnin' through me breeks."

"I only wish," I answers back, "that you was in my place To see yerself, because, O lor', you 'ave a funny face."

At that I cracked out larfin' till it fairly made me cry To see 'ow Kinky Bill 'ad abserlootely wiped 'is eye. I let 'im go at last when my ole 'bus 'ad done 'is worst; But Funny Face don't sit down now without a look round first.

W. W. ABBOTT.



## HILL-CLIMBING IN DERBYSHIRE

SOME members of the Nottingham and District M.C.C. lately discovered a hill in Derbyshire that had not previously been climbed.

Accordingly, a few days ago a number of members journeyed out and were joined at Matlock by some riders from Sheffield. The hill starts out of the main road in Matlock Bath, and is known as the "Wap-pings." It rises from the level of the Derwent to an altitude of over a thousand feet. The surface for the first part, which winds up among the houses on the hillside, is made up of uneven stone flags, and affords little assistance to any rider whose machine has not good rubber-studded tyres. There are several sharp bends at low, single-figure gradients, some being claimed as 1 in 3 by the local inhabitants.

### How the Riders Fared.

Mr. Cohen, of the Sturmev - Archer gears, was the first to make the attempt with a 4 h.p. Norton sidecar, but wheel slip, caused by a steel-studded back tyre, brought about his downfall at the second bend. Another Norton rider was baulked by the first machine standing at a corner. Weinstock (6 h.p. Campion sidecar) conked out on



### FREAK HILL-CLIMBING AT MATLOCK BATH.

- (Top) J. Richards, on a 6 h.p. King Dick sidecar, just starting. Notice the passenger seated on the carrier to prevent wheel slip.
- (Centre) George Hunt (8 h.p. Campion sidecar) on the first steep stretch. The main road is seen on the left. The large flagstones do not render the surface ideal!
- (Bottom) Another Campion rider going well.

### A New Freak Ascent discovered at Matlock Bath.

the first attempt, though at the second, without a passenger, he reached the summit without assistance.

The sensation of the day was provided by Blake, of Sheffield, on a 2½ h.p. chain-driven Levis fitted with a Henderson sidecar, who claimed his gear to be no lower than 11½ to 1. Shedding his passenger, he came at the hill with a rush, and negotiated the bends in brilliant style. The next climb was made in quite a different manner, and to onlookers made the hill look quite easy. It was by J. Richards (6 h.p. King Dick sidecar), who came up from the bottom at a uniform rate of speed. The King Dick pulled slowly but steadily, having power in hand all the way. George Hunt (8 h.p. Campion sidecar, with Charles Campion as passenger) next tried, but failed owing to being baulked by spectators at the first bend. After a restart at the foot he came up in brilliant style.

Cohen, who had failed on his first attempt, having persuaded a friend to lend him his back wheel shod with rubber-studded tyre, made the next ascent; the result was a fast, clean climb. Others to make the ascent were G. Wilkin (Norton sidecar) and McKeggie, who made a good solo climb on a 3½ h.p. twin Brough.





## A Further Selection of Letters from Readers scattered all over the World.

**I**N continuation of our practice of quoting extracts from communications sent to us by motor cyclists in the Dominions Overseas, we give below a further collection of instructive opinions and experiences. The increasing volume of letters which we now receive from the motor cycling fraternity abroad show that the pages which we devote monthly to airing our Overseas readers' views are appreciated. A most interesting letter from Lt.-Col. C. MacLaurin, an Australian officer on active service in this country, appeared in our correspondence columns in our issue of July 20th. This gallant officer expresses the opinion that Overseas correspondents are much too severe in their criticism of the design of the British motor cycle and its capabilities as an Overseas mount. He also is of opinion that the average road conditions in Australia are much exaggerated as a rule, and that he has found many roads in England far worse than the average Australian; and adds that not only, in his opinion, are the best British machines quite suitable for Australian conditions, but repeats that they are eagerly sought after, even in spite of the high prices now charged.

### The War Zone as a Comparison.

Bad though some of the roads must be in certain countries abroad, it is difficult to conceive worse riding conditions than exist in the various war zones, where the roads for miles round are pitted and torn with shells, and churned up by heavy traffic. Despite these conditions, almost every day we hear of the remarkable performances and the unfailing reliability of the British-made motor cycles used by our despatch riders.

### Inflated Prices Again.

It becomes quite monotonous in reading through our Overseas correspondence to notice the continual grumbles which appear, almost without exception in every letter, about the exceptionally high prices charged for everything in the way of motor cycles and accessories by the Overseas agents compared with the manufacturers' home prices. The difficulty of obtaining spare parts also seems pronounced. Whilst we can fully sympathise with our correspondents, we would take the opportunity of pointing out to them that at the present time we, at home, are having quite as bad a time in these respects as they are. Petrol is almost unobtainable, even at the high price of 2s. 10d. per gallon, *plus* 6d. tax, new machines are unobtainable, except in very small numbers, at any price, while it means a tiresome delay to obtain spares. Until the conclusion of hostilities such difficulties are bound to be encountered, and Overseas riders will have to be well satisfied if they are able to purchase

British motors and accessories at all, but we all look forward to the better conditions that are sure to exist both at home and Overseas after the war.

### Spare Parts.

MR. F. S. DAVIES, Calcutta, India: "My great grievance is the difficulty in procuring spares. I consider that when a local firm undertakes the agency of any motor cycle it should be compelled by the manufacturers to keep in stock a complete range of spare parts. One does not buy a motor bicycle to have it laid up for two months while one waits for an exhaust valve and spring or tappet to arrive from England. Machines should be non-rustable for Indian use, as in the monsoon it is impossible to get a machine dry at all for weeks. In Central India the roads are composed of pressed murrum, or fine gravel, which clings and binds, and in a ride after rain the gravel clogs the guards and acts as a brake, bringing the machine to a standstill."

### Confined to a Fifteen Mile Radius.

MR. J. C. DUNLOP, Jalpaiguri District, India: "I am quite a keen motor cyclist, but the facilities for such a pastime are not very favourable here. Roads are rather narrow, with very stiff hills in places, and one has to keep to the limits of a sub-district, where fifteen miles is about the average run."

### Unreasonable Prices Charged by Agents.

MR. H. F. POOLEY, Bassein, Burma: "Advertisements are of little use to Overseas riders unless manufacturers state the prices of the articles they wish to sell. An Overseas rider is not always in a position to wait months before getting a reply, and then a further long period before the



### SIDECARRING IN NEW SOUTH WALES.

Scott and A.J.S. outfits photographed on a piece of good road near Sydney. The Scott belongs to a soldier and the A.J.S. to Mr. Cunningham, of Petersham, Sydney. In sending us the photograph Mrs. Cunningham tells us that the A.J.S. has given great satisfaction, it being often used for lengthy tours, when it carries herself, husband, and two little children.



**Overseas Opinions.—**

article required arrives in the country. . . . The system in vogue for buying machines in this country is seriously at fault, and the sport is being very much hampered by unreasonable prices being charged."

**Spare Part Difficulty.**

"B.W.," Cape Town, South Africa: "In this country we have many grievances, an important one being the question of spare parts, which as a rule one has to wait for, say, two months while the agent, who has not got the part in stock, has to write to the manufacturers for it. If the manufacturers in England when they appoint an agent insisted on that agent stocking an all-round range of spare parts, all parties would be satisfied, and it would tend to increase the sale of the particular machine."

**Riding Conditions in New Zealand.**

SAPPER F. V. THOMAS, New Zealand Engineers, Christchurch: "Coming away from New Zealand, and landing in England for the first time, the first thought is what splendid roads you have in comparison with ours. What roads I have seen around Devon and around Birmingham have been very good indeed. I should say that if one wants bad roads one has to look for them. The country here seems

trip from Dunedin to Christchurch is a most uninteresting ride of 240 odd miles. Just a few slight rises in the road, and one goes for miles without touching a lever, and can see road, road for miles ahead on the plains. The only thing to break the monotony of the ride is the water races for irrigation purposes, which cross the road every few miles. These will break more than the monotony if one gets careless, as one soon learns to one's cost. Our roads are rough, and in many places unformed, even our main roads. In winter they are in many places unrideable. So, compared with our roads, I think that home readers have little to complain about. There are always plenty of sheep, cows, and cattle wandering about the roads, too, and arguments are plentiful. We generally come off second best."

**Water Splashes.**

Mr. J. W. SYMONDS, South Grafton, N.S.W.: "Rims require to be strong for the roads here. I recently saw a man nearly killed by the wheel collapsing; he was riding a nearly new machine along an ordinary country road at a very moderate speed, and the wheel collapsed without a moment's notice. During a day's journey on the Australian roads a rider has to run through many low lying creeks 12in. to 18in. deep running across the road, which often cause a lot of magneto trouble if this instrument is set too low. The American machines seem to be getting a hold in these parts chiefly, I think, on account of their low prices."

**Agents' Charges.**

"A.A.F.," Sydney, N.S.W.: "The motor industry, fruitful a source of Overseas trade as it may seem, is being literally starved and kept back in what would be a race of progression by the greed of the agent. Prices are out of all proportion to values. Repairs are difficult to get properly and reasonably executed. For instance, I was riding my machine along a main street on a dark night when I hit a projection in the shape of a sewer main cover sticking up from the crown of the road, which cracked the crank case. I sent the crank case half to a welding specialist, and a crack 2½-3in. long was filled at a cost of 17s. 6d., and the job is not oiltight."

[A further series of extracts from our overseas mailbag will be published next month.—Ed.]

**CROSSING A SOUTH AFRICAN DRIFT.**

A 3½ h.p. Rover sidecar negotiating a difficult stretch during a tour by a party of East London motor cyclists to the Perie Mountains, fifty miles away. We wish to thank Mr. H. T. Medefindt, of East London, for the photographs.

greener and has more vegetation than in New Zealand, taking it mile for mile. Here in England one never seems to be really in the country. Just when you think things are looking peaceful and countrified you run into another small town or village. Go to New Zealand, branch off the main roads there, and before you know where you are you are miles from anywhere or anybody. The contrast is most marked. Your roads are more interesting than ours. There are more turns and scenery, more to keep one's mind occupied, so naturally more enjoyment derived. We certainly have scenery—splendid scenery—natural bush, rushing river, and in many cases no bridges. The



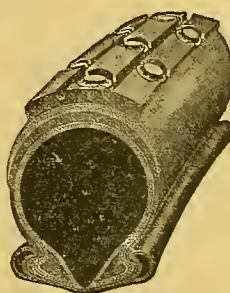
Hand-power temporarily replaces the petrol engine.



## TYPES OF AVON TYRES—No. 3

## “Combination”

BECAUSE the steel studs only come into action in thick grease or mud, leaving the clean-cut rubber bars to take care of dangerous dry-skids, the Avon “Combination” is not self-destructive like an all-steel studded tyre. Moreover, its double safety devices are capable of gripping on all surfaces.



Starting or stopping, climbing or coasting, cornering “hairpins” or speeding on the straight—on muddy macadam or smooth wood—this non-skid Avon is always on guard. If conditions create a tendency to side-slip or wheel-race that any tyre *can* stop, then the “Combination” will stop it every time.

And it is stronger—heavier—more durable than any motor cycle tyre yet manufactured. Note the extraordinary depth of tread, with the reinforcing layers of rubbered canvas extending down the walls, and the three-ply casing with *two plies round the beads*. No conditions are too severe for this cover and no work too heavy.

Type.	For Machines	1½"	2"	2½"	2½"	2½" to fit 2½"	3"
Sunstone.....	Up to 8 h.p.	—	—	44/-	49/6	—	60/6
Combination .....	Up to 5-6 h.p.	—	—	53/-	55/-	57/9	59/9
Three-ribbed *	“Big” Models	—	—	—	—	—	48/4
Tricar.....	Up to 5-6 h.p.	—	—	38/6	41/3	44/-	49/6
Stonehenge .....	Up to 4 h.p.	—	22/9	24/9	26/9	29/6	31/4
Druid .....	Up to 2½ h.p.	17/4	19/3	21/2	—	—	—
Lightweight 3-rib .....	2-strokes, etc.	12/-	14/7†	16/9	—	—	—
Lightweight, studded..	do.	14/10	16/6‡	18/2	—	—	—
Endless Tube * * ..	—	6/11	7/2	8/3	9/4	9/4	10/2

\* For high-powered machines with motor rims. Also made 650×65 at 40/- and 43/8.  
† 24×2 12/-. ‡ 24×2 14/10. \*\* Dome ends 2/3 per tube extra.

# AVON

## TYRES

Full illustrated Catalogue free from—

Avon India Rubber Co., Ltd., 19, Newman Street, Oxford Street, London, W.

Depots—Manchester,

Birmingham,

Glasgow,

Bristol,

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Nottingham,

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Swansea,

Paris.

1,000 Agents hold stocks.

Ample supplies available.

In answering this advertisement it is desirable to mention “The Motor Cycle.”





## CORNERING.

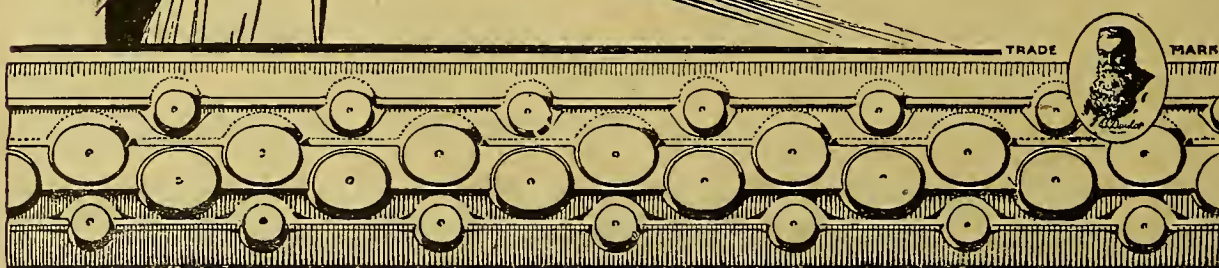
To be able to corner at speed with safety is an important matter, as well as a pleasurable feeling, and special provision for cornering is made in the Dunlop rubber studded non-skid motor cycle cover. In addition to the main rib with its large and effective staggered studs, there are two side ribs, out of which project smaller studs which, if the tyre is properly inflated, just touch the road and no more.

Should, however, there be any cant on the tyre due to cornering they come into action more strongly, or should the road be very bumpy they touch harder and more frequently, and in extreme cases the side ribs also come into action strongly, thus forming an increasing non-skid according to the necessities of the case.

## DUNLOP RUBBER CO., LTD.,

Founders of the Pneumatic Tyre Industry.

Aston Cross, BIRMINGHAM.  
LONDON—146, Clerkenwell Rd.,  
E.C. Branches—Coventry, Nott-  
ingham, Manchester, Newcastle,  
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Glasgow, Dublin, Belfast.



The Dunlop rubber studded non-skid motor cycle tread.



## WHY THREE WHEELS?

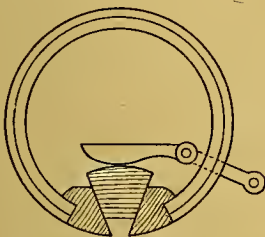
Some Considerations which led to the Adoption of Certain Distinctive Features of the Scott Sociable.

SOME surprise exists that sidecar lines of construction have so far influenced the design of the Scott three-wheeler, described in last week's *Motor Cycle*, that it might aptly be set down as a sidecar outfit built as one unit, and the question, "Why three wheels?" is perhaps a natural one. It might be answered by another question—"Why four?"

It may be depended upon that the ingenious inventor of the Scott three-wheeler chose the right-angled triangular position of the wheels for very good reasons, and in the following article we intend to deal with some of the peculiar advantages of this interesting vehicle.

### The Advantages and Disadvantages of the Sidecar Outfit.

We have in the sidecar outfit a vehicle which, although unmechanical, has thoroughly established itself and withstood the ordeal of severe road test. Its disadvantages are: Difficulty of obtaining perfect alignment owing to its unmechanical design; exposed and uncomfortable position of the rider; the necessary strength can only be obtained by piling on weight, so that it is a good deal heavier than it need be; if the vertical alignment be correct the sidecar is apt to lift on corners; difficulty of rear springing.



Details of the internal expanding brake. The exterior diameter is 8in.

In spite of these significant defects it has proved a very desirable type of vehicle as evidenced by its popularity, while it has the following distinctive qualities to its credit: Economy, unequalled mobility, speed, simplicity, and cheapness of production. If, therefore, we can remove the former objections and still retain the latter good qualities, we clearly have a machine which will meet a popular demand.

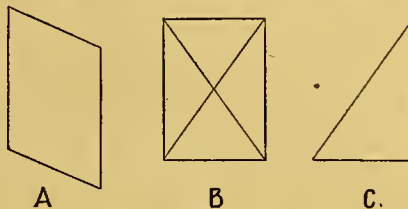
It must not be thought that because the sidecar is unmechanical other vehicles following on the same lines are necessarily so. The sidecar outfit is unmechanical because it is a combination. Its imperfections arise from the fact that the frame of a motor cycle, which can be ridden as a single track machine, does not lend itself to withstanding the lateral strains imposed by a sidecar, and the necessary degree of strength is obtained only by stiffening up certain members so that they will resist stresses which they are badly placed to bear.

In the Scott three-wheeler the inventor has followed sidecar construction only in

so far as its advantages lie. He has produced a machine designed throughout as a three-wheeled vehicle. It is neither a combination nor a compromise, and thus lateral strength has been obtained without adding weight, while the various other disadvantages of the sidecar combination have been avoided.

### Strength of Triangular Structures.

Sidecar construction was adopted not simply on the strength of the sidecar having proved a success, but because the design offers certain peculiar advantages.

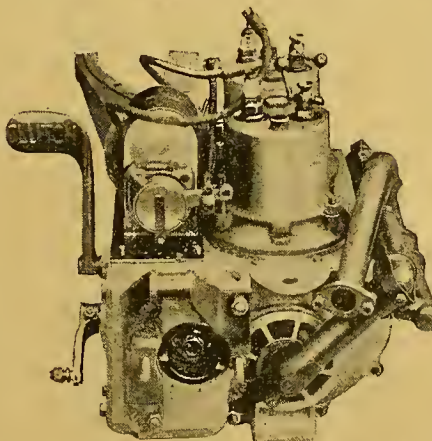


Strength of triangular structures.

Foremost, the three-wheel construction naturally adapts itself to a triangular framework, and a triangle is stronger for its weight than any other design. It is stronger than a rectangle because a rectangle needs to be braced, whereas a triangle is braced in itself. Referring to the accompanying sketch, it will be seen that there is nothing to prevent a rectangle assuming the shape shown at A under severe strain, unless it be braced as shown at B. It is then no longer a rectangle but a series of interconnected triangles. Though it contains double the number of tubes, it is no stronger than the triangle C.

A triangle cannot be distorted unless one side be lengthened or another shortened, and, therefore, if triangular construction be properly applied it may be regarded as indestructible.

The Scott frame consists simply of a series of triangles, so placed that the



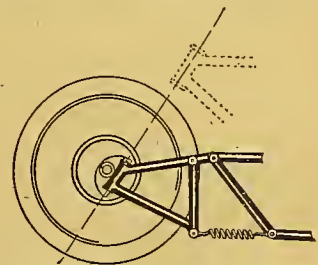
End view of Scott power unit, showing the induction pipe connection and universal joint for propeller-shaft.

tube lengths are subjected only to direct compression or tension. Consequently, no amount of overloading can cause the frame to buckle. Breaking point is reached only when the strain becomes sufficient to destroy certain members by compressing them endwise, or by pulling them in two. As a comparison, an ordinary darning needle may be capable of suspending a heavy weight in direct tension, whereas a side strain (such as that imposed on the main members of many sidecar outfits) of small amount would be sufficient to snap it. To apply the simile further. If the needle be held vertical, and prevented from bending by a surrounding framework, it will be capable of resisting a surprising load in direct compression.

Here we have the fundamental law of triangular construction. A triangle can be destroyed, but in whatever direction the destructive force be applied it cannot be distorted. It was largely because the three-wheel design adapts itself to triangular construction that this form of design was adopted in the Scott Sociable.

### Why not a Tricycle?

On the face of things it may appear that tricycle construction would be the more correct, but such design presents no advantages and numerous disadvantages. In the first place, the tricycle is



Steering design of Scott sociable.

difficult to balance and to steer at high speeds, while this does not apply to the sidecar. It presents difficulties in the distribution of weight as regards the power unit, it demands the transmission of a four-wheeler, while giving none of the advantages of the right-angle three-wheeler. It is a design which many times has been adopted and many times abandoned. The sidecar has proved advantages, whereas the tricycle has not.

One great advantage in having the steering wheel more or less in alignment with the driving wheel is that this system renders it possible to retain the full advantages of the caster wheel effect of motor cycle steering. The Scott was first designed as a machine gun carriage, and our illustrations show it as it has since been developed on the lines of a touring car. As a machine gun carriage it was particularly necessary that the vehicle should retain the mobility of the sidecar outfit—that is, that it be capable of turning, "under steam," in extremely narrow compass.



### Why Three Wheels?—

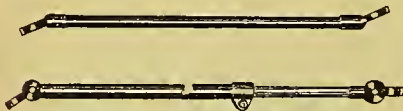
The Scott three-wheeler can turn in a circle with the sidecar wheel as a stationary pivot—a state of affairs arrived at by adopting the principle of motor cycle steering. The pin on which the axle of the wheel pivots is set at the same angle as the steering head of a motor cycle, so that if a line passing through its centre were produced upwards, it would pass through the steering head on the corresponding single-track machine, and, by so doing, the castor action is still retained.

### The Question of Weight.

It is interesting to note that the framework of the Scott chassis weighs less than the framework of the Scott motor cycle and sidecar outfit. As a second interesting comparison, the power unit (which is an excellent piece of work), complete with gear box (an integral casting), magneto, radiator, etc., weighs approximately 20 lb. less than a modern 6 h.p. four-stroke power unit with its corresponding components.

### Nut and Bolt Fixings.

It was explained in last week's issue that the frame consists of a number of eye-headed tube lengths, secured by means of nut and bolt fixings. The advantages of this system are as follow: Should a tube become damaged, it is not necessary to submit the whole frame

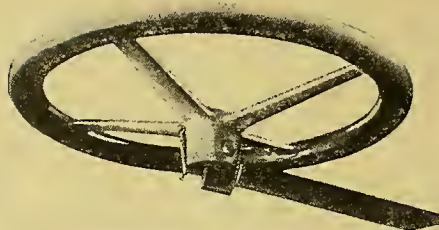


Ordinary tube and telescopic spare tube.

for the brazing in of a new member. One or two telescopic tubes are carried as spares, and in a few minutes the damaged member can be removed and a telescopic spare substituted. The nut and bolt fixings are considerably cheaper, and permit of a higher degree of accessibility than would be possible if brazed junction lugs were used, and after severe test it has been found that the joints do not work loose. They are not, indeed, so likely to do so as the nut and bolt fixings of sidecar connections, the frame being more rigid, owing to the scientific construction.

### No Brazed Junction Lugs.

The distress of the brazer detailed to craze up the Scott frame by the use of junction lugs would be pathetic, and so would be the distress of the man paying for the lugs! If ordinary junction lugs were used, the frame would be difficult to make and costly to produce. Moreover, the brazing of complicated junctions is dangerous, as the risk of burning the tubes cannot be avoided. One burnt tube may mean a broken frame, but perhaps cost of production is the most important point. The independent tube system is cheap, convenient, and enormously strong, while it represents the bedrock of simplicity as regards construction. Given the necessary bundle of tubes, any novice could build up a Scott frame simply by reference to a plan.



The folding steering wheel of the Scott sociable.

### Single Driving Wheel.

The fact that only one wheel drives may be criticised, it being argued that the design lends itself to a two-wheel drive. The disadvantages of the latter system, however, especially as regards cost of production, far outweigh its advantages.

The weight of the fully loaded Scott outfit is 5-6 cwt., or approximately half that of the alternative four-wheeler, and therefore the driving wheel is doing but half the work, while it carries less weight.

The possible disadvantage of uneven wear of tyres is reduced to a minimum by the design of the quick detachable and interchangeable wheels, which is such that the task of changing round the wheels is a perfectly clean undertaking, while it occupies less than two minutes per wheel.

A real advantage of the one-wheel drive is that it renders it possible to set all road wheels at a slight rake. Every sidecarist knows the advantage gained in steering, etc., by having the machine leaning slightly away from the sidecar, so as to counteract the camber of the road. By setting the wheels at a rake, not only is the steering improved, but strength is gained, while it gives longer life to the tyres.

### Advantages.

Summing up, then, this novel three-wheeler offers the following advantages: Framework practically indestructible, owing to its triangular construction. No brazed junction lugs. Nut and bolt fixings, which permit of any tube being removed, and its place temporarily taken by a telescopic spare. (Should it be desired to re-enamel the frame, this can be done piecemeal.) The vehicle occupies less room on the road than the alternative four-wheeler, it is lighter, and consequently much faster on hills. It costs less than half to produce. Sprung fore and aft. All wheels set at a rake and offset from frame—instantly detachable and interchangeable. All working parts enclosed. No transmission adjustments. Substantial mudguarding and ample tyre clearance. Hand starting from the seat. Car comfort and control.

## RECEPTION OF THE SCOTT SOCIABLE.

AS was to be expected, tremendous interest has been aroused by the description in the last issue of *The Motor Cycle* of the new three-wheeled Scott sociable. Within a couple of hours of the paper being on sale, a wire came to the Editor asking for the name and address of the manufacturers,

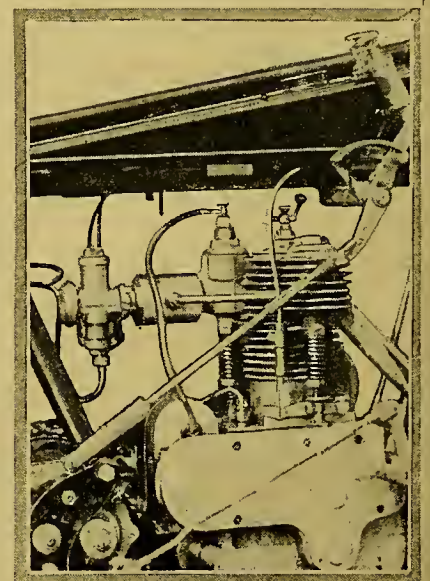
and Friday morning's post brought a batch of letters on the subject. Everybody does not think alike on any one matter, and consequently it is not surprising that there is one adverse criticism. This comes from a private motorist (cycle and car) of ten years' experience, who, whilst appreciating the excellence of the mechanical features, says "the Scott sociable is horrible," referring to its exterior appearance.

The following is typical: "I was very much struck with the description of the Scott three-wheeler in this week's *Motor Cycle*. It embodies points which for some time I have longed to see embodied in one model. . . . I should like to place an order for one of the machines as soon as they will be available."

The Scott Engineering Co., Ltd., have received quite a batch of enquiries, though, as a matter of fact, Mr. Alfred A. Scott, the designer and builder, is not now at the works named, but is consulting engineer to the Scott Co. One man offered to go to the works at Bradford straightway and pay for a machine if he could have one.

On July 13th we described a new two-stroke lightweight Grandex machine, which has a new design of frame on the lines of the increasingly popular straight tube type. The bore and stroke of the Precision power unit fitted to this machine are 64×70 mm.—225 c.c.

The road from Johannesburg to Durban, S.A., appears to be as attractive to record-breakers as those separating Melbourne and Sydney and Launceston and Hobart, Australia. It is 470 miles by road from Johannesburg to Durban, and the best time at present by sidecar is 18h. 51m., while solo time (Indian lightweight) is 19h. 59m. Several attempts have been made to lower these times, but without success. A Douglas rider is reported to have done it in 19h.

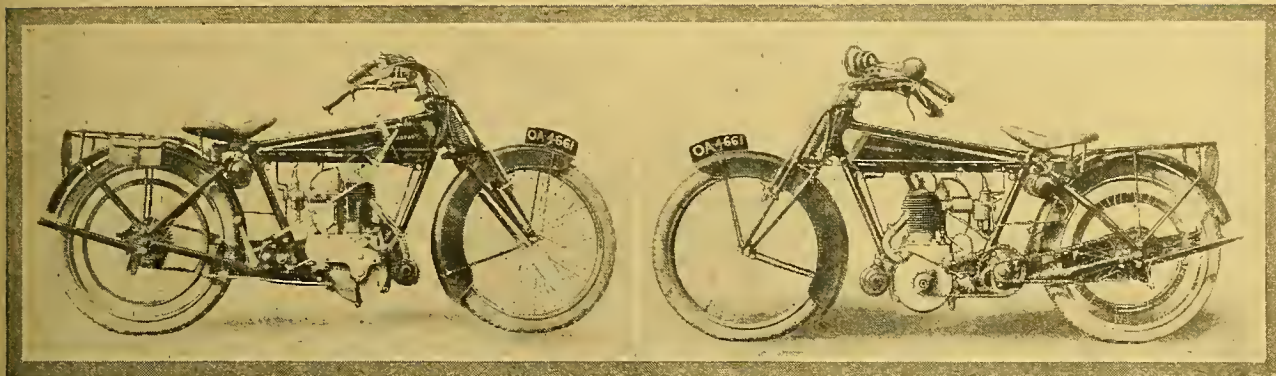


The new 3 1/2 h.p. Quadrant power unit with vaporiser fitted to induction pipe for use of paraffin. (See next page.)



## The Quadrant "After the War" Model.

Many Departures from former Design.      A Useful Paraffin Vaporiser.



New model  $3\frac{1}{2}$  h.p. Quadrant with sloping top tube. This particular machine is fitted with a vaporiser, the design of Mr. T. Silver, enabling the engine to run on paraffin. The tank containing the petrol for starting purposes will be noted beneath the saddle.

WE speak of an "after the war" model, but our readers will join with us in the fervent hope that it may prove to be a 1917 model. At the present time many motor cycle firms are using what little time they can spare from munition work to get improved models on the stocks, and, no doubt, the motor cyclist of the future will derive much benefit, indirectly, from the experience gained on war work when the makers are able to return to their regular work.

We have been able to inspect and make a short road trial of an entirely new model, now well past its experimental stages, from the works of the Quadrant Co., Lawley Street, Birmingham.

The frame has been redesigned, with a top tube sloping direct from the head. This necessitates a broad tapering tank, which held one and a half gallons of—not petrol, but pure paraffin when we tested the machine, but of that we will speak later.

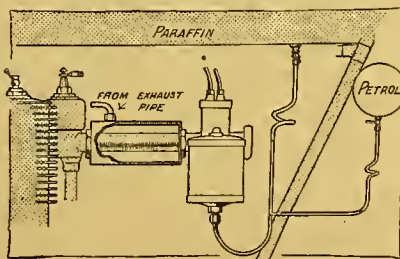
### A Smaller Engine.

The power unit is of the usual sturdy type associated with this firm, but of smaller capacity than formerly, 85 mm. x 88 mm. bore and stroke, nominally  $3\frac{1}{2}$  h.p. The valves follow the usual Quadrant practice, the inlet being situated behind the cylinder, and the exhaust on the right-hand side.

The transmission is all-chain through a B.S.A. three-speed countershaft gear, with foot-operated clutch and kick starter. A new silencer is fitted across the frame, made up of two cylinders enclosed in an aluminium expansion chamber, with outlets on either side of the centre chamber. The M.L. magneto which is to be fitted follows well-known lines, and is made by Messrs. Morris and Lister, of Coventry. The carburetter is the popular Amac, and, assuming that petrol is used, excellent running is certain; it served equally well with paraffin as the fuel. This machine, with its attractive appearance and power amply sufficient for sidecar work, should soon gain a big reputation when it comes on the market, as we hope it will shortly do.

### The Use of Pure Paraffin.

Mr. Tom Silver, who is responsible for this machine, had experiences in the use of heavy fuels in the early days of the motor industry. Now the increasing difficulty in obtaining petrol has led him again to experiment with paraffin as the "moving spirit." He has perfected a small addition to the ordinary carburetter by which it is possible to run any machine on paraffin only. It consists of a cylinder about four inches long by two inches diameter placed round the inlet pipe with a connection to the exhaust port, so that some of the hot gas passes around the induction pipe and heats the sprayed paraffin sufficiently to cause it to vaporise thoroughly before reaching the cylinder.



Vaporiser fitted to new single-cylinder Quadrant for running on paraffin. Position of small petrol tank will be noted.

For starting purposes a small tank of petrol is carried neatly set in the frame under the saddle. A pipe from this tank joins the pipe from the main tank just before attaching to the float chamber. A few minutes' running on petrol and the induction pipe is sufficiently warm for the change to be made by turning off the petrol and turning on the paraffin. The taps are conveniently placed, so that this can be done from the saddle whilst riding. We may say that we were somewhat sceptical, but a short trial dispelled all doubts of the ability to run on paraffin only.

The warming process took from one to two minutes, but less might have been sufficient, and when the change was made it was difficult to detect any difference in the running.

### Easy Starting.

When the engine had warmed up to the normal we were able to stop and restart by paddling off, not once or twice by luck, but many times, without the slightest difficulty, the engine firing within a couple of yards of the start every time. No appreciable difference in power was noticed, but we had not the opportunity of testing it on a good hill. Knocking seemed absent, although we deliberately attempted to make it knock. There are certain points to be remembered: To allow sufficient running on petrol to warm up the induction pipe thoroughly; to turn off the paraffin and turn on the petrol a short distance before stopping for any lengthy period, so that the float chamber shall be full of petrol with which to restart. When these points have become habitual running on paraffin is as easy and certain as on petrol. Many of the disadvantages of paraffin result from incomplete vaporisation, but it is claimed that as this heating system produces complete vaporisation, the faults of diluted lubrication and consequent wear in the bearings, dirty engine and exhaust, etc., are entirely absent.

### The Paraffin Vaporiser shortly to be Placed on the Market.

Any make of carburetter can be used; a longer induction pipe may be necessary, also a larger jet may be required. On the trial machine Amac jets Nos. 29 and 33 were used. The vaporiser can be fitted to any engine with very little trouble, and should soon justify its cost.

This vaporiser is fully protected, and we understand that Mr. Silver is endeavouring to put it on the market at the earliest opportunity. Motor cyclists who are interested are advised to communicate with him direct. We hope to make a more exhaustive test of both the new Quadrant and its economy device in the near future.





## TIME TO LIGHT LAMPS

"SUMMER" TIME.

Aug. 3rd	...	9.14 p.m.
" 5th	...	9.11 "
" 7th	...	9.8 "
" 9th	...	9.4 "

### Petrol Secretary's Allowance.

Mr. W. Cole, the secretary of the Petrol Committee, is a motor cyclist, and has, we understand, allotted himself petrol at the rate of half a gallon per week for three months.

### Petrol Allowances.

Some misapprehension may exist as to the manner in which the six gallons of petrol allowed to each motor cyclist for the months of August, September, and October may be obtained. Motor cyclists cannot get the six gallons just when they please; it is stated on the licence that not more than two gallons can be purchased in any one month.

### The H.Q.C.D., A.A. Section.

The letters H.Q.C.D. stand for the Headquarters Central Detachment Special Constabulary, which is a body of motorists working voluntarily for the Metropolitan Special Constabulary. Their work consists in being on duty during night raids, calling up special constables, and making themselves generally useful on such occasions. Motor cyclists for this duty are urgently wanted, and should apply to Mr. Bartleet, A.A. and M.U., Fanum House, Whitcomb Street, W. Petrol is provided for this work. Volunteers must be members of the A.A. and M.U.

## SPECIAL FEATURES

THE GREAT UTILITY OF THE MOTOR CYCLE. WHY THREE WHEELS? (Illus.)  
SATURDAY'S H.Q.C.D. HILL-CLIMB.

### An American Appreciation of the late Admiral Arbuthnot.

Mr. W. H. Wells has been good enough to show us a letter he has received from Mr. George M. Hendee, the head of the great Indian concern. Mr. Hendee writes: "I read in *The Motor Cycle* of the death of Sir R. K. Arbuthnot, and I can well imagine your grief and sorrow at losing this most noble exponent of motor cycling."

### Brighton Road Users' Note.

The Automobile Association states that the road between Shalford and Guildford, *via* Quarry Street, Guildford, on the Brighton Road, is closed owing to a subsidence. The road is likely to be closed to traffic for some time. The alternative route from Guildford to Shalford and Brighton is *via* the Portsmouth Road to Peasmarsh, and then turn left to Shalford.

### Despatch Riders in the Somme Fighting.

"The despatch riders are a constant source of wonder and admiration. Their missions are often of the most perilous, and the mortality among them has been considerable. Behind the lines one sees them all day and everywhere, pounding along on their motor cycles, soaking wet and cased in mud, or, in dry weather, covered with dust and grime, so that their features are quite indistinguishable, somehow threading their way through all the blocks and intricacies of the traffic, among horses and guns and lorries and columns of marching men. And at night, wherever one is, in the stillness or through the noise of the guns, somewhere on the nearest road the ceaseless purring of their machines goes on. Individually, I presume, they sleep some time. Collectively, they never

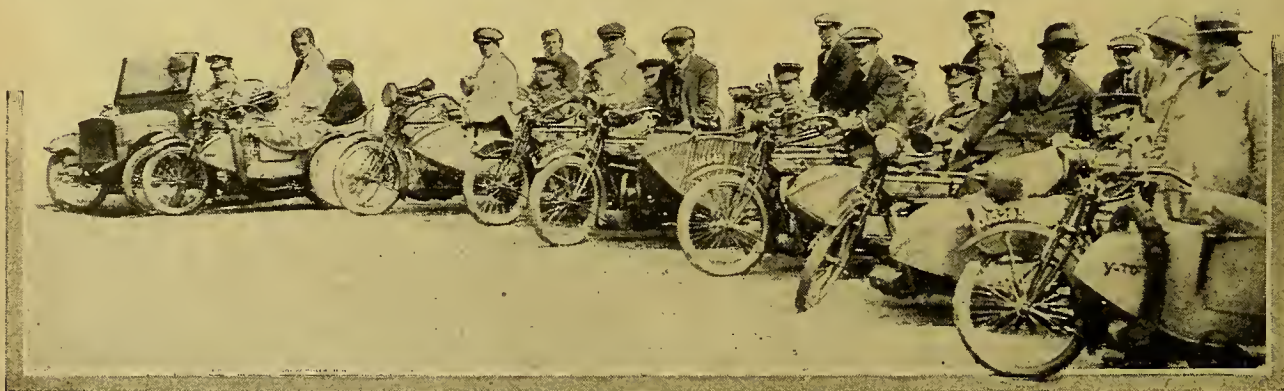
stop, the constant playing of their shuttles going on day and night through all the complicated fabric of the moving armies." (From *The Times*, July 27th.)

### Mr. Joynson-Hicks on Petrol.

At the annual meeting of the A.A. and M.U. held last week, Mr. W. Joynson-Hicks, M.P., chairman of the association, referred to the waste of petrol in the Services. He said that all motorists were prepared to pay their share, and even more than their share, of taxation for war purposes, but they were entitled to demand that the authorities themselves, particularly the Army and Navy, should be as economical as they possibly could in the use of petrol. Mr. Joynson-Hicks went on to say that there was no lack of petrol in the world; all that was needed was more transport to get it over here.

### Returns to his Old Love.

Mr. Oscar Hedstrom, whose name will be known to thousands of our readers by reason of his prominent connection with the Indian motor cycle, has returned to the Hendee Manufacturing Co. after an absence of three years. Mr. Hedstrom built the original Indian, and he was identified with the development of Indians from 1901 to 1913, when he retired to take up farming in New England. But his great interest in motor cycles continued too strong, and he has returned to his old love. He was the originator of the laminated springing for motor cycles, and the designer of the Indian Hedstrom carburetter, which, excepting for the addition of a pilot jet, has remained practically unaltered for seven or eight years. Mr. Hedstrom was born in Sweden, and went to the United States when a child.



MEETING A RED CROSS TRAIN WITH SIDECARS.

A suggestion made in this issue that sidecars might be used to convey slightly wounded men from ambulance trains to hospitals in order to save petrol is seen being carried out in this picture. It was taken at Coventry on Friday last, when a batch of Rudge sidecars met an ambulance train and conveyed some of the Tommies to a local V.A.D. hospital. Mr. V. A. Holroyd is on the extreme right.



**Methods of Road Repair.**

We have received information that three steam rollers are at work on the Yelverton-Plymouth road. This is welcome news, but at the present time those responsible for the work are making themselves unpopular by leaving fifty feet of heavily metalled road unrolled and unlit at night.

**An Irish Wounded Soldiers' Run.**

The popularity of sidecar outings for wounded soldiers has spread to Ireland. A few days ago a number of Belfast motor cyclists took about two dozen soldiers from local hospitals to Millisle, Co. Down. The weather was delightful, and the men thoroughly enjoyed themselves. Another outing is being arranged.

**Motor Cycle Manufacturer Wounded.**

Lt.-Col. Charles E. Scott, formerly a director of the Scott Engineering Co., and the brother of Mr. Alfred A. Scott, the two-stroke expert, is, we regret to hear, at present in hospital at the base rather badly wounded, but it is hoped that he may soon recover sufficiently to enable him to get home.

**Paraffin as a Fuel for Two-stroke Engines.**

We are informed that a reader has been running his Radco two-stroke on paraffin with great satisfaction. He obtains a better consumption and a higher average speed (twenty-four miles per hour as against twenty). He now uses the oil tank to carry petrol for starting purposes. This is connected with the induction pipe, and when a little petrol is injected the engine will start easily. After about five minutes' running the machine will start on paraffin. Our correspondent mixes a little saltpetre with the paraffin to reduce the carbon deposit, and uses a thicker lubricating oil.

Some little while ago a member of our staff made some experiments with paraffin on a Clyno two-stroke, and found it to be quite satisfactory. Both these machines used the petrol method of lubrication.

**Week-end Events in this Issue.**

The centre pages of this issue of *The Motor Cycle* are devoted to the H.Q.C.D. hill-climb, held at Pebblecombe on Saturday last. *The Motor Cycle* is the only journal dealing descriptively and pictorially with week-end events in the succeeding issue, and thus regularly provides its readers with first news.

**No More Petrol at Fishguard, Patchway, or Pilning.**

The Great Western Railway notify that it will be found necessary upon the exhaustion, on or about August 31st, of the petrol supplies on hand to suspend the arrangements by which motorists are able to replenish their petrol tanks from supplies at Fishguard Harbour Station, after conveyance of motor cars and cycles from Ireland by the company's boats, and at Severn Tunnel Junction, Patchway, and Pilning Stations, after the conveyance of cars and cycles through the Severn Tunnel.

**The Admiral Arbuthnot Trophy.**

The following donations have been received at the time of going to press. Donations should be sent to the A.C.U., 83, Pall Mall, S.W.

Auto-Cycle Union	£5	5	0
Royal Automobile Club	5	5	0
S. Bettmann, Esq.	5	5	0
S. G. Frost, Esq., R.F.C.	5	5	0
The Hendee Manufacturing Co.	5	5	0
The Gloria Company	5	5	0
Messrs. Hille and Sons Ltd. (Proprietors of The Motor Cycle)	5	5	0
"Motor Cycling"	5	5	0
Messrs. Phelon and Moore, Ltd.	5	5	0
The Triumph Cycle Co.	5	5	0
M. J. Schulte, Esq.	5	5	0
Messrs. Godfrey, Ltd.	2	2	0
Messrs. Joseph Lucas, Ltd.	2	2	0
J. R. Nisbet, Esq.	2	2	0
G.W.K., Ltd.	2	2	0
Rev. E. P. Greenhill	1	1	0
H. P. E. Harding, Esq.	1	1	0
R. T. Lang, Esq.	1	1	0
J. W. Orde, Esq.	1	1	0
J. Simmonds, Esq.	1	1	0
Otto Thomas, Esq.	1	1	0
A. W. Torkington, Esq.	1	1	0
W. H. Wells, Esq.	1	1	0
E. M. P. Boileau, Esq.	10	6	
M. C. Breese, Esq., R.F.C.	10	6	
Geoffrey Smith, Esq.	10	6	
H. Johnson, Esq.	5	0	

Total to date £76 7 6

**North London Wounded Soldiers' Run.**

Mr. H. J. Carter, 333, Green Lanes, Harringay, N., tells us that he is forming a club for the purpose of giving wounded soldiers sidecar runs on Sunday afternoons. North London motor cyclists who would care to co-operate should write to Mr. Carter.

**After the Work has been Done.**

We read in the daily press that the principal motoring organisations held a joint meeting last week, and resolved on joint action in connection with the petrol supply question. It was also resolved to offer assistance to the Petrol Control Committee. It seems rather late in the day, to put it mildly, to offer such assistance. The following bodies were represented: R.A.C., A.A. and M.U., C.M.U.A. and S.M.M.T.

**Benzole and the British Government.**

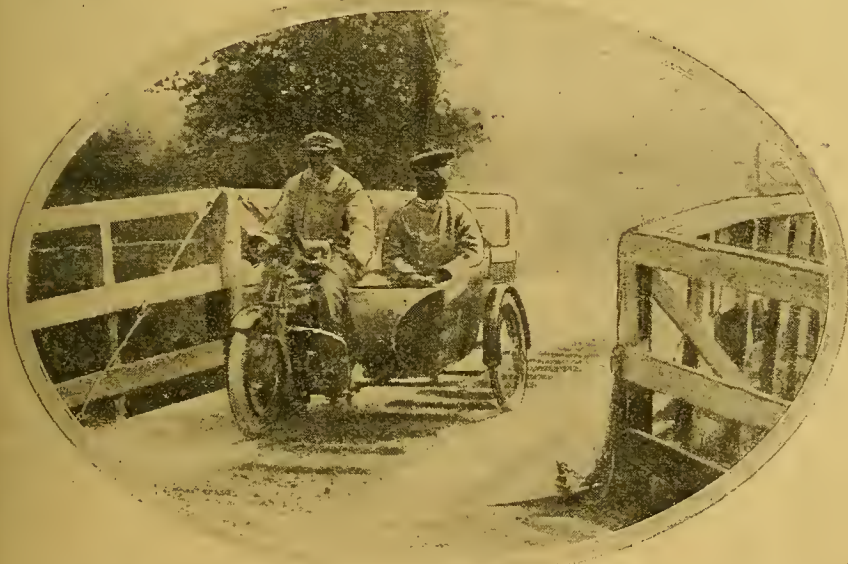
According to reliable information which has reached Lord Montagu via Denmark, the Stettiner Co., of Germany, has already erected eleven to twelve large coalite plants to increase the supply of benzole. Years ago, practically all the British automobile journals urged our own Government to move in the matter, but without result. Everybody now knows how, at the eleventh hour, the sale of benzole was prohibited, and the whole supply taken for high explosive shells. Had the output of benzole been encouraged, there would probably have been no shortage of motor spirit to-day for military or civilian purposes.

**Where are we?**

There are rumours—and they may be no more than rumours—that there is an ample supply of petrol in the country for all purposes, and that the present restrictions are simply due to the Government having the idea that the use of petrol encourages extravagance, and thus desires to force economy upon the nation. A Colonial firm, we are informed, has offered to supply 4,000,000 gallons of motor fuel per month and eight tank steamers to ensure delivery. We hope that the Government will accept the offer. The price quoted is 11½d. per gallon free on board at a Canadian port.

**Petrol Substitutes.**

With the forthcoming great petrol restrictions, motor cyclists are already beginning to experiment in earnest with other fuels of various descriptions. Many enterprising garages are already stocking, and are able to supply in either large or small quantities, white oil, which is a highly refined kerosene. When mixed with a small proportion of ordinary spirit excellent running is obtained, and if starting is effected on petrol the fuel can be used neat. If, however, it is to be quite satisfactory, some sort of vaporiser is required; even a properly designed hot air intake makes a difference. This week-end we had a most satisfactory journey on a Scott running on half petrol and half white oil. The consumption was better than on pure petrol, and the running perfectly sweet. Starting from cold was the only difficulty, and this was made easy by an injection of a little petrol into the cylinders.

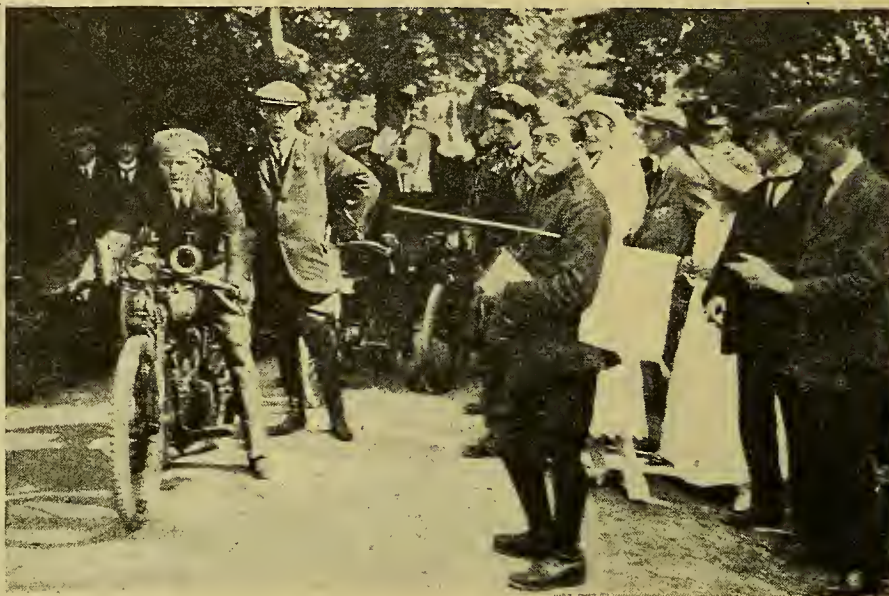


A sidecarist, with a convalescent Scotch soldier aboard, crossing the swing bridge over the canal at Aldermaston. Photographed during the course of a run for wounded soldiers organised by Basingstoke motor cyclists.

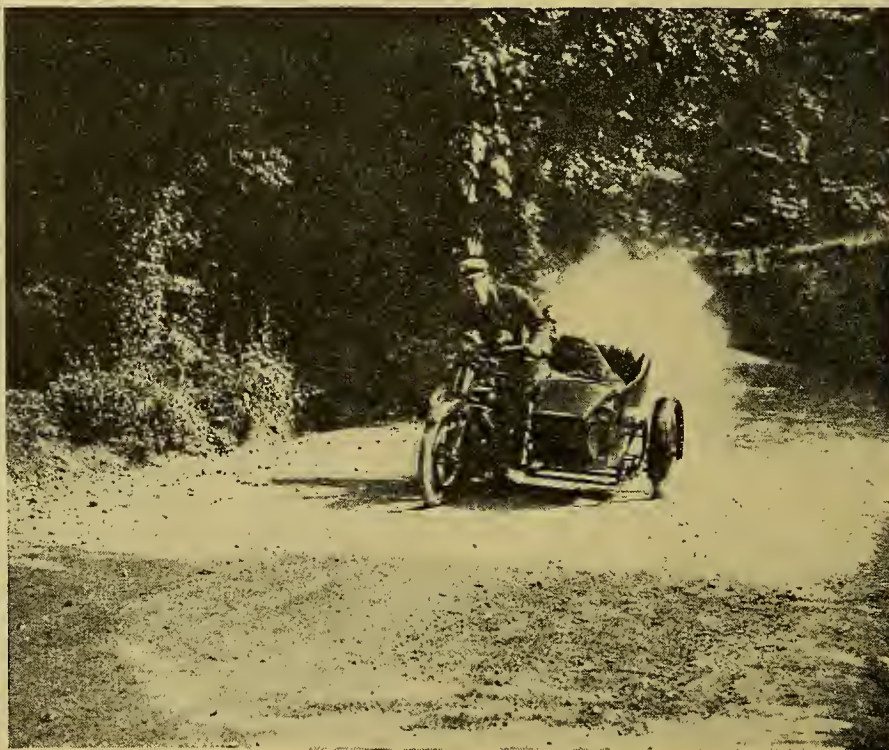


## A SPECIAL CONSTABLES' HILL-C

An Inter-squad Cor



Lieut. O. C. Godfrey starting Frank Applebee (Indian)



An Enfield rider cornering well.

WHEN you see S.C. on the side of a sidecar do not think these letters are the well-known abbreviation for this type of vehicle. They stand, of course, for Special Constable. Now these particular specials, who organised an informal hill-climb on Petcombe Hill, near Dorking, on Saturday, consider themselves somewhat of the ordinary, as they have a special duty to perform, namely tear round London on raid nights call up their colleagues who do not possess motor cycles. They belong to the A.A. Section of the H.Q.C. lately commanded by Mr. Chas. Jarrott, now Capt. R.F.C., and at present commanded by Mr. C. Temperley.

The idea on Saturday was to hold an inter-squad hill-climbing competition, each squad of six men being designated by the day on which its members are on duty. As there were many novices as far as competition are concerned, though each squad consisted of six men, five only counted so that one failure should not defeat a squad of its chance. The results were worked out on *The Motor Cycle* formula.

Numerous well-known faces were to be seen. Mr. George Reynolds was at the time at the summit of the hill, Mr. W. H. Wells at the foot. Among the competitors we noticed E. G. W. (Indian); D. S. Kapadia, of the I.M.C. (Rex sc.); R. M. Brice, a veteran sportsman on a 6 h.p. J. Vincent engine, which is a production of Messrs. Brown Bros., Ltd. Charlesworth (Zenith sc.); and Frank Applebee (Indian). Among the officials at the start we noticed O. C. Godfrey.

An I



# RECREATION FOR THE H.Q.C.D.

## Pebblecombe Hill.

ec.-Lt. R.F.C., who is just com-  
his sick leave, and Mr. H. W.  
t, chief inspector of the A.A.  
of the H.Q.C.D.

he men had a flying start. The  
sensational climb was made by  
Applebee, who showed the  
urs just how it should be done.  
e time he rounded the first bend  
s going so fast that he had to  
it.

deciding the winning team, the  
nances of the best solo and  
combinations were taken, and  
fference between the average of  
ype was added to the sidecar  
es. On time the results were:

SOLO MACHINES.		
der and machine.	Squad.	Time.
Applebee (7 Indian), Thursday ..	0	
Wesworth (6 Zenith), Friday ..	+3½ sec.	
Whe (7 Indian), Wednesday ..	+5 sec.	

SIDECARS.		
der and machine.	Squad.	Time.
Hardy (8 Zenith), Wednesday ..	0	
Fraser (7 Indian), Monday ..	+2½ sec.	
White (7 Indian), Wednesday ..	+3½ sec.	

fastest solo machine beat the  
sidecar combination by 8½s.

LA RESULTS (subject to confirmation).

SOLO MACHINES.	
Wesworth (6 Zenith), Friday.	
Applebee (7-9 Indian), Thursday.	
Hore (3½ Rover), Friday.	

SIDECARS.	
Williams (6 Enfield), Tuesday.	
Jeffery (6 Enfield), Wednesday.	
Hardy (8 Zenith), Wednesday.	

inter-team contest, for the cup  
ed by Sgt. R. A. Miles, was  
the Wednesday squad, with the  
ay squad second. The winning  
onsisted of F. H. Jeffery (6 h.p.  
sc.), F. A. Hardy (8 h.p. Zenith  
sc.), T. White (7 h.p. Indian sc.), L.  
le (7 h.p. Harley-Davidson sc.),  
Gwynne (7 h.p. Indian).



At the foot of Pebblecombe Hill on Saturday last



Competitors appreciated the shade at the starting point





# "THE MOTOR CYCLE" RECRUITING SECTION.

Youths of 18 now Accepted. Next Week's Arrangements.

THE fact of youths of eighteen years of age now being accepted for the Motor Machine Gun Service has led to an increased number of applications for this popular section.

On Tuesday this week at the Recruiting Office, Coventry, and yesterday at the Recruiting Office, Nottingham, a number of men were examined and accepted for service.

Particulars of enlistment and a form for filling up may be obtained on application to the address given on this page, but it is not necessary to write. Those readers who conform to the conditions of enlistment mentioned on this page, and who are ready to join up at once, may attend any of the inspections named. Recruits coming to Coventry proceed either the same day or the next day to their training centre.

In the case of recruits living at a distance a free railway warrant will be issued if the applicant will take the trouble first to get examined before the Medical Board for his district.

The amended conditions of enlistment in the M.M.G.S. are given hereunder:

**EXPERIENCE.**—At least one year's motor cycle or car driving experience.

**AGE.**—18 to 40.

**ENLISTMENT.**—For duration of the war.

**MEDICALLY FIT.**—For general service or for garrison duty abroad.

**PAY.**—1s. 2½d. per day, all found; the usual separation or dependants' allowance.

## Applications.

In applying for enlistment into the M.M.G.S. letters should be as brief as possible, and should mention:

- (1.) Age.
- (2.) Experience.
- (3.) If called up.
- (4.) Whether fit for service Overseas.
- (5.) Date applicant could join up.

Central Office for Motor Machine Gun

Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

A list of recruits accepted prior to the new regulation admitting youths of eighteen years of age is appended:

Dean, L. W., Birmingham.  
Evans, M., Brigg.  
Goodard, N. H., Eastbourne.  
Goodwin, J., Normacott.  
Maclean, A., London.  
Matthews, J., Coventry.  
Paton, H. S., Templetonburn, N.B.  
Roberts, O. N., Pwllheli.  
Short, E. W., Sherborne.

## Next Week's Inspections.

Next week Mr. Geoffrey Smith will be at Coventry and London in order to examine and accept suitable recruits as follow:

**COVENTRY.**—The Recruiting Office, Little Park Street, Tuesday, August 8th, 2.30 to 4 p.m.

**LONDON.**—The Motor Cycle Offices, 20, Tudor Street, E.C., Saturday, August 12th, 2 to 4 p.m.

H. E. Walker writes from the Argentine Republic to the effect that he is leaving for England at the beginning of August in order to enlist in the Motor Machine Gun Service, as he has noted from *The Motor Cycle* that this section is open for recruits. Walker is an assistant ranchman, but had one and a half years' motor cycling experience in England before going to the Argentine.

## DESPATCH RIDERS AT HOME.

THERE are many motor cyclists attached to the A.S.C., M.T., in different parts of England, and it is always as interesting to hear of their doings as it is of those Overseas. Among the men stationed in the S.E.



Cpl. Eric Williams riding his medical officer's Brough.

district of London is that well-known rider, W. Pratt. He tells us that he has charge of six men, and they all get a good deal of London riding. Occasionally a run with a convoy to another camp in another part of the country comes as a pleasant change. Cpl. Pratt is much struck with the increase, since the war, of the number of careless riders and drivers on the roads, and says that he would rather be out at the Front again.

## ERIC WILLIAMS CONVALESCENT

WE had another opportunity a few days ago of meeting Cpl. Eric Williams, who is now rapidly completing his recovery at Edmonton Hospital. He is in good hands there and great interest is naturally taken in him, as many of the medical officers are motor cyclists. At the hospital there are two Villiers machines, a Brough (belonging to Maj. Taylor, R.A.M.C.) and a Rudge.

Williams had very interesting stories to tell us of the recent fighting. Thanks to lessons learnt in previous attempts to advance, the motor cyclist has not the hard work to do he had in the past, and is now used as a reserve means of communication. Williams's post at the beginning of the offensive was in a dug out at the end of a communication trench, his machine leaning against the parapet, and only once had he to carry a message on his Triumph, which, by the way, he had converted to suit his own tastes.



A.S.C., M.T., DESPATCH RIDERS IN ENGLAND.

Names left to right: Cpls. W. Pratt (Douglas) and Taylor (Triumph), L.-Cpl. Shepherd (Douglas), Cpl. Wood (Indian), and Pte. Jordan (Douglas).





# Letters to the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

## Is it in the Air?

Sir,—Regarding your article on American high-speed racing in the issue of July 27th, we should suggest that over the pond they must employ some method of their own of measuring miles. One can hardly expect the public to take such published speeds seriously, and, if so, it obviously puts our own racing men and machines in this country at a very low level.

J.H.

## Spring Frames and Freak Hills.

Sir,—Regarding Mr. Robinson's letter dealing with spring frames for freak hill-climbing, I might say that I do not doubt "Ixion's" abilities. What I say is that Stoneythwaite Rake is an exceptional hill, and will surprise most motorists when they see it. Seeing that he believes so much in the spring frame for freak hill-climbing, I should esteem it a great favour if he will let me know (if he would like to try his spring frame on Stoneythwaite Rake) when he intends doing so, as my friends and I will surely be there to watch him.

J. G. BETHWAITE.

## Petrol Permits.

Sir,—From this week's *Motor Cycle* I gather that all motor cyclists, whatever their use of machine, have been given a licence for only two gallons of petrol per month. That is my own case. My work is in no sense "private riding," much less "pleasure riding"; it is entirely in the service of the Missions to Seamen, which is at present doing a very large work amongst the naval men—in fact, a well recognised "war object." I have to travel extensively, and quite often in country places difficult of access by railway.

In my form I filled in my name, and added, "Representing the Committee of the Missions to Seamen," explaining also that my riding is *entirely* for the society. My average is 700 or 800 miles a month, and I asked for twelve gallons of petrol per month. It is nothing less than a scandal that such treatment should be accorded to a purely professional use of a motor cycle.

(Rev.) F. C. LEES.

Sir,—I have been notified by the Petrol Control Committee that my supply of petrol for the next three months is restricted to six gallons. I am wondering why we were asked to give an estimate of our requirements at all, as all the motor cyclists in my district seem to be allowed the same quantity, irrespective of the type of machine they ride, or the purpose for which it is used. The owner of a lightweight, riding fifty miles per week for recreation, who asked for eight gallons, is given six.

I am a commercial traveller, employed by a firm in one of the reserved occupations, averaging 250 miles per week, mostly on business in connection with Government work, and I also am permitted to have six gallons as against my estimate of thirty-six gallons. This is not much more than 15% of my requirements, whereas a firm which lets cars on hire is granted 50% of the quantity requested. I have no doubt you will be inundated with complaints similar to this, and I hope to hear shortly that the stock of petrol has accumulated to such an extent that a further allowance can be made to genuine business riders.

I might also mention that I am a special constable, and in the event of air raids have undertaken to give the neces-

sary warning over a very scattered and hilly district. This entails a journey of about thirty-five miles, and may have to be undertaken twice in a night. My half a gallon of petrol per week will not do many of these trips.

ROBERT J. COSH.

Sir,—With reference to the petrol question, a man at Wood Green has received a permit allowing him to purchase 288 gallons of petrol in the three months. He is a builders' merchant, and is connected with firms on munitions, and does carting for them by horses, etc. His application was granted because he said the carting was of national importance, and he held a motor car in reserve, and would not take the petrol unless obliged. I have seen the permit.

MOTOR CYCLIST.

[The foregoing are but a selection of the many letters of complaint received from readers against the action of what has come to be known as "the most unpopular committee" yet formed in connection with the war.—Ed.]

## Costly Spare Parts.

Sir,—In reply to a letter from R. Logan, Botany, N.S.W., in your issue of April 6th, 1916, as N.S. Wales agents for J.A.P. engines and spares, we beg to state that we have had J.A.P. valve caps always in stock. Mr. Logan could not have applied to us for the line. Our price for making a J.A.P. valve cap would not exceed 5s.

Mr. Logan's advice that British manufacturers should insist that their Overseas agents carry large stocks of spare parts, in a similar manner to the American firms, is amusing, inasmuch as the agents in this State for British motor cycles, notwithstanding the difficulty in obtaining supplies from Great Britain, carry ten times the quantity of spares carried by the agents for American motor cycles. In support of this statement, we send you separately our lists of J.A.P., Triumph, Rudge, and New Hudson spares.

BENNETT AND BARKELL, LTD.,

Sydney.

J. BARKELL, Managing Director.

[The list referred to is very complete.—Ed.]

## Storage Space required for Sidecars.

Sir,—The attention you so frequently give in your paper to sidecar combinations makes them appear very attractive to the novice, but there is one matter that does not appear to have been dealt with, viz., the overall dimensions of combinations and what the minimum storage space required is. No doubt this varies with different makes. Can the sidecar be readily detached from the machine, for it should pack closer in this condition? It would be very interesting to know into how small a space the separated parts can be readily packed, for many of us have very little space, and the possibility of keeping a combination at all depends upon its going into a certain space and passing through restricted passages, so the question of dimensions is rather important.

Your article upon cleanliness, in *The Motor Cycle* for July 13th, reminds me that I have frequently seen lightweights in which the footboards are so low that with the silencer in front of the engine the exhaust gases pass over the foot all the time.

H. EDGAR PARKER.



### Petrol Waste.

Sir,—The photograph of the A.J.S. testing room in your issue of July 13th is most interesting. If gas can be used successfully for testing purposes, why should it not be used on the road? There would surely be plenty of possible methods: we have had compressed acetylene in cylinders for lighting purposes a good while now. It would be very interesting if the A.J.S. Co. could tell us how long an engine of given capacity can run on a unit volume of gas. I have heard that thirty-two gallons of petrol are used to test each aeroplane engine of a certain well-known and excellent make. Would it not be "some" saving if they used coal gas?

The experiments of Mr. Barthorp with steam motor cycles sound interesting. I should like to help him if he lives fairly near my home (Wolverhampton). I may say I have used "flash" boilers in model power boats.

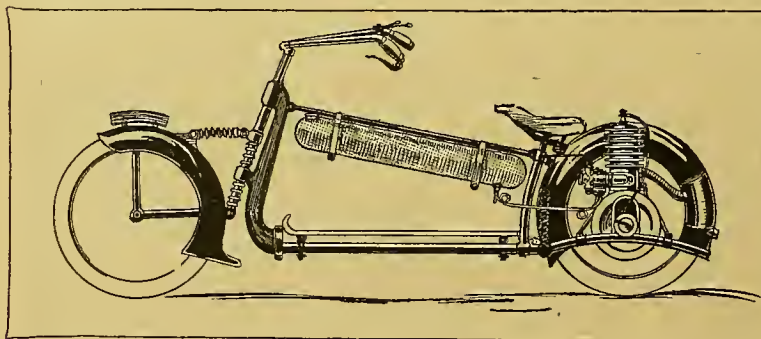
"H.M.'s" sidecar body designs are very shapely and attractive; but, as he is going in for "something better," why does he not place the centre of weight of the body and passenger directly above the sidecar axle?

H. S. V. ADDENBROOKE.

### A Juvenile's Motor Cycle.

Sir,—Observing in your issue of July 20th an interesting illustrated description of "A Motor Skicycle," I would like to make a few suggestions which, to my mind, would improve and add to the safety of such a novel form of mechanically propelled juvenile two-wheeler which might replace the present juvenile bicycle.

Firstly, a miniature two-stroke engine capable of attaining about 15 m.p.h. maximum speed should be made (such an engine would run quite well and smoothly, since it seems these engines are more efficient in the smaller sizes); quite a simple three-port type would be sufficient, and this should be mounted on the back wheel instead of the front, as Mr. Maina has arranged. I believe that, in Mr. Maina's design, there would be some peculiar "over-balancing" effects when



turning sharply round a corner due to the position that the engine would be placed in, since it is a fixture to the end of the steering column, so to speak. The engine would be run on petrol for simplicity, or a sump cast on the crank case, which would be arranged in such a manner as to lubricate the engine automatically. Of course, a reducing gear would still be used from the engine to the back road wheel to obtain the suitable ratio. The saddle should be mounted in a column, which could be carried upwards from the back portion of the frame with a tie rod to the frame steering head, as shown in the rough sketch appended. The above suggestions, I believe, would bring this invention of Mr. Maina's quite within a practical form, and it could then be placed within the hands of elder juveniles, say, between twelve years and sixteen years of age, after which they would be quite capable of handling the modern up-to-date junior motor cycles. I should say that such a machine could be made and would sell somewhere in the neighbourhood of twelve or fifteen guineas—perhaps cheaper when catering for quantities.

NEWERA.

### Dust.

Sir,—Almost every motorist will have experienced riding behind some vehicle which has been raising a goodly cloud of dust. Whenever any of us have undergone it for either a

prolonged or short period it has created a good deal of annoyance. Apart from the aggravation caused therefrom, I wonder how many motor cyclists have considered how injurious this is to one's health.

Most of us are acquainted with the properties of dust, inasmuch as it oftentimes fills up the gauze protecting the air inlet of our carburetters, etc. In the same way, it finds a resting place in the nostrils and back of the throat, and anyone suffering from catarrh of these membranes will surely know that it is not good for them.

I am quite aware that motorists do not go about with their mouths wide open in the face of a cloud of dust; but, even so, Nature does not provide us with a respirator or some complete protection against this evil, as evinced when one happens to glance at one's countenance after a good run on a dry day, and observing that dirty black line on one's lips, and the gritty feeling in one's mouth.

I know that motorists, as a rule (and I am no exception) object to adorning themselves with any more wearing apparel than at present, for I am afraid that, when fully equipped, we motorists present the appearance of highwaymen, but I firmly believe that motor cyclists should protect themselves, when occasion arises, against the dust evil. If there were some simple combination made to protect the nose and mouth as well as the eyes it would certainly find favour with hygienic loving motorists.

I hope this will not alarm any of your readers, as I once heard a medical gentleman laughingly define dust as being clean dirt.

JOHN BELL.

### American Motor Cycles.

Sir,—One of the questions we shall all be asking after the war will be, "What machine shall I buy?" and I regret to say my answer will be "An American." I feel I can claim to be patriotic, but still my patriotism is not proof against the clumsiness of the average British heavyweight, and for many reasons I would not dream of using a lightweight. For too long have we been content to pat ourselves on the back and point to our wonderful  $3\frac{1}{2}$  h.p. singles, but British manufacturers seem quite oblivious to the fact that to some people a single-cylindered engine is anathema. I have owned fifteen machines during ten years' motor cycling, and I always make a point of trying every machine I can, and now I would never ride, willingly, any but a four-cylinder bicycle. The T.A.C. showed promise, and I am sure it would have had a very big sale, had it been shortened and lightened, but it was unfortunately over-developed into a 10 h.p. water-cooled affair. The average 8 h.p. twin of British make is a most impossible solo machine. I have tried a great many, and all seem to be first-class skidders, and the makers have got that particular weight distribution and steering angle that make a machine thoroughly uncomfortable to ride. My last machine was a

7-9 h.p. spring frame American-made bicycle, and was a perfect joy to ride, either in the open or in traffic. I will not enlarge on its merits, except to say that I feel it is an unfortunate fact that no machine made can touch this 1916 model. One cannot help feeling that the outlook for British manufacturers will be a desperate one soon unless they bring their machines up to date. Already the Colonies are demanding Americans, and willing to pay more for them, because they know they are the most suitable for rough work. It is time that the motor cycling press plainly told manufacturers to get out of the rut of the present conventional design. In the meantime, can anyone question the following statements?

The American has produced the first practical rear sprung frame.

The American is the first to standardise electric lighting. The sole four-cylinder bicycle is of American manufacture. Big tyres and big wheels are of American origin.

H.M.S. —.

H.E.R.

[Though we publish the above letter from a naval motor cyclist, his views must be somewhat isolated, and we think it well to dissociate ourselves from some of the opinions expressed. "H.E.R.'s" experiences of British twin-cylinder mounts were obviously unfortunate, and he has a treat in store!—Ed.]

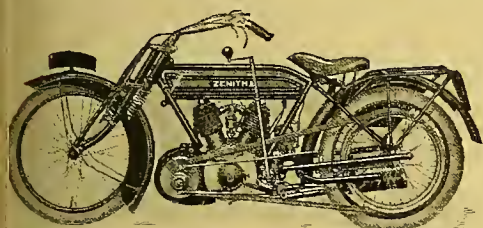


# Where the Motor Cycle Wins.

## A Press Photographer—

Mr. J. Edge, of Liverpool—tells in "The Motor Cycle," June 29, of how he beats his rivals, who rely upon trains and cars, by using his

# ZENITH



The BIG "8" ZENITH, "Clutch and Countershaft" type, with Kick Starter, Positive Locking Clutch, longest Belt Drive, and the Infinitely Variable Gradua Gear.



Read what he says of his machine:

### An Appreciation of a Reliable Mount.

This is my second Zenith. The first, a 6 h.p., served me well for two and a half years. Then I exchanged it for one of the latest 8 h.p. machines, which I received last June, and since then I have run, mostly with sidecar attached, 2,700 miles. The original belt is still on, and looks like new. The back cover I took off at 1,850 miles, and had it re-rubbered by Bates at a cost of about 12s. The original plugs are still in the engine, so beyond oil and petrol (the latter=70 m.p.g.) I have had no other expense. In the last fourteen years I have had at least that number of machines, but the present is proving the most satisfactory of the bunch.

MERCURIAL.

Models from 3½ to 8 h.p.  
Catalogue with pleasure.

ZENITH MOTORS, Ltd.,  
HAMPTON COURT, ENG.

# BOWDEN

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VICTORIA ROAD  
WILLESDEN JUNCTION.  
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as Government  
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# Wood-Milne

## Motor Cycle Tyres

and experience real "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

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In answering these advertisements it is desirable to mention "The Motor Cycle."

B19



The Food Drink which promotes  
fitness and efficiency is

# HORLICK'S MALTED MILK



A glass of Horlick's is always the best invigorator. Taken before a ride it will give strength and endurance, and after strenuous exertion there is no better pick-me-up. At all times it gives and maintains fitness and stamina, and is especially useful to men on Active Service.

**SUPERIOR TO TEA, COFFEE, COCOA, AND BEEF EXTRACTS.**

READY IN A MOMENT WITH HOT OR COLD WATER ONLY. NO COOKING.

Served in Hotels, Cafés, and Railway Refreshment Rooms

Also available as delicious food tablets to be dissolved in the mouth. Relieve hunger and thirst and prevent fatigue.

Supplied in Sterilised Glass Bottles, at 1/6, 2/6, 11/-, by all Chemists and Stores  
The Tablets also in convenient Pocket Flasks at 6d. and 1/- each.

Liberal sample of either powder or tablets sent post free for 4d. in stamps.

**HORLICK'S MALTED MILK COMPANY, SLOUGH, BUCKS, ENGLAND.**

## THE DUNHILL M.C. JACKET & OVERALLS

AS SUPPLIED TO H.M. GOVERNMENT.

Planned on the saddle, so to speak, the garments combining smartness with perfect ease and freedom.  
Built of Paramatta Twill of the finest Proofing, and quite impenetrable to wind and rain.

The quality is unequalled anywhere for the price.

**GUARANTEED ABSOLUTELY  
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### PRICES :

Cheapest quality Jacket (belt extra) £1-1-0  
Seatless Trouser Overalls 15/6  
Best Quality: Jacket with belt .. £2-2-0  
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**THE BELT FOR RUDGE, ZENITH, PHILIPSON,  
GRADO, BRAMPTON, or ANY GRADUAL GEAR.**



**SPECIAL OFFER.**

$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	USUAL PRICE for 8ft. SPECIAL PRICE for any length up to 8ft. Plus 8d. Postage.
28/-	30/-	34/-	36/-	
22/-	24/-	26/-	28/-	

### EXTRACTS FROM RECENT LETTERS.

"I cannot give even an approximation of the mileage belt has done, as I ride, more or less, every day, winter and summer. Since I have had the belt I have twice toured the Lake District (it having taken me over Hooister and Kirkstoe), once through Derbyshire and North Wales, and once through South Wales and Somersetshire; also to the South and West of Scotland. A lot of my riding is done over the Yorkshire Moor and Coast roads."

"Having tested your belt and given it a good trial I think it only right to let you know the result. Since I took up motor cycling, eight years ago, I have had nothing but trouble with belts—slipping, stretching, and short life: since using the 'ZILLA' I have been quite free from all belt trouble. Anyone using a Rudge-Multi or other variable geared machine should not hesitate but use a 'ZILLA' and say good-bye to other makes."

Take the advice of experienced riders and order at once.

Address all communications to—  
**The ZILLA PATENT BELT COMPANY, Ltd.,**  
101, Great Western Street, MANCHESTER.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Two Sparks at Once.

**?** Please tell me how I can fit two plugs to each cylinder of my 7-9 h.p. road racing Indian. I have tried fitting an extra one in the compression tap hole, but, although the engine will fire quite evenly on either of the plugs, it will not fire on both at once. The magneto is a Bosch. I tried both at once by tapping the high-tension lead.—H.S.C.

The only way you can obtain a spark at both sets of plugs at once is by fitting a double pole plug in one of the orifices in each cylinder, or a special magneto. Special plugs are made by Messrs. Lodge for this purpose. Using two plugs at once may cause somewhat difficult starting and a tendency to knock at low speeds.

### Water in Jet.

**?** I have a 7-9 h.p. twin, and lately I have been very much troubled with it. I injected petrol in the compression taps, and it ran for about fifty yards and then stopped. I have had the jet out, but it seems all right. As I am a novice, I should be thankful if you would give me a hint or two upon the matter.—T.W.

We should say that the trouble is possibly due to water in the petrol, which is very difficult to get rid of, especially as it can be in the jet, and when you take the latter down it seems to be quite clear, because the drop of water in it is transparent. We should recommend you carefully to overhaul your carburettor and the petrol system.

### Timing the Magneto.

**?** (1.) Having upset the timing of the magneto on my 8 h.p. Bat-Jap, I cannot get it to fire on both cylinders. Will you kindly explain correct timing? (2.) How can I find out which cam is for each cylinder?—J.L.

(1.) Time the engine as follows: Place the ignition lever about two-thirds retarded; place one of the pistons on top dead centre, firing stroke—that is, when the piston reaches the top of the cylinder after the inlet valve has closed. Then time the magneto so that the contact points are just breaking for that particular cylinder. If you time this correctly the other will look after itself. (2.) We think you will find that No. 1 cam is the rear cylinder, but the best way to find out is to see which cam causes a spark to occur at each of the high-tension wires. If No. 1 causes a spark or a shock to be felt at the terminal which goes to the rear cylinder, then you know just how you stand.

### Excessive Knocking and Vibration.

**?** I have a 1913 three-speed single which, owing to excessive engine vibration and severe knocking, has never been satisfactory. I sent it to the makers, who re-bored the cylinder and fitted new piston. For a time the knocking disappeared, except when picking up, so I lowered the compression with a plate between the cylinder and the crank case, which slightly improved matters. It has gradually been getting worse, until now, after less than 1,000 miles, it knocks and overheats far worse than ever. I took it down and discovered slight play in the gudgeon pin, and two very bright places in the skirt of the piston, also one very black place about 1½ in. long in one of the rings. I filed the bright places down and put the piston back, with very little improvement. My repairer suggests that he fit a new piston, with one ring at the top and one ring at the bottom, and not cut away in the waist. (1.) Do you consider this would improve matters? (2.) Are you in favour of this kind of piston? I have bought an Amac carburettor, but, unfortunately, it is too large to fit on the inlet pipe. (3.) Do you consider this would be an improvement on the present one, which is an old pattern?—M.H.

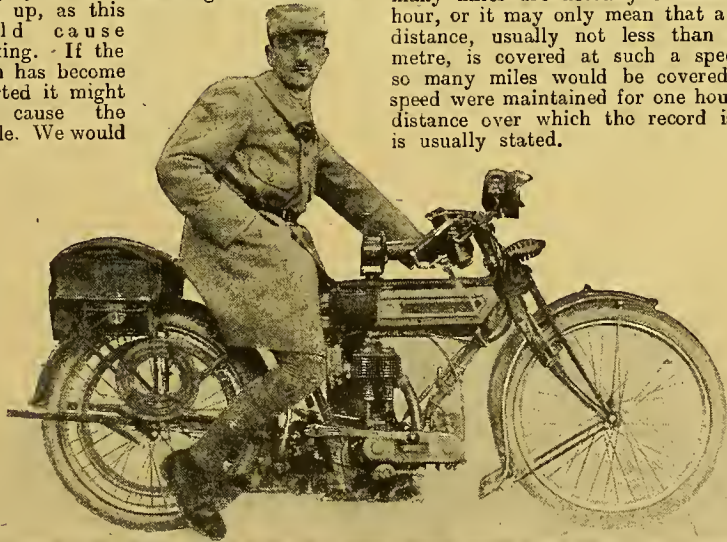
A knock is a very difficult trouble to trace without actually seeing the engine. The play in the connecting rod should be taken up, as this would cause knocking. If the piston has become distorted it might also cause the trouble. We would

not advise a different type of piston from that already fitted, as the difference in weight might upset the engine balance and so render vibration worse. Your filing the piston would be likely to do more harm than good. (1.) No, we do not fancy this would remedy your trouble. (2.) We prefer the waisted type with all rings at top. (3.) The trouble may lie in the carburettor giving too rich a mixture, and so causing overheating. If so, a change of instruments might effect a cure.

### Four-stroking Down Hills.

**?** Please answer me the following questions: (1.) Why does my 2½ h.p. Levis, single speed, four-stroke down hills or down a small incline? Moving the controls does not end the trouble. (2.) Why does oil come out of the hole in the filler cap when the machine is running? (3.) What does ten miles per hour really mean? Does it mean a certain machine has gone ten miles in one hour or touched ten, e.g., S. George went ninety-three miles per hour on an Indian at Brooklands? Does it mean he travelled ninety-three miles or touched ninety-three miles?—C.R.

(1.) A two-stroke is always inclined to four-stroke when running light, though the trouble may be accentuated by having too rich a mixture. Try a slightly smaller jet. (2.) This is probably due to vibration. (3.) It may mean that so many miles are actually covered in one hour, or it may only mean that a certain distance, usually not less than a kilometre, is covered at such a speed that so many miles would be covered if the speed were maintained for one hour. The distance over which the record is made is usually stated.



A French military motor cyclist, holding the rank of Etat-Major, who has contributed from time to time to *The Motor Cycle*. His mount is one of the latest Triumphs.



**Local Taxation Licence.**

**?** Would you kindly answer me the following question, viz.: I took out an Excise licence in January for my motor cycle (a Rudge Multi). I have since exchanged the Multi for an L.M.C. Shall I have to pay another local taxation licence for the L.M.C.? I have received a notice to that effect. —W.B.

No. The £1 local taxation licence entitles you to keep one motor cycle for the period of twelve months. If you sell it and then purchase another, the same licence holds good, provided you do not have the two machines at the same time.

**Castor Oil.**

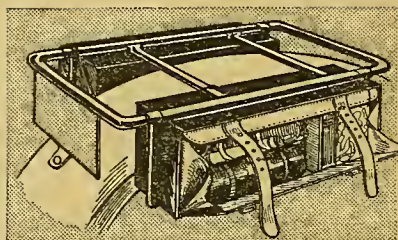
**?** Would a good grade of castor oil be suitable for use with a two-stroke engine for lubrication purposes, and, if so, what quantity should I use as compared with ordinary lubricating oil? It is a little thinner body. I have an idea that the castor oil would be cleaner in use than ordinary lubricating oil. —E.R.

Castor oil is quite unsuitable for the lubrication of motor cycle engines, and we do not recommend you to use it under any circumstances. It is true that castor oil is used in aeroplane engines, but these are so frequently taken down and cleaned that any evil effects it may have upon metals are removed.

**Petrol-paraffin Mixture.**

**?** Re petrol-paraffin mixtures, kindly inform me on the following: My machine is a standard 2½ h.p. Douglas, T.T. model. I have not altered it in any way; have not touched plug gaps, or interposed gauzes in induction pipe. I have a 24 jet in Amac. I know it is rather small, but I get good results, 112 m.p.g. and 47 m.p.h. on petrol. I am making a hot air intake to help small jet. I have been trying a 50% mixture of petrol and paraffin, and get fairly good speed results, etc., on the level. With the same jet I get 100 m.p.g. and the same speed as with petrol. Kindly tell me a cure for the following: (1.) Engine slows up quicker on hills than with pure petrol. (2.) When accelerating on a hill it does likewise; of course, closing air cures to some extent. (3.) After your tests, do you consider Binks fuel better than a 50% mixture of petrol-paraffin? (4.) Does it evaporate at atmospheric temperature? (5.) Is it possible to start up from cold? I might add I can start up from cold on a 50% mixture easier than on petrol. —H.E.C.

(1 and 2.) We think you are almost bound to experience this lack of acceleration when using a paraffin mixture, as, of course, it does not evaporate so readily as pure petrol. Fitting a hot air pipe to the carburettor would undoubtedly assist matters. (3.) You would probably get better results by using Binks fuel if mixed with petrol. (4.) Yes, it will evaporate when once the engine has been started, and will evaporate at atmospheric temperature, but only very slowly. It is necessary to start on petrol. (5.) No, not without injecting petrol first.

**A FEATURE OF THE LATEST DOUGLAS.**

The new Douglas tool bags. Note their size and divisions for spares. (See description on p. 56, July 20th.)

**READERS' REPLIES.****Engine refuses to take Air.**

May I be allowed to make a suggestion to "F.Y.G.," who in your issue of July 20th refers to the refusal of his 1914 Triumph to take air? If "F.Y.G." goes to a Triumph depot, obtains a new air slide and length of Bowden cable (supplied complete for about 3s. ready for fitting), and fits same in his carburettor, I think he will find a cure for his trouble. It did in my case, when symptoms were identical. —JOHN MELVILLE.

**Preventing Belt Slip.**

With regard to "C.A.C.S.'s" query in *The Motor Cycle* of July 13th, I think he can overcome his trouble to a great extent by treating his belt with a preparation obtainable from the Increased Power Co., Queen Street, E.C. This somewhat messy preparation is very slightly smeared on the sides of the belt which come in contact with the pulley flanges, and in my case I have found it invariably prevents slipping even in heavy rain. Usual disclaimer. —L. SQUIRE.

**Oiling an A.J.S.**

I have driven a 5-6 h.p. 1914 A.J.S. combination for two years for trade work, and after trouble with the oiling (the only trouble I have had on a splendid machine) I find the following the right method: Open Best and Lloyd so oil can run in a stream, give two full pumps, and then no more for eight or nine miles; never give less than two at a time, and even three pumps will not matter. I have never had a sooted plug, and the same two plugs have been in the machine since I bought it. Re clutch slip, place the front wheel against wall, start engine, lift clutch, and put in bottom gear, drop clutch very gently,

**SPECIAL NOTICE.****"THE MOTOR CYCLE" FOR NEUTRAL COUNTRIES.**

Under the existing regulations, copies of newspapers may now only be sent to neutral countries in Europe, America, and Africa if posted direct from the office of the publishers or by newagents who have obtained permission from the War Office for the purpose.

The publishers of *The Motor Cycle* have obtained the necessary permission, and, consequently, can post copies for subscribers as usual. The subscription rates to all neutral countries are 10/10 per annum; six months, 5/5.

THE PUBLISHERS,  
"The Motor Cycle," 20, Tudor St., London, E.C.

and engine should stop. Magneto is timed rather far advanced on my machine, and will pull better on hills if retarded about one-third. —WILLIAM F. HEWETT.

**EXPERIENCES WANTED.**

A.D.R. (Palling, Norfolk).—4½ h.p. single-cylinder O.K.-Precision sidecar combination, 1913 model. Speed, consumption, etc.

**RECOMMENDED ROUTES.****LEICESTER TO BLACKPOOL.—B.C.**

Leicester, Loughborough, Derby, Ashbourne, Leek, Congleton, Holmes Chapel, Northwich, Warrington, Wigan, Preston, Lytham, Blackpool.

**LOUGHBOROUGH TO RHYL.—W.A.H.**

Loughborough, Castle Donington, Derby, Uttoxeter, Stone, Woore, Nantwich, Tarporley, Chester, Queensferry, Flint, Holywell, Rhyl.

**BIRMINGHAM TO DURHAM.—E.M.**

Birmingham, Sutton Coldfield, Tamworth, Ashby-de-la-Zouch, Nottingham, Mansfield, Worksop, Doncaster, Ferrybridge, Aberford, Wetherby, Boroughbridge, Northallerton, Darlington, Durham.

**LANGPORT (SOMERSET) TO STRATFORD-ON-AVON.—E.L.P.**

Langport, Semerton, Castle Cary, Bruton, Frome, Trowbridge, Melksham, Chippenham, Malmesbury, Cirencester, Fosse Way, Stow-on-the-Wold, Moreton-in-the-Marsh, Stratford. 110 miles approximately.

**WESTBURY (WILTS.) TO PENMAENMAWR.—R.H.M.**

Westbury, Trowbridge, Bradford, Batheaston, Swainswick, Nailsworth, Stroud, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Wellington, Whitchurch, Wrexham, Mold, St. Asaph, Abergelle, Conway, Penmaenmawr.

**SWANSEA TO EDINBURGH.—C.N.**

Swansea, Llandilo, Llandovery, Brecon, Three Cocks Junction, Willersey, Leominster, Ludlow, Church Stretton, Shrewsbury, Wem, Whitchurch, Tarporley, Warrington, Wigan, Preston, Lancaster, Kendal, Penrith, Carlisle, Longtown, Langholm, Hawick, Selkirk, Stow, Edinburgh. Approximately 370 miles.

**CHATHAM TO NOTTINGHAM.—L.T.**

Chatham, Gravesend, by ferry to Tibury, Billericay, Chelmsford, Dunmow, Thaxted, Saffron Walden, Great Chesterford, Cambridge, Huntingdon, Nema Cross, Wansford, Stamford, Oakham, Melton Mowbray, Nottingham. Approximately 160 miles.

**TOWCESTER TO LIVERPOOL.—A.S.**

Towcester, Daventry, along Watlin Street to a point just beyond the village of Weeford, where turn right and go through Lichfield, Rugeley, Weston Stone, Pipe Gate, Woore, Nantwich, Chester, Birkenhead, then by ferry to Liverpool.



# TYRE BARGAINS

SPECIAL CLEARANCE LINES.



Kempshall  
Heavy  
Non-skid.



650 x 75 'Autobi'  
Oversize for  
650 x 65 rim.



Continental 'Autobi' for  
Voiturette Rims 650 x 65.  
Specially suitable for  
heavy machines.



Elite  
Extra Strong.  
Guaranteed  
3,000 miles.  
26 x 2½, 22/6



Wood-Milne  
Grip-rib  
Heavy.



Kempshall  
Heavy Anti-  
Skid.

## COVERS.

	Our Price.	List Price.
CONTINENTAL.		
28 x 2½ Standard .....	17/6	27/6
26 x 2½ " wired-on ..	10/-	25/-
28 x 2½ Model de Course ..	18/-	34/-
26 x 2½ x 2½ T.T., basket pattern	21/6	28/9
26 x 2½ T.T., basket pattern, heavy	21/6	34/-
650 x 65 Autobi .....	22/-	39/6
650 x 75 or 700 x 80 Autobi, rubber studded	27/6	44/3

650 x 65 Heavy Fluted 19/- 33/-

## CLINCHER.

24 x 2 De Luxe, ex. heavy cover, with Tube Complete .....	17/6	32/-
26 x 2½ De Luxe .....	21/-	32/-
26 x 2½ " wired-on ..	21/-	34/-
26 x 2½ x 2½ Dreadnought ..	32/6	40/-

## COVERS.

	Our Price.	List Price.
26 x 2½ x 2½ De Luxe, extra heavy	25/-	36/-
26 x 2½ A Won, rub. stud.	19/6	32/-
26 x 2½ " " " "	22/6	32/-
26 x 2½ " " " " "	14/6	27/6
26 x 2½ B quality, rub. stud	13/6	26/6

## KEMPSTALL.

26 x 2½ Heavy anti-skid ..	22/6	32/6
26 x 2½ " non-skid ..	30/-	42/-
26 x 2½ " anti-skid ..	23/6	37/6
28 x 2½ " racing cover	30/-	50/-

## WOOD-MILNE.

26 x 2½ Grip-ribbed, heavy	17/6	29/-
26 x 2½ " " "	17/6	30/6
26 x 2½ " " "	22/6	32/9
(for 2½ rims) " " "	20/-	31/6
(for 2½ rims) " ex. heavy	25/-	39/-
26 x 3 " heavy	21/-	36/6
(for 2½ rims) " ex. heavy	28/-	44/-

## COVERS.

	Our Price.	List Price.
HUTCHINSON.		
26 x 2½ Passenger, ribbed ..	28/6	42/-
28 x 2½ Passenger .....	29/6	45/-

## TUBES.

### CONTINENTAL, WOOD-MILNE, etc.

21 x 2 Endless only .....	4/-	6/-
26 x 2 " " " "	4/6	6/9
26 x 2½ " " " "	5/6	7/9
26 x 2½ " " " "	5/9	8/3
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28 x 3 " " " "	9/6	11/9

Butted, 1/6 extra.

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rin. section .....	1/3	2/2
1 in. " "	1/-	1/11

## CLINCHER FLEXIS.

1½ in. section (8ft. 6in. lengths only)	1/6	2/6
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Special Heavy .....	15/-
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Studded or Ribbed Retreads.	
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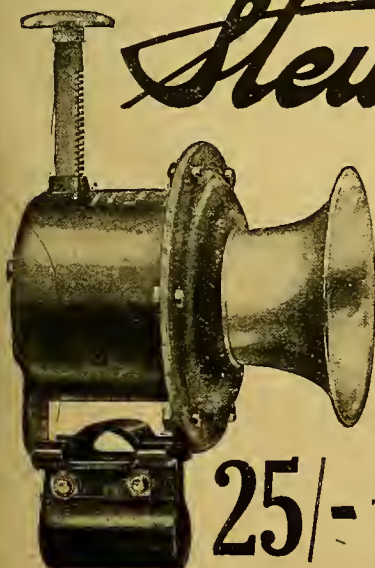
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VICTORIA, S.W.  
Phone—Victoria 6553.

Now this is a Warning Signal that people understand—it's the

*Stewart*

WARNING SIGNAL

—a full-throated instrument that makes them pay attention. The slightest pressure on the plunger produces a far-carrying sound that is obviously an imperative warning. It is just the kind of signal you need on your motor cycle. It is beautifully made in black finish, with Nickel Projector. Note the specially strong bracket, which is supported at each end, and will stand any amount of hard wear. Attaches to top tube or handle-bar.



25/-

Obtainable from all Traders, and from  
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# Economical Insurance for Motor Cyclists

THE PROVIDENT CLERKS' AND GENERAL GUARANTEE  
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ESTABLISHED 1865.

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Under 3½	£2 7 6	£2 10 0
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Special Models for Colonial conditions—4½ h.p. Single-cylinder, 6 h.p. Twin-cylinder. Countershaft 3-speed Gear Models.



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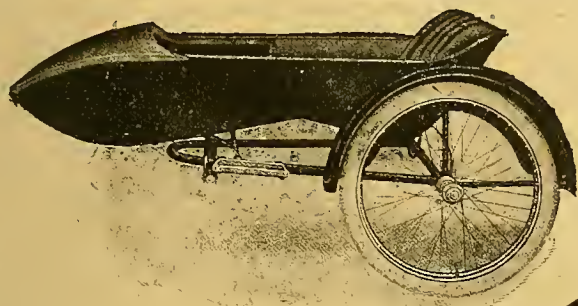
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LTD COVENTRY.

We are busily engaged in munitions, but, as soon as things in Europe are put right, we hope to fulfil our obligations to our numerous clients. Meanwhile, write and have your name booked for earliest possible delivery.



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**CANOELET**

**MINOR.**

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A genuine Lightweight Coach-built Sidecar.

MEAD & DEAKIN, ————— TYSELEY, BIRMINGHAM.

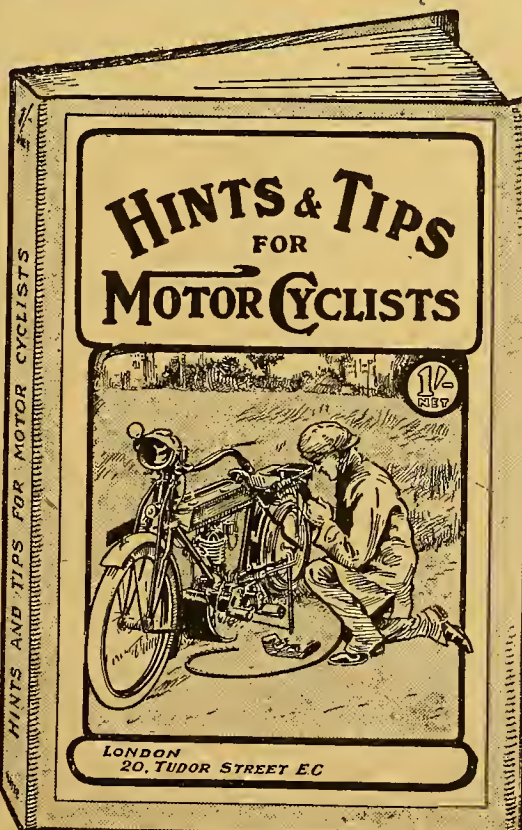
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Knowledge.**

“Hints and Tips for Motor Cyclists” contains what may be termed the cream of all motor cycling knowledge up to date.

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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if we not return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Advance.

**ADVANCE** 5-6 h.p. twin 1916 Motor Cycle, 2 speeds, free engine, lamp and generator new, only been tested; bargain, £45.-93, Montagu St., Kettering. [X5046]

### A.J.S.

**A.J.S.** 6 h.p. Combination, 1914, equipped; £75.-F. Lyceat, Burslem. [X4997]

**A.J.S.** New 1916 6 h.p. Combination on the premises waiting.—Moss, Wem. [X5074]

**A.J.S.** Latest 6 h.p. Combination, hood, screen, etc., brand new, in stock.—A. J. Young and Co., Ltd., Newmarket. [8632]

**1916** 2½ h.p. A.J.S., 3-speed, speedometer, very little used, as new; 50 gns.—Julians, Brood St., Reading. 'Phone: 1024. [X4701]

**1916** 2½ h.p. 3-speed A.J.S. Motor Cycle, actually in stock; £58.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter. [9164]

**A.J.S.** 6 h.p., 1913 (September), excellent condition, lamps, horn, speedometer, watch, mirror; £45.—Belsey, Puckle Lane, Canterbury. [X5071]

**A.J.S.** 1912 6 h.p. Twin Combination, coachbuilt sidecar, a good outfit; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7991]

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THE POINTS THAT ENSURE COMPLETE SATISFACTION AND UNBEATABLE VALUE BY FIRST CONSIDERING

THE OFFERS AT  
**WAUCHOPE'S**

The Kingdom's largest selection of New and Second-hand and slightly used 1913 Models of Best Makes at the lowest bedrock prices for cash or easy terms and a full guarantee with every model. Ask for our

## CLEARANCE OFFERS.

GET TO-DAY'S LIST. IT INCLUDES THESE:

No.	h.p.		
10538.	3½	1915 3-sp. twin <b>INDIAN</b> & Sc.	£55 0
10539.	7-9	'15 3-sp. <b>HARLEY-DAVIDSON</b>	£65 0
10540.	4½	1914 3-sp. <b>JAMES</b> and Sidecar	£50 0
10542.	3½	1913 3-sp. <b>HUMBER</b>	£25 0
10546.	4	1914 3-sp. <b>TRIUMPH</b>	£45 0
10549.	3½	1914 <b>ZENITH</b>	£45 0
10547.	4	1916 single-sp. T.T. <b>NORTON</b>	£50 0
10333.	3	<b>TRIUMPH</b> and Sidecar	£22 10
10553.	1½	<b>J.E.S.</b>	£10 10
10557.	4	1916 3-sp. <b>JAMES</b> Combination	£73 10
10563.	6	1916 <b>ENFIELD</b> Combination	£90 0
10565.	3½	twin <b>N.U.T.</b>	£35 0
10514.	4½	1915 3-sp. chain drive <b>B.S.A.</b>	£52 10
10517.	3½	single-speed 1912 <b>TRIUMPH</b>	£25 0
10519.	3	1914 2-sp. <b>PREMIER</b>	£35 0
10523.	2½	1913 2-sp. <b>DOUGLAS</b>	£44 0
10527.	5-6	1912 2-sp. <b>F.N.</b>	£30 0
10530.	3½	1915 T.T. single-speed <b>ROVER</b>	£50 0
10533.	4½	3-sp. 1912 <b>QUADRANT</b>	£27 10
10534.	4½	1914 single-speed <b>LEVIS</b>	£17 10
10536.	3½	1914 <b>ROVER</b> , single-speed, T.T.	£35 0
10466.	3½	1915 <b>HUMBER</b> Multi	£45 0
10477.	2½	1912 2-sp. <b>SINGER</b>	£20 0
10478.	2½	1911 single-speed <b>DOUGLAS</b>	£17 10
10479.	8	1914 2-sp. <b>WILLIAMSON</b> and 2-seater Sidecar	£55 0
10485.	4	single-speed <b>BRADBURY</b>	£23 10
10493.	5	<b>INDIAN</b> and Sidecar	£65 0
10506.	4½	1913 2-sp. <b>B.S.A.</b> and Sidecar	£45 0
10510.	2	1914 2-sp. <b>CALTHORPE</b> Junior	£17 10
10432.	2	1914 2-sp. <b>CALTHORPE</b> Junior	£18 10
10435.	6	1912 <b>REX-J.A.P.</b> and Sidecar	£27 10
10448.	4½	1914 3-sp. <b>B.S.A.</b>	£57 10
10453.	3½	1915 <b>SUNBEAM</b> and Sidecar	£73 10
10458.	2½	1914 2-sp. 2-stroke <b>CLYNO</b>	£25 10
10462.	5-6	1913 2-sp. <b>N.S.U.</b>	40 gns.
10465.	3½	1915 T.T. I.O.M. Multi <b>RUDGE</b>	£55 0
10419.	2½	1915 <b>CALTHORPE-J.A.P.</b>	£33 10
10427.	3½	1912 3-sp. <b>ROVER</b> and Sidecar	£32 10
10384.	2½	1914 2-speed 2-stroke <b>ALLON</b>	£32 10
10390.	2½	1915 2-sp. <b>WOLF-J.A.P.</b>	£30 0
10393.	1½	1916 <b>AUTO-WHEEL</b>	£11 10
10396.	3½	2-sp. <b>FAFNIR</b>	£12 10
10402.	4½	1915 <b>GRANDEX</b>	£37 10
10373.	7-9	1913 2-sp. <b>INDIAN</b> and Sidecar	£50 0
10342.	4	1914 <b>AUTO-WHEEL</b>	£10 10
10354.	4	1914 2-sp. <b>BRADBURY</b>	£30 0
10323.	2½	1911 2-sp. <b>DOUGLAS</b>	£25 0
10271.	3½	single-speed <b>CENTAUR</b>	£12 10
10205.	3½	1915 2-sp. <b>LEVIS</b>	£37 10
10149.	3½	2-sp. <b>N.S.U.</b>	£20 0
10102.	3½	1913 3-sp. <b>SINGER</b>	£32 10
10070.	3½	1909 <b>F.E. TRIUMPH</b>	£25 0
10068.	3	1914 2-sp. <b>ENFIELD</b> Combination	£65 0
10021.	3½	1912 <b>QUADRANT</b> , variable gear	£22 10
9867.	3½	1912 <b>SWIFT</b>	£20 0
9847.	4½	1911 2-sp. <b>ENFIELD</b>	£22 10
9347.	4½	1915 3-sp. <b>QUADRANT</b>	£42 10
9390.	3½	1907 <b>TRIUMPH</b> and Sidecar	£22 10
9772.	3½	1914 W.-cooled 3-sp. <b>HUMBER</b>	£35 0

**WAUCHOPE'S**, 9, SHOE LANE, FLEET ST., LONDON

'Phone: 5777 Holborn. Wires: "Opifacer, London."

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Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

**A.J.S.** Latest Type 6 h.p. Combination, detachable wheels, with spare wheel and tyre, coachbuilt sidecar with wind screen, Watford speedometer, Lucas lamps, and Stewart mechanical horn, mechanical condition and appearance as new, not done 2,000 miles; £90.—The Premier Motor Co., Aston Rd., Birmingham. [9195]

### Alldays.

**COLMORE** Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays. [9795]

**1915** 2-speed Alldays Allon, in good condition, £27/10; seen any time.—Bounds, Garage, High Rd., Kilburn. [9050]

**ALLDAYS** Allon, 1915, 2½ h.p., 2-stroke, as new, all accessories; £35.—Harrison, Bulder, Denmark Rd., Camberwell. [8964]

**1916** Alldays Allons, 2-speed models, in stock; £42; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9193]

**1916** Alldays Allon, 2-speed, in splendid order and condition; £33; easy payments arranged.—Jones, Garage, Muswell Hill. [9177]

**ALLDAYS** Allon, 2-speed, new; special bargain, £38/17 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [9763]

### Ariel.

**ARIEL**, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9183]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [9797]

### Auto-Wheels.

**AUTO-WHEEL**, good working order; bargain, £5/18, no offers.—Glencroft, Belvedere Av., Wimbledon. [8996]

**WALL** Auto-Wheel, excellent condition, shock absorber; bargain, £8.—Court, Martley, Worcester. [X4979]

### Bat.

**8 h.p. Bat-Jap**, single gear, £21, or lightweight and cash.—Haines, 94, Adelaide Rd., Leyton. [X5015]

**BATS** in stock, latest 4-5 h.p., 2-speed, 60 gns.; also 1914 4-5 h.p. sporting 2-speed twin, £35.—P. J. Evans, John Bright St., Birmingham. [X5027]

**1914** 4-5 h.p. Bat-Jap, in splendid order, and very fast, done very little work; price £40.—W. H. Stewart, 94, Clock House Rd., Beckenham. [8993]

**BAT-J.A.P.**, 6 h.p., sidecar coachbuilt, clutch, high starter, 3 speeds, excellent condition, Stewart speedometer; £50, or offer; joining up.—Heward, 7, Coleherne Terrace, Earl's Court, London. [9022]

### Blackburne.

**LATE** 1915 Blackburne Combination, splendid condition; must sell, account ill-health; lamp, wind screen, speedometer, new tyres; any trial; bargain.—29, Nelson Rd., Gillingham, Kent. [9046]

### Bradbury.

**2½ h.p. Bradbury**, B. and B. Helleisen, wants attention; £4; 10.—Wright, Town Fields, Winsford, Cheshire. [X4961]

**BRADBURY**, 4 h.p., variable gear, £22; light coachbuilt sidecar, £5.—Broom, 77, Marylebone Lane, London, W. [X4751]



## MOTOR CYCLES FOR SALE.

## Bradbury.

1914 3½ h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0822]

PETROL, 8 galls., given with 1913 Bradbury, 1915 Sturmer 3 speed; 27 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [9142]

BRADBURY, 1913, 4 h.p., 3 speeds, clutch, B. and B. Bosch, good condition; £27/15.—P. J. Evans, John Bright St., Birmingham. [X5034]

LATE 1913 Bradbury, 4 h.p., clutch, 2-speed N.S.U., B. and B. variable jet, new heavy Kampshalls, spares, absolutely sound lot; £29/10.—Lee, 30, Cholmeley Rd., Reading. [9094]

BRADBURY, 1913, clutch model, 4 h.p., Bosch, 2 speeds, lamps, beautiful condition; £28/10 cash; easy terms quarter down.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X4966]

## Brown.

15 GNS.—5 h.p. Brown, m.o.r., twin, strong, fast, tyres good, coil.—Railway Garage, Staines. [9171]

BROWN, 3½ h.p., 1912, overhauled, pan saddle, new tyres, belt; £15/2, including galls. petrol.—Troward 78, High St., Hampstead. Phone: 5392. [9141]

## B.S.A.

B.S.A., new 1916 models H and K actually in stock.—Moss, Wem. [X5077]

B.S.A., 1915, T.T., 3-speed model; £47.—Kittel, 21, Hobson St., Cambridge. [8966]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

B.S.A., 1916 K, new, £62; and 1913 clutch, £26; good order.—Digby, Merses, Essex. [9078]

1916 B.S.A., model K, delivered April, Lucas lamp set, accessories; £58.—Box L1868, c/o The Motor Cycle. [8948]

1914 B.S.A., 3-speed, kick starter, guaranteed like new, not marked; £42.—Maddocks, Tattenhall, near Chester. [X5054]

B.S.A. 1916 Model K, 4 h.p., used 300 miles only, and as new, guaranteed perfect; £55.—Tollady, Hemingford, Bicester. [X5060]

B.S.A. 1916 Models H and K in stock, immediate delivery; prices £64 and £62.—Wallace, Fountain Buildings, Bath. [9020]

1916 B.S.A., model K, and coachbuilt sidecar, 4½ h.p., run only 1,200 miles, perfect condition; £70; can be seen Stevens' Garage, Fleet. (D) [X4920]

FOR Sale, B.S.A. motor cycle and sidecar, good condition; owner goes to the Front; £60, or offer.—Apply, Mrs. Perrin, 139, Cromwell Rd., S.W. [8974]

1916 4 h.p. B.S.A. and Canoelet sidecar de luxe, almost new, done about 300; £75; easy payments arranged.—Jones Garage, Broadway, Muswell Hill. [9174]

B.S.A., 1914, 4 h.p., 3-speed countershaft, chain drive, B. Stewart speedometer, Lucas lamps, horn; £40.—Mont. Peters, 9th E. Yorks, Rugley Camp, Stafford. [X4917]

1915 4 h.p. Chain-cum-belt B.S.A. and Mills-Pulford sidecar and accessories, in good condition; £57/10; seen any time.—Bounds, Garage, High Rd., Ilbura. [9051]

B.S.A., 1916, 4½ h.p., 3-speed countershaft gear, B. chain drive, No. 2 B.S.A. coachbuilt sidecar, speedometer, lamps, horn, complete, condition as new; exceptional bargain, £60.—Below.

B.S.A. 1916 models in stock, ready for immediate delivery. 4 h.p. 3-speed countershaft gear, chain-cum-belt drive £62, all chain drive £64; exchanges or extended payment terms quoted.—Elec and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

B.S.A., model H and No. 1 sidecar in stock; also a 1914 with Lucas accessories, £48/10; liberal extended payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9030]

B.S.A., 1913, 3½ h.p., 2-speed gear, chain drive, F.E. clutch, kick start, Lucas lamps, horn, speedometer, and coachbuilt Bramble sidecar, all as new, done under 1,000 miles, as owner been abroad; £45.—Tazewell, Barnham Abbey, Bucks. [X4737]

## Calthorpe.

1915 Calthorpe-Jap, Enfield 2-speed gear, lamp, generator, etc., perfect condition.—5, Heath St., Hampstead. Phone: 3287. [9127]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

CALTHORPE, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9001]

CALTHORPE-J.A.P., 1916, latest model, 2½ h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9000]

CALTHORPE Motor Cycles, 1916 models.—Just arrived; 2-stroke 2-speed 31 gns., J.A.P. 2½ h.p. speed 36 gns.; easy terms arranged.—Storey's, 118, Orchard St., W. [0777]

## AN EFFICIENT ENGINE

GIVES MAXIMUM POWER WITH MINIMUM CONSUMPTION OF PETROL.

GODFREY'S, being Experts, can guarantee that Efficiency which, to the customer, means Economy in running and absence of all trouble.

WRITE FOR FULL LIST OF NEW AND SECOND-HAND MACHINES.

## NEW MODELS IN STOCK

include

INDIANS, ALLDAYS ALLON, ROYAL ENFIELD, BROUGH, CALTHORPE-J.A.P., RADCO, LEVIS, COVENTRY EAGLE, NEW IMPERIAL, etc.

## SECOND-HAND GUARANTEED MACHINES.

THOROUGHLY OVERHAULED AND READY FOR THE ROAD. SELECTED FROM AN EVER-CHANGING LIST.

222. 1915 2½ h.p. RADCO, standard, with access.

225. 1912 2½ h.p. DOUGLAS, 2-speed, clutch, and kick starter, not overhauled.

230. 1915 2½ h.p. VELOCETTE, 2-stroke, 2-speed, chain drive.

234. 1913 3½ h.p. TRIUMPH, 3-speed, semi-T.T. bars.

235. 1914 2½ h.p. CLYNO Lightweight, 2-stroke, 2-speed, clutch, and sporting coachbuilt sidecar.

246. 1914 7 h.p. INDIAN Road Racer, with head lamp and Low generator, and Corbin-Brown speedometer.

248. 1915 3½ h.p. HUMBER, 3 speed, kick starter (or with Sidecar £57).

249. 1915 7 h.p. INDIAN Road Racer.

250. 1915 7 h.p. INDIAN Road Racer.

255. 1915 5 h.p. INDIAN, 3-speed, kick starter.

255. 1915 5 h.p. INDIAN, 3-speed, kick starter.

260. 1915 7 h.p. HARLEY-DAVIDSON, 3-speed, Model F, and kick starter.

272. \*1916 4½ h.p. B.S.A., 3-speed, chain drive, kick starter, and Millford Corvette Sidecar, lamps, horn, speedometer.

278. \*1915 7 h.p. INDIAN, 3-speed, kick starter, electrically equipped, with coachbuilt Sidecar.

285. \*1915 7 h.p. MATCHLESS, M.A.G. engine, 2-speed gear, kick starter, and Matchless coachbuilt Sidecar, complete with Lucas dynamo set, including head lamp, sidecar lamp, and tail lamp.

299. 1916 Model F 7 h.p. twin INDIAN, spring frame, 3-sp. gear, rear drive speedometer, Splendifor ignition-lighting outfit, kick starter, and de luxe coachbuilt Sidecar with lamp.

\*Sidecar combinations

## GODFREY'S LTD.

208, Gt. Portland St., LONDON, W.

Phone—7091 Mayfair (2 lines).

EXCHANGES. EASY TERMS.

## MOTOR CYCLES FOR SALE.

## Calthorpe.

CALTHORPE, latest 1916 2-speed models in stock, cash or exchange; also a few brand new 1915 models, slightly soiled, at reduced prices.—Eagles and Co., High St., Acton. [X4986]

CALTHORPE-J.A.P.'s with Enfield gears; 5 models actually in stock, £37/16; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9026]

CALTHORPE 1915 Coach Combination, 4½ h.p., mag., 3 speeds, clutch, new condition; sacrifice 38 gns. cash; terms arranged.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X4991]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

CALTHORPE Motor Cycles.—Latest 1916 models in stock: 2½ h.p. J.A.P. 2-speed, iron engine, 36 gns.; 2½ h.p. 2-speed 2-stroke lady's model, 34 gns.; 4 h.p. twin J.A.P. lightweight combination, 67 gns.; exchanges or extended payment terms quoted.—Elec and Co., 15-16, Bishopsgate Av., Camomile St., E.C. City Agents. [0480]

## Campion.

CAMPION-VILLIERS, 1915, 2½ h.p., extra good engine, thoroughly solid machine; offered at £17/10, worth much more.—Laytons' Garage, Bicester. [X5063]

4 h.p. Campion, C.B. sidecar, 3 speeds, free, handle starting, F.R.S. lamp, spare belt, 2 tyres, touring and T.M. bars, etc., perfect; £27 or take part furniture and cash.—No. 655, c/o The Motor Cycle. [X4747]

## Chater Lea.

1914 Chater-Lea, 8 h.p., No. 7, and coachbuilt sidecar, all accessories; a cheap lot; £44; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9175]

## Chater-Lea-Jap.

1915 8 h.p. Chater-Lea, J.A.P. engine, Mahon variable gear and clutch, and coach sidecar; a good bargain, all in perfect order, £40; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9185]

## Chater-Precision.

1914 8 h.p. Chater-Precision, 3-speed, chain drive, large coachbuilt sidecar, all accessories, light car tyre, Palmer, new, a good, sound lot; £47/10; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9184]

## Clyno.

5 h.p. Clyno, countershaft gears, perfect order; clean for quick sale.—Thompson, 40a, Old Castle Market, Ipswich. [9061]

CLYNO 1915 2½ h.p. Lightweight, £25; good value; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9035]

6 h.p. Clyno, late 1914, 3-speed countershaft, chain drive, Canoelet sidecar, thoroughly overhauled; £45, no offers.—Simpson, Round Hill Cottage, Brook, near Lyndhurst, Hants. [9054]

1913-14 3-speed 6 h.p. Clyno, No. 6 sidecar, spare wheel, used only Sundays April, October, better condition than most 1915 machines, goes well half paraffin; £55, lowest.—Parkes, 79, South Row, Westbourne Park, W. [9116]

## Connaught.

PETROL, 6 galls., given with 1914 Connaught, variable ignition, 17 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [9142]

CONNAUGHT'S in stock for immediate delivery, miniature, standard, and 2-speed models; prices from £28/17/6.—P. J. Evans, John Bright St., Birmingham. [X5024]

## Douglas.

DOUGLAS, just overhauled, new tyres and belt; £16.—9, Market Sq., Biggleswade. [9109]

1915 Douglas, 3 speeds, complete, Lucas lamps; £45.—Cross, Jeweller, Rotherham. [X4740]

DOUGLAS, 1913, model N, 2½ h.p. twin, Bosch, fast; £25/10.—1, Ebner St., Wandsworth. [X4967]

DOUGLAS, 1916, W.O. model, 2½ h.p., 2-speed, semi T.T. bars.—Laytons' Garage, Bicester, Oxon. [X5061]

DOUGLAS, 1915, W.O. model, 2½ h.p., 2-speed, complete; £45, or near offer.—Laytons' Garage, Bicester. [X5062]

1909 Douglas, in good trim, new tyres (Hutchinson); £12/12.—Jones, Garage, Broadway, Muswell Hill. [9188]

DOUGLAS, 2½ h.p., 1914, W. 2,000 miles, used 5 months; £37; lamp, horn.—Rogers, Mullion, Cornwall. [8960]

1915 Douglas, Colonial model, 2-speed; enlisted; £43 close offer.—Spencer, Richmond Rd., Kingston Surrey. [9072]

DOUGLAS, 1914, 2-speed, kick start, clutch, Bosch, new condition; £35.—Tree, 268, Mitcham Rd., Tooting. [9121]

DOUGLAS, 2½ h.p., delivered March, 1914, 2-speed, clutch, kick starter, in splendid order; £37.—R. P. Fuggle, Edgware. [9023]

1914 Douglas, 2-speed, in very good order; £35.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [9175]

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]



## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1913, 2½ h.p., 2 speeds, clutch, in first-class order, overhauled this year; £35.—Vansone, Higgs and Hill, Hayes, Middlesex. [9037]

1915 4 h.p. 3-speed Clutch Douglas, sidcar, and accessories, in perfect condition; £57/10; seen any time.—Bouds, Garage, High Rd., Kilburn. [9049]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [1189]

DOUGLAS, 1912, in perfect condition, entirely new engine March, 1916, by maker; £21, bargain.—Sergt. Warick, 2/1 W.N. Amb., Howbury Camp, Bedford. [X5006]

1915 2½ h.p. Douglas, 3-speed, Colonial V model, perfect order, long exhaust, lamps, horn, speedometer, spares; 40 gns.—Lieut. Dunsford, Egypt Point, Cowes. [9108]

1914 T.T. Douglas, very little used, new tyres, including one spare, lamps, all accessories and spares; £40.—Oram, 20, Caddington Rd., Cricklewood, London. [8774]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

DOUGLAS, 1914, 2½ h.p., Binks, long, nickelled exhaust, new tyre, belt, lamps, horn, chain cover, fast, spares; ordered abroad; £34.—Browning, R.N.A.S., Westgate-on-Sea. [9114]

1916 Douglas, War Office model, 2-speed, footrests, semi-T.T. bars, latest pattern, brand new, one only in stock: immediate delivery.—Robinson's Garage, Green St., Cambridge. [9135]

1913 Douglas, 2½ h.p., model W, clutch, kick start, footboards, touring bars, 2 lamps, horn, tools, etc., condition engine perfect; £33/10.—Robinson's Garage, Green St., Cambridge. [9136]

## Enfield.

ENFIELD 6 h.p. Combination, 1915, lamps and horn; £68.—F. Lycett, Burslem. [X4999]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ENFIELD Combination, late 1914, beautiful condition, Lucas equipped; 60 gns.—Moss, Wem. [X5075]

ENFIELD 1913 2½ h.p. twin, mag., 2 speeds, countershaft; £26/10.—1, Ebner St., Wandsworth. [X4968]

1916 8 h.p. Enfields actually in stock; easy payments arranged.—Jones, Garage, Broadway, Mueswell Hill. [9187]

ENFIELD 2½ h.p. Twin, 2-speed, free, perfect order and condition; £20.—Fletcher, Gippeswyk Rd., Ipswich. [X5048]

1912 2½ h.p. Enfield Twin, 2-speed, free, Bosch, B.B., Brooks, perfect condition; £18/10.—Williams, Sharpness, Glos. [8959]

ROYAL Enfield, 2½ h.p., 1915, as good as new, very little used; £30 cash.—Colonel Stanford, Holmurst, Malvern. [X4871]

ROYAL Enfield Combination, 1914, 6 h.p., perfect order, complete; £55, or offer.—Naylor, White St., Southall, Middlesex. [9025]

ENFIELD Combination, August, 1914, excellent condition; 55 gns.; exchange Douglas or cycle.—20, Beauchamp Rd., Clapham Junction. [9085]

ENFIELD 1916 6 h.p. Combination, latest model, just arrived from works; 90 gns.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8998]

ENFIELD, M.A.G. 3½ h.p. twin, 1915, indistinguishable from new, Enfield gear, handle start, accessories; £35.—14, Dodbrooke Rd., W. Norwood. [8858]

1916 Royal Enfield Combination, 90 gns.; 5 h.p. twin model, 55 gns.; actually in stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter. [9166]

ENFIELDS actually in stock for immediate delivery 6 h.p. combinations, 3 h.p. and 2½ h.p. models, ready to drive away.—P. J. Evans, John Bright St., Birmingham. [X5022]

ENFIELD, 1916; immediate delivery of latest 6 h.p. combination; now in stock; 90 gns.; make sure of this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8999]

ENFIELD Combination, 1916, 6 h.p., 2-speed, delivery from stock; 90 gns.; exchanges or extended terms quoted.—Elice and Co., 15-16, Bishops Gate Av., Camomile St., E.C., Enfield Agents. [0552]

ENFIELDS.—Birmingham agent, P. J. Evans, 87-91, John Bright St. Immediate delivery all models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination; also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X5026]

ENFIELDS, 8 h.p. 6 h.p., and 3 h.p. actually in stock, £92, £94/10, £57/15 respectively. Liberal exchanges, deferred payments if desired; also 6 h.p. De Luxe combination, electrically equipped, hood and screen, valuable accessories, mileage 1,950, £95; also 1916 8 h.p., hood, screen, Lucas accessories, mileage approximately 1,000, £95, open to near offer; deferred payments entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9028]



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TRIUMPH, 3½ h.p., 1911, 2-speed countershaft gear, chain-cum-belt, complete with wicker Sidcar; cheap at

NEW HUDSON, 1914, 6 h.p., 3-speed, kick start, complete with New Hudson coach-built Sidcar with screen, all accessories

A.J.S., 1914, 6 h.p., 3-speed, lamps, horn, speedometer, and Millford Sidcar, as new

HARLEY, 1914, 7 h.p., 2-speed, and coach-built S'ring INDIAN, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidcar

INDIAN, 1913, 7 h.p., coach-built Sidcar, 2-speed, and spring frame

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CALTHORPE, 1914, 2 h.p., 2-speed

RUDGE 1913 3½ h.p. Multi, T.T. bars

IVY, 1915, 2-stroke, single-speed

KERRY-ABINGDON, 3½ h.p., magneto, 2-speed

TRIUMPH, 1912, 3½ h.p., clutch model

NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine

TRIUMPH, 1912, 3½ h.p., clutch model

ROYAL RUBY, 2½ h.p., 1915, J.A.P., 2-speed

TRIUMPH, 1912, 3½ h.p., clutch, Philipson pulley

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CALTHORPE-J.A.P., 1915, 2½ h.p., 2-speed

REX, 1913, 3½ h.p., 2-speed, and clutch

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LAGONDA 10 h.p. 1915 Coupé, just repainted

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G.W.K., 10 h.p., 4 speeds, 80 mm. tyres, 1914 model, just being repainted

FORD, 1913, 20 h.p., 4-seater, detachable wheels; make a splendid light van

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A.C., 5-6 h.p., late 1913, hood and screen, lamps, all tyres new, splendid condition

MINERVA, 28 h.p., 1910, 5-seater; £6 6s. tax; just being overhauled

KNIGHT Junior, 1914, 11 h.p., sporting body, excellent order

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Exchanges arranged on any of the above.

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ENFIELD, 3 h.p., 1916, latest model, just arrived from works; immediate delivery; make sure of this now. 55 gns.; we are Enfield specialists.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [9002]

## Excelsior.

EXCELSIOR, British, 4½ h.p. combination, all accessories, very powerful and smart lot; £35.—Bunting, Harrow. [9202]

## F.N.

F.N., 1913, in splendid order throughout; £28.—Box L1,900, c/o The Motor Cycle. [9215]

F.N., 4-cyl., 1913, as new, not ridden 50 miles; £45.—Apply to Bodman, 2, First Av., Mortlake. [9075]

F.N., 5-6 h.p., 4-cyl., in good order; £20; private owner.—O. Hubbard, 68, Albany Rd., Siftingbourne. [X5047]

## Harley-Davidson.

BRAND New Harley-Davidsons.—See below.

MODEL F, 7-9 h.p., 3-speed; £68.—The Premier Motor Co. [9215]

MODEL J, 7-9 h.p., 3-speed, with dynamo electric lighting outfit; £75.—The Premier Motor Co. [9075]

THE Above are guaranteed brand new; standard specification and standard equipment.—The Premier Motor Co., Birmingham. [8352]

SPECIAL Gloria Sidcars, to match; 19 and 25 gns. You save £17 by purchasing your new combination direct from the recognised H.D. experts. Delivery carriage paid to any address.—The Premier Motor Co., Aston Rd., Birmingham. [8352]

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

HARLEY-DAVIDSON, 1915, and coachbuilt sidcar, good tyres, accessories, in perfect order; £68.—Vincent Motors, Rugeley. [X4490]

8 h.p. Harley-Davidson, Montgomery combination, 2 speeds; any trial here; price £55; owner enlisted.—23, Malpas Rd., Newport. [X5072]

HARLEY-DAVIDSON, 7-9 h.p., late 1915 Phoenix #14 sidcar, good condition; £65, or near offer.—2, South St., Godalming, Surrey. [X4870]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

HARLEY-DAVIDSON Combination, 7-9 h.p., electric model, 3-speed, in most excellent condition throughout, equal to new; £285.—245, Putney Bridge Rd., Putney. Tel. No. 1616 Putney. [9055]

HARLEY-DAVIDSON, 1915 model F, mileage 1,100 also H.D. sidcar (Feb. 1916), mileage 300, which combination as new; no reasonable offer refused.—Charles Walker, 13, Grape St., Shaftesbury Av., W.C. Regent. 5895. [8706]

1916 Harley-Davidson Combination, run 2,000, speedometer, lamps, Klaxon horn, in first-class order and condition, property of member of the staff joining up; £80, or reasonable near offer.—Box L1,899, c/o The Motor Cycle. [9211]

HARLEY-DAVIDSON Combinations actually in stock; £101/15 and £110 or below; £80/15 or £89; deferred payments if desired; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9021]

HARLEY-DAVIDSON, 7-9 h.p., 1915 model, electric lighting set and booter practically new; accepted £60, or near offer; present owner going abroad.—Telephone Avenue 4224, or write Silent Grey, c/o Deacons, Leadenhall St., E.C. [897]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depot 261, Deansgate, Manchester, and 31, Renshaw St, Liverpool. [081]

HARLEY-DAVIDSON Combination, 7-9 h.p., 1915 2-speed, spare outer and 3 inner tubes, clock, accessories, condition good, start long journey any instant, certain of timely arrival, Phoenix sidcar complete; joined army; £65; part exchange anything preferable, such as gold watch, but must sell quickly; offer please; no postcards.—Pte. Lloyd, 22157, Alwalton Works, Tidworth. [910]

## Hazelwood.

LATE 1913 5-6 h.p. Hazelwood-Jap, countershaft gear coachbuilt sidcar, kick start; £38.—Tickle, Baworth, Leicestershire. [X474]

## Hobart.

1914 Hobart, 2-stroke, single gear, with mag., speedometer, etc.; £14; ready for running.—Till, 8, Eardley Rd., Streatham. [921]

HOBART 3-speed 4 h.p. Twin, and 9 gn. Gloria sidcar, all accessories, any trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [082]

HOBART, 1916, 2-speed, practically brand new, done under 500 miles; must sell; offers; Saturday afternoon.—123, Lordship Rd., Stoke Newington, N. [891]

HOBART-VILLERS, 1915, 2½ h.p.; we have it extra fine sample, exceptionally fine engine, appearance, well tried; £21; approval anywhere. Layton's Garage, Bicester, Oxon. [X501]



## MOTOR CYCLES FOR SALE.

## Humber.

**HUMBER** 1913 Lightweight, 2h.p. mog., runs well; £13/10.—1, Elmer St., Wandsworth. [X4969]  
**1911** Humber, sidecar; 2-speed, 3½h.p., spares, good condition; £20.—Nobbs, Sandfield, Bramber Rd., N. Finchley. [8887]

**1913** 2-speed Humber, with coachbuilt sidecar, tyres new, due order; bargain, £23.—1a, Union St., Wolverhampton. [X5043]

**31h.p.** Humber and Sidecar, 2-speed, lamps, mechanical horn, fine condition, complete; £23, offers.—136, St. Ann's Rd., Tottenham. [8954]

**PETROL**, 8 galls., given with 1915 Humber, 3-speed, underslung coach sidecar; 42 gas.—Troward, 78, High St., Hampstead. 'Phone: 5392. [9147]

**1911** 3½h.p. Humber Motor Cycle, less back wheel, carburetter, and mag.; a bargain, all in perfect order; £9.—Jones, Garage, Broadway, Muswell Hill. [9176]

## Ideal.

**31h.p.** Ideal, 3 speeds, new back tyre, low built, smart appearance, perfect condition throughout; £22/10; consider exchange higher power.—Garneson, 1a, Richardson Rd., Eccles. [X5004]

## Indian.

**BRAND** New 7-h.p. 3-speed Indian; 55 gas.—Ruhber Co., Peterborough. [X5038]

**INDIAN** Road Racer, 1915, long exhausts, very fast; £45.—2nd Lieut. Pemberton, Aerodrome, Swaffham. [8977]

**1913** 7-h.p. Indian and sidecar, electric lamps, etc., complete; £42.—Cross, Offingham Sq., Rotherham. [X4739]

**INDIAN**, 1916, 7-h.p., 3-speed, spring frame, in excellent condition throughout; £60.—Dominy, Jewry St., Winchester. [9071]

**INDIAN**, 1913, 7-h.p., 2-speed, spring frame, coachbuilt sidecar, in sound mechanical order; exceptional bargain, £36.—Below.

**INDIAN**, 1915, 5h.p., T.T.; 3-speed, clutch and kick starter, complete with accessories; £48.—Elice and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

**1915** T.T. Indian, 3½h.p. twin, 3 speeds, and light sidecar, sporty turnout; £55 cash, no offers.—29, Portland Rd., Southall, Middlesex. [9157]

**INDIAN** Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres; £75; in stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X5027]

**INDIAN**, 7-h.p., clutch, free engine, bought January 1916, in perfect condition, very fast, done only 4,400 miles; £47.—N.F.S., 10, Vulcan St., Bedford. [X4854]

**1915** Indian, 5h.p., 3-speed, Montgomery sporting case sidecar to match, done 1,500, guarantee perfect; £60.—Woodman, Clarendon Place, Chatham. [9118]

**1913** 7h.p. Indian, T.T., clutch, just overhauled, wear of bore, etc., good running order; £25, or offers.—Dix, 19, Middleton Rd., Golder's Green, N.W. [8994]

**INDIAN**, 1915, 5h.p., 3-speed, kick starter, electric head and tail lamps, Dunlop tyres, Lucas horn; 0 gas.—Julianus, Broad St., Reading. 'Phone: 1024. [X4131]

**INDIAN** Powerplus, 7h.p., 3-speed, and spring frame, dynamo lighting set, 2 lamps, horn, and speedometer; £90.—P. J. Evans, John Bright St., Birmingham. [X5029]

**ATE** 1915 Indian, 5h.p., excellent condition; exchange for similar machine, British or American.—Pte. Wilson, A.S.C., 2a Camp, Hut 22, Lark Hill, Salisbury. [9070]

**INDIANS**—Model C, 7h.p., in stock for immediate delivery, spring frame; 3 speeds, 2 electric lamps and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X5032]

**1916** Powerplus Indian Combination, new April, spring frame, dynamo lighting, horn, speedometer, Millford sidecar; cost £112, sell £85.—Gilmour, Easttown, Dumfries. [8985]

**1914** 7h.p. Indian and sidecar, fitted up complete, and in fine condition throughout, second to none; £85, or would consider a deal for car.—Rowley, 35, Lumley Rd., Skegness. [8986]

**BLUE** Indian and coachbuilt sidecar, late 1913, 7-h.p., clutch, free engine, 2-speed, lamps, screen, coils, etc., perfect condition; £38.—R. Watson, 139, Avenue Parade, Acconington. [X5035]

**INDIAN**, 1913, new 1914 7h.p., T.T., free engine, very good condition, fast, beat P. and H. lamp, speedometer, etc.; trial, £35.—Apply, G. Dalziel, Chase House, Kingswood, Surrey. [X4919]

**INDIAN**, 1913, 3½h.p., Millford sidecar, 2-speed, free engine, Lucas set, speedometer, powerful machine, small mileage only, condition perfect throughout; £29/10.—C., 597, Finchley Rd., Hampstead. [5066]

**INDIANS**—Birmingham agent, P. J. Evans, 87-91, John Bright St. Immediate delivery ex-stock 5h.p. speed standard and sporting models, with and without sidecar; price £70; sidecars from 11 gas. [X5031]

**INDIAN**, 1914, 7-h.p., T.T., 2-speed, kick start, sporting sidecar, engine overhauled, only run 12 months, all accessories, spare tube, lamps, horn, etc.; £55, or offer.—67, High Bridge, Newcastle-on-Tyne. [8962]

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4½ h.p. B.S.A. Sidecar and luggage grid.....	£17 10

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1916 4 h.p. A.J.S. Combination, hood & screen 95 0		45 0	87/6
1912 3½ h.p. P. & M., 2-speed, and coach Sidecar.....	33 15	13 15	35/10
1915 2½ h.p. EXCELSIOR, 2-speed, and clutch.....	36 10	10 10	46/7
1914 6 h.p. A.J.S. and Canoelet, hood and screen.....	70 0	25 0	80/8
1914 8 h.p. ZENITH, c/shaft, and Sidecar.....	62 0	10 0	78/10
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Garage: 12, Tottenham Mews, W.C.

'Phone—Museum, 1240.

Telegrams—"Dynametro, Westcent, London."

## MOTOR CYCLES FOR SALE.

## Indian.

**1915** 7-h.p. Indian Combination, in new condition, tyres unscurched, spring frame, electrically equipped, speedometer, 1,200, all accessories and spares; £78/10.—Oram, 20, Caddington Rd., Criklewood, London. [8775]

**INDIANS** in Stock.—Latest models, Powerplus combinations, Sporting Powerplus 3 speeds models, Standard 7h.p. overhead inlet combinations, with lighting set, The famous 5h.p. 3-speed double-purpose mount.—P. J. Evans, John Bright St., Birmingham. [X5033]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES**, 1913-14, and cane sidecar, 4½h.p., 3-speed countershaft, kick starter, Brooks saddle, perfect order; £37/10.—Collyer, 286, High Rd., Wood Green, N. [X4987]

**JAMES** 1916 4½h.p. Combination, 3-speed, clutch and kick-starter, delivery from stock; £80/15.—Elice and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491]

**1914** James Combination, 4½h.p., kick start, clutch, 3-speed countershaft, Canoelet sidecar, wind screen, ebony lamp sets; bargain, £49.—97, Crofton Park Rd., Brockley, S.E. [X4918]

**JAMES** Combination, late 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, hood, screen, horn, speedometer, and Lucas front and rear lamps, in splendid condition: cost £90, bargain, £75, or nearest offer.—3, Lower Addiscombe Rd., Croydon. [8980]

## J.A.P.

**8 h.p. J.A.P.**, 90x77, run 150 miles, a.i.v., offers: 1911 Rex engine, dismantled, parts.—J. Winter, 24, Mount Pleasant, Louth. [X5041]

**4 h.p. J.A.P.** and Sidecar, new 3-speed Armstrong gear, recently overhauled; £22/10.—Apply, Stelschke Tyres, -76, York St., Westminster. [9024]

## J.E.S.

**J.E.S.**, lady's, Druid spring forks, little used. £12/10: J.E.S., gent's, low built frame, good condition, £10; J.E.S., set for fixing to pedal cycle, new condition, £7.—Apply, Kingsbury, Hampton, Middlesex. [9033]

## J.H.

**J.H.**, 1916, 2½h.p., only run 200 miles; bargain. £31.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9014]

## Levis.

**POPULAR** Levis, 2½h.p., 2-stroke: £28.—F. Livett, Burslem. [X5002]

**1914** Levis, 2½h.p., excellent: £20, or nearest.—11, Breeknock Rd., Camden Rd. [X4872]

**LEVIS**, new July, 1916, lamps, horn; £28.—4, Stormont Rd., Clapham Common. [9155]

**LEVIS** 1915½ Popular, perfect condition; cheap; must sell.—35, Mile End Rd., E. [9008]

**LEVIS**, 2½h.p., new, done 500 miles, lamps, horn, etc.; £25.—S., 41, Ash Rd., Stratford. [8740]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**LEVIS**, 2½h.p., countershaft, single speed, Bosch, Amac, good running order; £17.—Callen, Fox Hill, Didcot. [X5019]

**LEVIS** Popular, new; special bargain; cannot repeat: £28 cash; gradual payments 2%.—Refere Crele Co., 332, High Holborn. [0764]

**LEVIS** 1916 Popular Model, 2½h.p., slightly shop-soiled, special bargain, £29.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9003]

**LEVIS** 2-stroke Motor Cycles, latest 1916 models.—Sole London and district agents. Cars and Motor Sundries Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711]

**LEVISES**—Three Populars, £32, and two No. 1's with Enfield gears, £47/10; actually in stock; deferred payments by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9027]

## Lincoln-Elk.

**LINCOLN-ELK**, 4½h.p., and sidecar, clutch, 2 speeds, nearly new heavy tyres, splendid order; £30.—Hopton, 2, Foundry Lane, Biggleswade. [9110]

## M.A.B.

**PETROL**, 8 galls., given with 1913 M.A.B. 3½h.p. twin, Enfield gear, coach sidecar; 29 gas.—Troward, 78, High St., Hampstead. 'Phone: 5392. [9145]

## Martin.

**MARTIN-J.A.P.**, 2½h.p., overhead inlet and exhaust valves, Amac forced feed carburetter, lamp, horn, speedometer, in new condition throughout; £23.—Vincent Motors, Rugeley. [X4491]

## Matchless.

**8 h.p. T.T. Model** Matchless-Jap and sidecar, overhead valves, very fast; £35.—11, Bandalls Rd., King's Cross, N. [899C]



## MOTOR CYCLES FOR SALE.

## Matchless.

**MATCHLESS J.A.P.**, 2½ h.p., smart, racy mount, tyres and general condition splendid; £20, a bargain.—Banting, Harrow. [9199]

**MATCHLESS 1914 Combination**, 8 h.p., M.A.G., splendid condition; trial; £65.—52, Pentonville Rd., N. Tel.: North 2337. [8955]

**MATCHLESS Combination**, 1915, 7½ h.p. M.A.G., 3 speeds, 2 spare tyres, mileage 2,500; £65.—3, 64, Macoma Rd., Plumstead, Kent. [9073]

**MATCHLESS 1915 8 h.p. 3-speed Combination**, fine order, accessories; 70 gns.; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9031]

**MATCHLESS**, 1913, 6 h.p., twin belt, Lucas head lamp, Dunlop extra heavy tyre, 2-speed gear and hand clutch, kick starter, and sidecar; 45 gns.—Julians, Broad St., Reading. Phone 1024. [X4129]

**MATCHLESS 8 h.p. Combination**, 2-speed, twin belts, speedometer, watch, pillion, wind screen, 3 lamps, tools, etc.; £42, or near offer; lightweight taken part exchange.—14, Chipley St., New Cross, S.E. [9010]

**3½ h.p. Twin Matchless Motor Cycle**, 3 speeds, free 2nd engine clutch, kick starter, countershaft, new tyres, lamps, and horn, in excellent condition, very fast and flexible; price £38.—John C. Beadle, Ltd., Motor Engineers, Dartford. [0827]

## Minerva.

**MINERVA**, 2½ h.p., B. and B., running order; £8, nearest.—21, Havelock Rd., West Kensington. [9172]

**2½ h.p. Minerva**, m.o.v., new dropped frame, spring 2½ forks, nearly new mag., splendid little mount; £10/10.—Garneson, 1a, Richardson Rd., Eccles. [X5005]

## Moto-Reve.

**MOTO-REVE** 2½ h.p. Twin, splendid guaranteed order throughout, practically as new, little used; £12, a bargain.—Cross, 94, Heath Rd., Twickenham. [8957]

## New Hudson.

**NEW Hudson 6 h.p. Combination**, countershaft, 1915, Lucas electric set; £80.—F. Lycett, Burslem. [X4998]

**NEW Hudson**, 2-stroke, 2,200 miles, Miller lamp, Dunlops, like new; £23.—41, Kirkstall Rd., Stramshaw. [X5036]

**1915 6 h.p. New Hudson Combination**, in excellent order, very little used.—Turpins, 22-29, Preston Rd., Brighton. [0716]

**PETROL**, 6 galls., given with 1913 New Hudson, 4 h.p., 3-speed; 25 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [9146]

**NEW Hudson**, 2½ h.p., 1915 Model de Luxe, excellent order, heavy Dunlops, in new condition, fine climber, and very flexible; £26.—Rev. Philpott, Arbury Rd., Nuneaton. [X4977]

**1916 New Hudson 6 h.p. 3-speed Combination**, £92/10; model D 2-stroke, 40 gns.; model C 2-stroke, £38; actually in stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter. [9166]

**1913-14 New Hudson**, 3-speed, single-cyl., luxurious sidecar, all perfect, full equipment; price £40; seen tried appointment.—Bosquet, Camden Metal Works, Georgiana St., Camden Town. [9084]

**1913 New Hudson**, 3½ h.p., 3-speed, and very nice sidecar, enamelled New Hudson grey; a cheap lot at £38; all accessories; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9180]

**1914 3½ h.p. 3-speed New Hudson**, kick starter, clutch, chain-cum-belt drive, 26x2¼ Palmer tyres, complete with Canelet coachbuilt sidecar, enamelled to match, combination guaranteed in perfect condition; £35.—The Premier Motor Co., Aston Rd., Birmingham. [9196]

## New Imperial.

**NEW Imperial**, 2½ h.p. J.A.P., free engine, kick start; £44/8.—F. Lycett, Burslem. [X5001]

**NEW Imperial-Jap**, latest models, in stock, £38 and £44/8.—Crow Bros., Guildford. [8336]

**1916 2½ h.p. New Imperial**, 2-speed model, in stock; £38.—Alfred Procter, Chestow. [X4982]

**COLMORE Depots**, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**NEW Imperial-Jap**, late 1915, 2-speed, nearly new, splendid condition; £25.—11, King's Rd., Brighton. [8972]

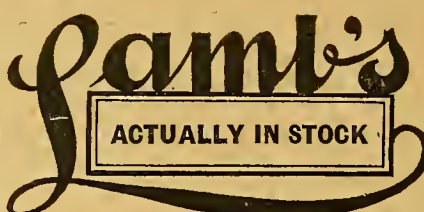
**NEW Imperial-Jap**, 2½ h.p., Rally touring sidecar, lamps, and horn, new July; £48.—F. Lycett, Burslem. [X5000]

**NEW Imperial**, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0765]

**1915 New Imperial-Jap**, 2½ h.p., 2-speed, F.E., excellent condition; £27; exchanges.—Newham, 223, Hammersmith Rd., W. [9082]

**1915 New Imperial**, 2½ h.p. J.A.P., 2-speed gear, lamp, horn, splendid running condition; sacrifice £25.—Alfred Procter, Chestow. [X4981]

**NEW Imperials**, latest models in stock; 2-speed, also kick-starter hand-controlled clutch models.—P. J. Evans, John Bright St., Birmingham. [X5030]



7-h.p. **HARLEY-DAVIDSON** and Sc., 16F £101 15  
7-h.p. **HARLEY-DAVIDSON** comb.elec. £110 0  
5 h.p. **ENFIELD** Combination £92 gns.  
6 h.p. **ENFIELD** Standard Combination £90 gns.  
3 h.p. **ENFIELD** 1½ wght, 2-sp., k/starter £55 gns.  
(3 in stock)

4½ h.p. **B.S.A.** chain drive £64 0  
4½ h.p. **B.S.A.** belt-cum-chain £62 0  
5 h.p. **INDIAN** c/bn. (m/c. alone £70) £62 10  
3½ h.p. **ARIEL** Combination £82 10  
6 h.p. **NEW HUDSON** Com., fawn, 3-sp. £82 8  
2½ h.p. **LEVIS** Popular (3 in stock) £32 0  
2½ h.p. **LEVIS** Model E, 2-speed £37 16  
2½ h.p. **CALTHORPE J.A.P.**, 2-sp. Enfield £36 0  
2½ h.p. **ALLDAYS ALLOM**, single-speed £36 0  
2½ h.p. **ALLDAYS ALLOM**, 2-speed £42 0  
2½ h.p. **ALLDAYS ALLOM**, 2-sp. & clutch £45 0  
2½ h.p. **NEW IMPERIAL**, 2-sp., 1/tourist £38 0  
2½ h.p. **NEW IMPERIAL**, 2-sp., k/starter £44 8

## NEW 1915 SHOP-SOILED only.

2½ h.p. **CONNAUGHT**, single-sp. { What } £32 0  
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<b>CANOELET - HARLEY - DAVIDSON</b> , 28x3 in. wheel, quite new, never removed from crate; usual price £17 10s.	£14 10 0
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<b>WATSONIAN</b> , Model F, art cane for lightweight	£9 3 6
<b>WATSONIAN</b> , Model H, coach Sidecar	£11 10 0
<b>WATSONIAN</b> , Model N, coach Sidecar, for 3½ h.p.	£12 11 6
<b>WATSONIAN</b> , Model G, coach Sidecar, for lightweight	£10 18 6
<b>COMFY</b> coach Sidecar for lightweight	£8 17 6
<b>PHOENIX INDIAN</b> coach S/car, all red	£13 10 0
<b>INDIAN</b> Standard, 28x2½ in. wheel	£15 0 0

## SECOND - HANDS.

**ROVER** 3½ h.p. 3-sp., coach com., all access £45 0  
**TRIUMPH** 1911-12 3½ h.p., Mabon clutch £19 10  
**MATCHLESS** 1915 8 h.p. 3-sp. comb. accs. 70 gns.  
**ENFIELD** 6 h.p. de Luxe, elec., hood, screen £95 0  
**ALLION**, 2-str. clutch model, speedometer £38 10  
**ENFIELD** 4 h.p. 1916 com., hood, screen £95 0  
**WOLF** 1915 4½ h.p. 3-sp. com., k/starter £49 10  
**INDIAN** 1916 5 h.p. & coach Sidecar, n. new £78 10  
**BRADBURY** 6 h.p. 1914 3-ps., k/st. S/car £57 10  
**NEW HUDSON** 2½ h.p. 1912, J.A.P. 3-sp. £21 0  
**SERVICE PRECISION** 1912, 2½ h.p., s-sp. £16 10  
**P. & M.**, 3½ h.p. 1913, 2-speed £39 10  
**DOUGLAS** 1912, 2-sp., k/starter good cond. £26 10  
**ALLION** 1915, 2-sp., k/starter, accessories... 40 gns.  
**SUN VILLIERS** 1914, new 1915, 2-sp., 2-str. £27 10  
**ARIEL** 1915, 6 h.p. com., 3-sp., c/s ft., gear k/starter £68 10  
**WOLF** 1915 2½ h.p. single-sp., 2-str. £21 0  
**CLYNO** 2½ h.p. 1915, single-sp., accessories £25 0  
**ALLION** 1915, 2-sp., 2½ h.p. & S/c., access. £35 0  
**BRADBURY** 1914, 4 h.p., 2-sp., coach com. £33 10  
**HUMBERETTE** 8/10 h.p., 2-str., worth £70 £62 0  
**ROVER**, 6 h.p., 2-str., & access., worth £35 £30 0  
**FORD**, new 1915, rear windshield, shock absorbers back and front, Stepany wheel and tyre, speedometer, exhaust whistle and syren, special running boards and tool chest, oil lamps, carefully used.  
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## MOTOR CYCLES FOR SALE.

## New Imperial.

**1916 2½ h.p. 2-speed New Imperial-Jap**, only 3 months old, runs perfectly on petrol substitute; any trial; owner buying combination; £32.—Springfield, High St., Sidcup, Kent. [9059]

**NEW Imperial-Jap**, 1916 models, delivery from stock; 2½ h.p., 2-speed, £38; 2½ h.p. ladies' model, 2-speed, clutch, and kick-starter, £46/8.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

**NEW Imperials**, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## New Ryder.

**PETROL**, 6 galls., given with 1915 New Ryder-Jap, 2-speed; 24 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [9144]

## Norton.

**BIG 4 Norton Combination**, S.A. countershaft; delivery from stock.—A. J. Young and Co., Ltd., Newmarket. [8633]

**NORTON T.T.** 3½ h.p., competition machine, in splendid order, and very fast, enamelled red, with gold lines; £30.—Sydney Hall, Stevenage. [X4913]

**NORTON**, late 1913, 4 h.p., coachbuilt sidecar, 3-speed, free engine, new tyres and belt; £35; perfect condition.—Ledger, Market St., Wellington, Salop. [X4992]

**PETROL**, 8 galls., given with 1915-16 Norton Big Four coach combination, Sturmer countershaft gear, perfect; 66 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [9146]

## N.S.U.

**N.S.U.**, 1914, 2 h.p.; 2-speed, free, 130 to gallon, good condition; £19.—12, Oakhill Rd., Sutton. [9117]

**1914 5-6 h.p. N.S.U. Combination**, 2-speed, free engine, 20 gn. Bramble sidecar, tyres, etc., as new; exchange for A.C. Sociable of recent date.—9, Clephane Rd., Essex Rd., N. [9058]

**N.S.U.**, 1912, 3 h.p. twin, spring frame, 1915 B. and B. new adjustable pulley and saddle, Hutchinsons R.S., Douglas T.T. bars, Cowey, very good order; £10.—B. 21, Semley Rd., Norbury. After 7. [9065]

## N.U.T.

**N.U.T.** 3½ h.p. Twin, 3-speed, clutch; £32.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9012]

## O.K.

**1916 O.K.**, Mark III, open frame, 2-speed, hand-controlled clutch, Cluchoer de Luxe tyres, in perfect order, soiled only; £36.—Robinson's Garage, Green St., Cambridge. [9154]

## Omega.

**3 h.p. 2-stroke 1914 Omega**, B. and B., Simms mag., perfect condition; bargain, £20.—6, Colly Rd., Norwood, London. [9122]

## P. and M.

**1914 3½ h.p. P. and M.**, 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [0721]

**1912 3½ h.p. P. and M.**, 2-speed, sidecar, new cylinder, piston, and kick starter, lamp, horn, spares, just overhauled; £30.—Hawley, Oakhill Rd., Ashted, Epsom. [9111]

**P. and M.**, 1913, 3½ h.p., 2-speed gear, new coachbuilt sidecar, full outfit, in good condition; £40.—Take and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7990]

**1913 P. and M.**, countershaft 2-speed and free, Millford coachbuilt sidecar, Lucas outfits, just overhauled, excellent condition throughout; £35.—T. 92, Northcote Rd., Clapham Junction. [8951]

**1914 3½ h.p. Phelon and Moore**, 2-speed gear, kick start, chain drive, Lucas lamp set, 1 gn. horn, Cowey speedometer, excellent tyres, engine guaranteed perfect; £42/10.—Robinson's Garage, Green St., Cambridge. [9132]

**P. and M.**, 1914, condition equal to new, Coronet sidecar, coachbuilt, all accessories, 3 new spare covers, 2 spare butt-end tubes, one engine chain, 10 gallon petrol, No. 1, lamps, 2 horns, 1 valve; £58.—Pickles, 230, Queen's Rd., Haliiax. [8769]

## Peugeot.

**PEUGEOT** Twin, 3½ h.p., Bosch, B. and B., perfect condition; £10.—75, Vanner Rd., Sydenham. [9086]

## Poce.

**POPE**, 1914, 4½ h.p., C.B. sidecar, 2-speed, F.E., spares; £36; or exchange Douglas, 1914-15.—31, Ennersdale Rd., Lewisham. [9160]

## Premier.

**3½ h.p. Premier**, T.T. bars, Grade pulley, very fast; £22.—Roodhouse, Engineers, Conisborough. [X4744]

**2½ h.p. Premier**, excellent condition; bargain.—Geo. 2 F. Newcombe, 15, Ashcroft Villas, Cirencester. [9095]

**1914 3½ h.p. Premier**, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]



# THE MOTORCYCLE

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## The Effect of Cheap Fuel on Lubrication.

**B**EFORE motor cyclists adopt the cheaper white oils and paraffin-petrol mixtures as the motive power for their engines, they should consider very carefully what effect these are likely to have on the oil with which the engine is lubricated. So long as the combustion is perfect there is nothing to fear, but if paraffin in any quantity is allowed to escape unburnt past the piston rings into the crank case it is likely so to thin the lubricating oil that the latter no longer has sufficient viscosity to maintain an oil film in the bearings, with the result that, when the oil film breaks down at the moment of greatest pressure, we have metallic contact between the bearing surfaces accompanied by excessive heat and undue wear.

It is possible that this injurious effect will be less noticeable on motor cycles than in the case of car engines, for the reason that the oil is being constantly fed to a motor cycle, in the majority of cases, from a fresh supply and used up in a few miles, whereas in a car engine a sufficient supply of lubricant is carried in the sump to last 1,000 miles, and the addition of paraffin (even in small quantities) to this may very seriously interfere with its lubricating powers. As a matter of fact, the analysis of an oil so used in a light car showed quite a considerable loss in viscosity.

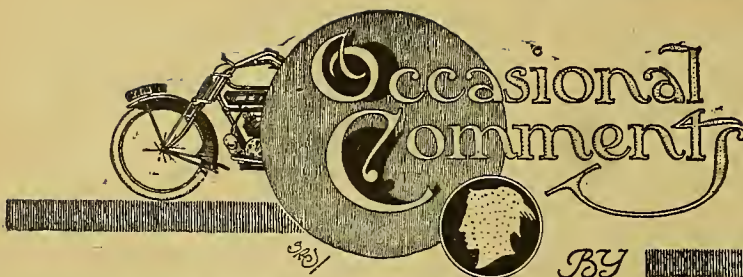
It therefore behoves all motor cyclists who wish to experiment with the heavier fuels not only to see that their piston rings are a good fit, but also that the vaporisation of the fuel is assisted by heat. They will then have little to fear. What we should advise motor cyclists to do is to drain the oil from their crank cases more frequently, say every 150 to 200 miles, and charge the crank case with fresh lubricant. Still another useful tip is to use slightly thicker oil, i.e., with more body in it, than in the normal course. There will then be less fear of the

oil in the chamber becoming diluted to the extent of causing damage to the bearings.

## Economy Committee at Cross Purposes.

**O**N the one hand we have the War Savings Committee urging the people of this country to economise to the utmost; on the other we have a committee placing obstacles in the way of that desirable achievement. We have in mind particularly at the moment the question of travel. The cheapest possible method of power locomotion, whether the Government Departments know it or not, is by motor bicycle. We are in the middle of summer and the holiday period, and no doubt a great many munition workers, exempted men, and people over military age, are contemplating or have made arrangements for a short respite. Deprived of a reasonable quantity of petrol they must resort to the already congested railway, and that means a bigger outlay, unnecessarily so seeing that the motor bicycle will be lying in its shed unused for lack of a tin of petrol. Some may retort that this is not the time for holidays! True, but many a toiler finds that the continuous pressure of modern times absolutely demands a rest to restore him for efficient work. Then again, many a man abandoned his holiday last year. We ask—seeing that no one has touched upon this point—if the question of "seasons" has been considered? We estimated on the official petrol cards our spring consumption. After this summer term—essentially the one in which the most petrol is used by motorists—we arrive at the autumn period, when motoring wanes, partly owing to colder days and less favourable weather. The fact remains that motorists are very much incensed at the meagre allotment at the period when money could have been saved by using one's motor—on which the tax has been paid—in preference to a railway carriage, always so stuffy and objectionable on a hot day.





BY

LION

### The Scott Three-wheeler.

This novel vehicle suggests a whole catalogue of subjects for thought and discussion, but its supreme interest consists in the fact that one of our leading engineers has at last considered the problem of a light three-wheeler *de novo*, and has found it soluble along sidecar lines. In the past the same problem has been attacked by many engineers, and has found various solutions. In earlier days the idea of detachability betrayed most engineers into the side-tracks represented by the sidecar and the tricar; and when progress piled on weight, horse-power, and general luxury, the underlying basis of the motor bicycle dominated men's minds so completely that years passed before anybody broke away from it. The tricar proved a failure; the sidecar has done well in private ownership, though its very disappointing records in long distance competitions suggest that it has only recently become a desirable machine to buy "for keeps" where hard work was in prospect. The A.C. Sociable and the Morgan runabout frankly broke away from the obsession of utilising a motor bicycle frame and make-up as the major portion of the three-wheeler, and the Morgan has a particularly good record in competition. Many thinkers have finally abandoned the three-wheeled principle in favour of the glorified quadricycle, recently yclept a cycle car, though their productions have never really established themselves on the market; and their main result up to date has been to suggest an unquestionable success in the light car, leaving the problem of a light motor cycle passenger combination still largely unsolved. At last an engineer arises who agrees with Mr. Morgan that the three-wheeler is the real solution, but differs from him profoundly as to the correct method of applying the three-wheeled principle. While the former adopts a chassis resembling in plan a steep isosceles triangle with its base in front, the latter prefers a right-angled triangle with its hypotenuse as the off side. The only serious objection to either consists in appearance. The Morgan always looks rather unsupported behind, and the Scott looks lopsided; this point may be ignored, as the sidecar is most ungainly in appearance, but has nevertheless won the public affection.

### Its Promise.

I should not devote so much space to the Scott if I did not feel that its intrinsic merits promise it at least as large a niche on our markets as the Morgan already enjoys. I have always felt that the costly sidecar outfit *de luxe*, however well designed and made, was an absurdity. Its dirtiness, inaccessibility, and discomfort arose from the folly of starting with a complete motor bicycle as the basis, and forgetting that the motor bicycle could be ignored in

all cases where detachability was no longer desired: *i.e.*, the sidecar may survive in its lighter and simpler forms, since some men will always want a passenger carrier as an afterthought or for occasional use, and that in all other cases the sidecar is an absurdity. Nevertheless, the enormous mileage annually covered by sidecars shows that the Scott arrangement of a three-wheel chassis is sound in principle and has certain practical advantages. Wherefore the ultimate evolution of such a machine as the Scott, which is the sidecar principle purged of its absurdity, is inevitable. One's sole doubt as to its being the pioneer of a type commanding huge sales is the reflection that most users would undoubtedly prefer the appearance of the Scott plus an extra wheel, and whether many users would not pay the extra cost implied by such an addition, connoting a fourth wheel, an extra axle, and a reverse gear. Anyhow, the sidecar principle, thus purged of its anomalies, is sure to be tried out, and Mr. Scott is at least the pioneer of a long series of experiments, whether or not he proves to be the founder of a permanent type. This brilliant attempt to endow the sidecar principle with permanence is the main interest of the new vehicle. Should it fail, we may expect to see the passenger market simmer down eventually with the detachable sidecar and the light car as its two extremes, the gap being filled by a fleet of variegated designs, including such compromises as the Morgan and the light quad.

### Fascinating Details.

In its dual attack on the few survivors of the four-wheeled cycle car and the sidecar *de luxe*, the Scott three-wheeler is assisted by a host of brilliant details. Being assembled from a bundle of tubes with an ease reminiscent of a Meccano model, it is cheap to construct and repair. It eliminates the need for a reverse by retaining the microscopic turning circle of a sidecar. It is far better sprung than any sidecar has ever been. Its engine is extremely accessible, and will nevertheless keep perfectly clean. The transmission may prove to be the best yet fitted to a motor cycle. Its light weight makes for speed, low fuel bill, and tyre life. It incorporates convenient and slightly accommodation for a good bulk of luggage. There is no inaccessible wheel—a merit which is novel on three-wheelers of all previous designs. The engine is a simplified form of the simplest type of engine known to us if we take it for granted that the rotary valve will give no serious trouble for a considerable mileage. The hand starter is better than any kick-starter, and far better than the usual motor car handle starter. The lubrication ("petrol") is of a type admitted to possess marked technical and practical advantages; the external dirtiness inseparable from it is of comparatively small



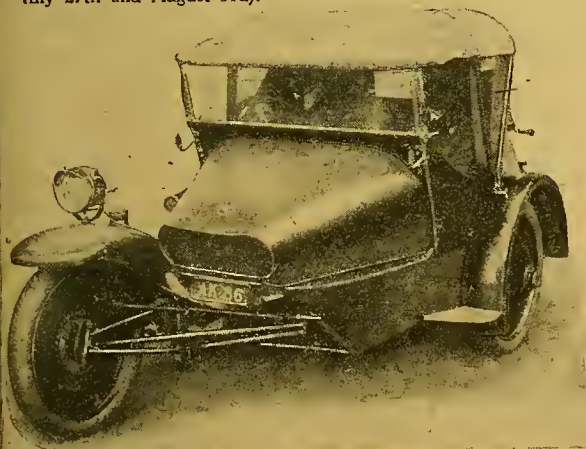
## Occasional Comments.—

account when the engine is encased, and does not come between the driver's calves. Decarbonisation is extraordinarily simple, as sidecarists accustomed to cleansing an 8 h.p. V twin mounted in a diamond frame will be the first to perceive. Altogether the alternative types of three-wheeler, and particularly the high-powered £120 type of sidecar, must face a very formidable rival indeed. Its main principle is singularly attractive, and the detail work, so far as it can be judged by eye or on paper, seems absolutely brilliant. At the moment of writing I have little information as to the resurrection of four-wheeled cycle cars after the war; but if a four-wheeled edition of the Scott three-wheeler could be listed at, say, £10 more than the present vehicle will cost, the most dangerous rival would be identifiable. In the meantime we do not know what the peace price of the Scott three-wheeler will be.

## Light Car Competition.

In all considerations of the future evolution of light two-passenger outfits, we have to keep a watchful eye on second-hand light cars, and especially when the question of £ s. d. is considered. The light car is in

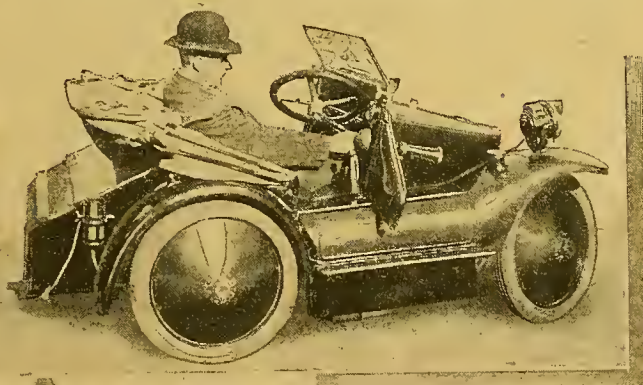
THE NEW 5 h.p. SCOTT THREE-SPEED SHAFT-DRIVEN SOCIABLE (Described exclusively in "The Motor Cycle" of July 27th and August 3rd).



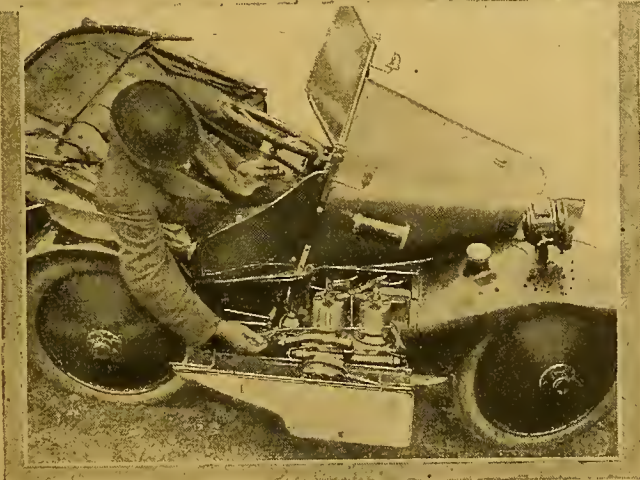
Shows the complete protection for driver and passenger provided.

its infancy, and its 1913 editions were admittedly poor stuff as compared with the 1915-1916 types. Yet these 1913 models are daily fetching upwards of £130, which is a lot of money for the class of buyer who merely seeks the cheapest satisfactory transport for two people. Moreover, the supply of second-hand light cars is still remarkably small, as the 1913 output was very limited; and the prices have been

raised at least 40% by the practical cessation of manufacture since August, 1914. In other words, within two years of the declaration of peace, there should be an almost unlimited supply of second-hand light cars available at about £100 apiece. Such a car as a 1913 Morris-Oxford, Singer, or other leading make, would be uncommonly good value at £100 to-day; and the £100 bargain of, say, 1919, will represent a little-worn 1916 Calcott (to name one make). Such alternatives will knock the £120 sidecar outfit clean off the market, one would think; will very seriously interfere with the production of cheap quads; and will limit the chances of such new introductions as the Scott three-wheeler, and render its retail price one of the main factors, if not *the* main factor, in its commercial success. One might confidently predict an enormous vogue for such a vehicle at, say, £75; but with every £5 advance towards £100 its chances of big sales would dwindle appreciably; and at £100 its market might even approach the problematical. For we must remember in all speculations and prophecies that the days will come when cars will be no longer sold, as bicycles once were sold too, for one, two, or three years' use, but for five, ten, or even fifteen years' work; and the history of the bicycle shows that the durability factor of mechanical transport machines lengthens out fairly rapidly, as design settles down. First cost will very soon be the dominant factor in the success or failure of the lighter two-passenger outfits; and uncertainty as to the future in this respect has deterred many big con-



Entrance from driver's side, a very desirable arrangement not found on many cars of much greater price and power. Observe tilting steering wheel.

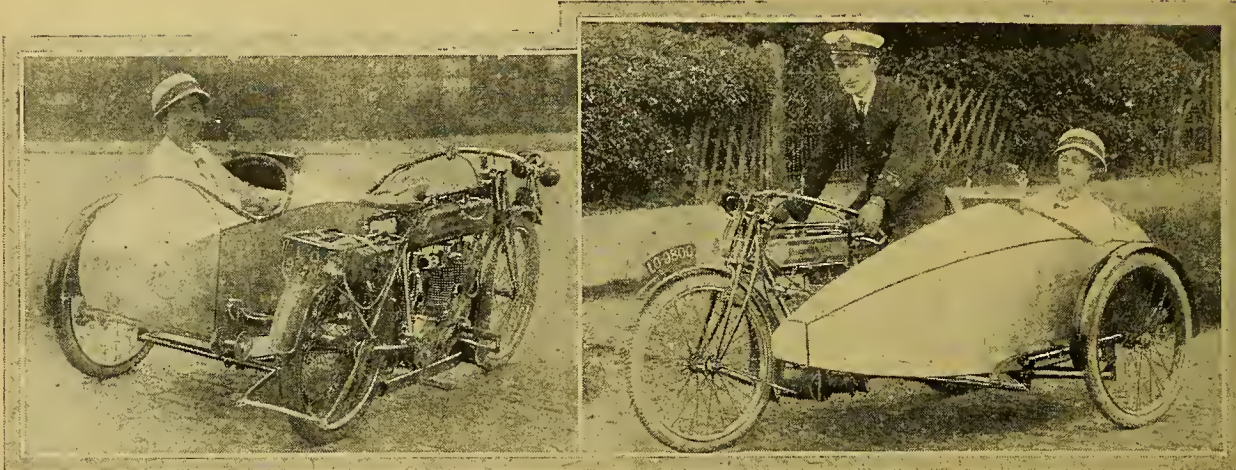


Engine exposed, showing extreme accessibility. The front mudguard forms the petrol tank.

cerns from dabbling with light three and four-wheelers, especially since the light car made good. Indeed, this truth forms the sole justification of those makers who continue to embody high-powered twin bicycles as the groundwork of costly passenger outfits; they have proved to be good temporary compromises; and innovations were certainly rather risky.



## An Aeroplane Type Sidecar Body.



A sporting sidecar attached to a 1913 model Rudge. The rear suspension is a novelty, being composed of elastic bands on the lines of an aeroplane's landing chassis.

THE smart-looking sidecar body herewith illustrated has been built to the design of a naval officer by a well-known firm of aeronautical engineers. It is constructed of a mahogany and ash framework covered with aluminium sheet. In order to combine extreme lightness with strength no door has been fitted; this also, of course, prevents the clean

lines being broken. It will be seen that the body closely resembles the fusilage of an aeroplane. The method of springing the rear of the body is decidedly novel, elastic bands being used in a somewhat similar manner to that in the shock-absorbing device on an aeroplane's landing wheels. We understand that this method of springing is perfectly comfort-

able, while the system is very worthy, owing to its simplicity and lightness. We are told that the body is only three pounds heavier than the old cane body which this one replaces.

The owner speaks in very high terms of his Rudge, which, although only a 1913 model, is capable of pulling a sidecar well.

## Improved Mudguarding.

THE middle of summer may not seem the most appropriate time for referring to the mudguarding of motor cycles, but the great room for improvement in this respect is sufficient excuse, if any be needed, for so doing.

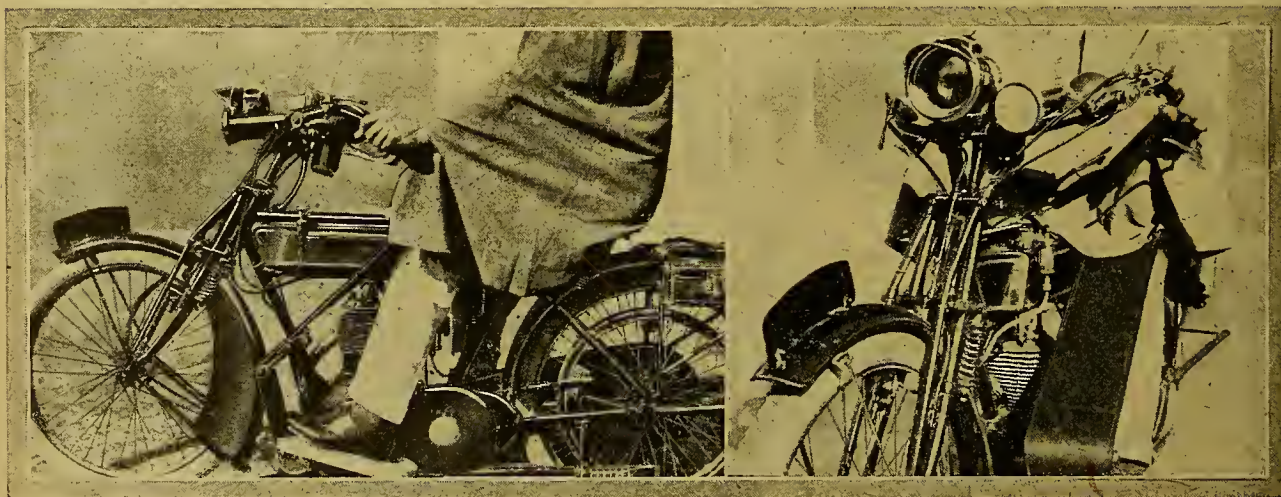
The auxiliary leather guards illustrated herewith are not new, sketches of this particular type having been published in *The Motor Cycle* of December 23rd last.

They are so practical, however, that the photographs showing them actually fitted to a Sunbeam will be of general interest. The inventor is Mr. J. A. Macgill, of Bangkok, Siam.

The guards consist of a couple of strips of varnished leather attached beneath the footboards, carried over a crossbar situated some six inches above the front of the footboards, and then

carried back and attached to another tubular crossbar situated in any convenient position on the top tube, preferably as near the rider's legs as possible. In conjunction with a good front guard, these strips afford excellent protection from mud, rain, and cold.

Mr. Macgill tells us that he has had the top crossbar nickel plated, which improves the appearance.



J. A. Macgill's auxiliary leather guards fitted to a 3½ h.p. Sunbeam.



## STEERING HEAD DESIGN.

### A POINT WHERE IMPROVEMENT IS OVERDUE.

**A**N interesting point was raised in *The Motor Cycle* by a correspondent in France in connection with steering head troubles, and it certainly is extraordinary that it has taken the test of war to bring this point into prominence, for it certainly is no new one. One piece of advice which is often given to prospective purchasers of second-hand machines is "to see that there is no shake or looseness in the head," but in view of the fact that few machines on the road can hold the steering head adjustment for more than about 500 miles, the advice is more or less superfluous. Under ordinary conditions, no doubt no serious trouble results, beyond the slightly increased tendency to sideslip which slackness anywhere in a frame produces, but to the mechanically-minded rider the disadvantages of a sloppy steering head are sufficient to make it a source of chronic worry.

There are several causes which combine to produce the trouble in question, most of which could be easily removed, as usually happens in such cases, if the matter were investigated. Most motor cyclists are familiar with the usual steering head construction, which is one of the few legacies of the push bicycle, now that pedals and the free wheel are happily things of the past.

#### Pressing in the Ball Races.

The head itself, shown in section in the diagram, usually a steel pressing or a malleable casting, is recessed top and bottom, and into this recess the grooved steel races are pressed. Now herein lies one of the difficulties, for in order that the load shall be equally distributed over all the balls, and not concentrated on a few, it is essential that the working faces of the two ball races should be truly parallel. Several possibilities of error arise: first the working surface or plane of contact of the balls may not be parallel with the face C of the ball races, the races themselves may not bed properly in the recess owing to a careless workmen allowing dirt or scale to remain in the recess, or not pressing them in squarely, and lastly the face D of the recess may itself be out of parallelism with the corresponding face of the upper race—an error that is exceedingly likely to arise even if truly square when machined on account of the distortion produced in brazing. If any of these errors arise a serious overloading of certain of the balls will take place, with a consequent rapid wear of both balls and races.

#### The Difficulties of Adjustment.

Another fruitful cause of trouble is the fact that the working face of the adjusting nut is almost certain to be out of square with the axis of the head, a point generally recognised in the design of ball thrust bearings; the consequence is that the top half of the upper ball race lines itself up with this untrue surface,

and thus throws the load to one side of the bearing, with the evil results already mentioned.

The next point in order of demerit is the adjustment, an operation calling for a great deal more skill and pains than it usually receives, especially in view of the fact that a ball thrust bearing may easily be given an initial axial load of as much as a ton by unskilful adjustment, and still work easily enough to escape notice. How often does one see amateurs—yes, and often mechanics who ought to know better—adjusting the head with the front wheel on the ground, and as long as the handle-bars turn fairly freely and there is no shake, the head is considered correctly adjusted. Obviously, it is impossible to tell by this method whether an initial and unnecessary load is not being applied to the bearing. Instead, the front of the machine should be supported, and preferably the front wheel removed, so as to make the "feel" of the bearing as sensitive as possible; but this is a refinement which is often rendered unnecessary by the shocking existing condition of the balls and races.

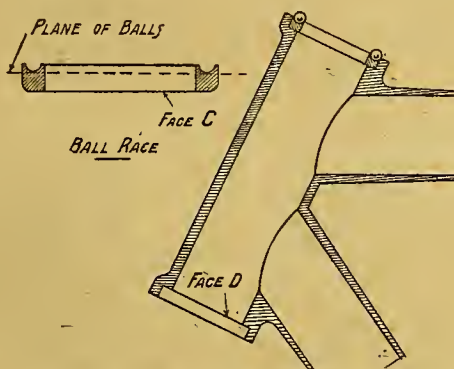
#### Larger Bearings Necessary.

To effect some improvement in this matter is not difficult when one considers in how many directions it may be attempted. In the first place, the size of the present bearings in nearly every case is hopelessly inadequate, and even at the expense of an unusually large head they ought to be increased both as regards diameter and size of balls. The adjusting arrangement is another point which requires considerable modification to ensure alignment, and, if at all possible, the length of head should be increased to reduce the journal loads which this long-suffering bearing has also to carry. A good lubricator, too, should be fitted.

#### Plain Bearings not a Remedy.

As regards the suggested solution of the difficulty by the use of plain bearings, there is not much hope in that direction. Plain bearings are neither necessary nor desirable, as readers of *The Motor Cycle* who remember the old plain bearing bicycle will know, for a dismount had to be made every ten miles or so for the purpose of oiling the wheel bearings. This, by the way, is the origin of the custom, still in vogue with the fair sex, of carrying an oilcan in the tool bag, to the great detriment of the appearance of the inside of the bag and the condition of one's fingers after opening it. At least I have never been able to obtain an explanation from any lady as to why she carries a messy piece of goods like the average cycle oilcan, which she never by any chance uses on the road; so I take it that, like other inherited and undesirable instincts, it is a vestigiary trace of the plain bearing bicycle.

ANTIDOTE.



Section of steering head showing how ball races are inserted.



# ECONOMICAL TRAVELLING.

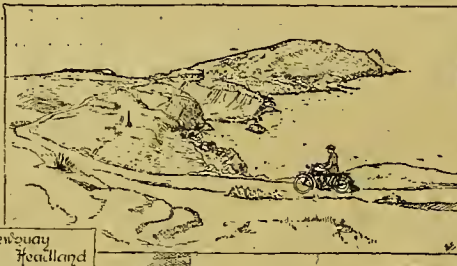
FIVE HUNDRED AND TWENTY MILES ON FOUR GALLONS OF PETROL.

**F**INDING that I had the inside of a week at my disposal, and having need to visit a relative in Cornwall, from motives of economy I decided to make the trip by motor cycle. I spent no time in tuning up my 3 h.p. Enfield or other preparations, took no spares, but a couple of sparking plugs, and left my home in the Midlands at about noon, intending to ride just so far as I felt inclined on that day, and to finish the journey on the next.

## The First Gallon.

My way lay *via* the Fosse Way, which south of Halford is rather narrow and with the surface of an ordinary country lane, rather rough, but far preferable to the pot-hole roads one often meets with on many main thoroughfares. I lunched at a wayside inn, not far from Fosse Bridge, where there is a steep drop and rise, sitting on a stone bench by the roadside, having so far covered about fifty miles.

The road was now wider and better. Cirencester was soon left behind, but when I had left the Tetbury Road and was nearing Malmesbury an ominous bump showed that the rear tyre was flat. This short account is not intended to be a record of tyre trouble, therefore it will suffice to say that my luck in tyres was out, and I had to remove the back cover no less than seven times. On the other hand, I had no involuntary stops except those in connection with tyres.



Newbury Headland



ALTERNATIVE ROUTES FROM THE MIDLANDS TO NEWQUAY  
(FOLLOWED BY THE WRITER OF THE ACCOMPANYING ARTICLE).

With occasional delays I passed through Chippenham, Melksham, Frome, Trowbridge, and Bruton. It was now beginning to get dusk, and I commenced to look out for a suitable stopping place. The inn at the pretty village of Sparkford was full, so I journeyed on to Ilchester, where I found comfortable quarters.

A run of about a dozen miles on the following morning, during which I passed by an ancient camp to the south of the road, brought me to Ilminster, where I took in a gallon of petrol.

## The Second Gallon.

At Ilminster I was advised to avoid Chard and take the direct road to Honiton. This I did, and found the road hilly, but not at all bad. From Honiton to Exeter the road was in excellent condition, and I enjoyed a capital run at a fairly fast pace. Exeter streets were pot-hole and bad—the worst roads I encountered during the trip—and I was glad to leave the city behind, but so long as I followed the Okehampton Road I found the surface bumpy. However, after about a couple of miles, I bore to the left and made for Moretonhampstead and Dartmoor. The road now ran through lovely scenery, but was very hilly—in some places it was



Glastonbury

well engineered, and wound in and out through the trees as it climbed the wooded slopes above the valleys; in others it seemed

to take a delight in ascending the steepest places. Far-rant's Hill, for example, being like the roof of a house, apex and all; when a *détour* of a

mile or so would have taken one round by the River Teign, here little more than a brook. Then followed the long rise (three miles) of Doccombe, where the road curls till it seems to be climbing in a spiral. Within a few miles I reached the wilds of Dartmoor itself; the climbs gave me no trouble, and I was able to run down the hills, which for the most part are straight, at about 35 m.p.h. with the engine at rest. The roads, which are sometimes rough, were in very good condition, and the day was glorious.

The ascent from Two Bridges past Princetown



**Economical Travelling.—**

was followed by two long descents; the first to Merivale Bridge is suitable for fast travelling until near the bottom, where there is a right-angled turn to the right, followed by a bend to the left just before reaching the bridge. Here I saw about 100 Dartmoor ponies of all ages and some twenty men looking over them. The next hill, Moorshop, is winding and needs care. Passing through Tavistock and over country which was still hilly, I soon crossed the Tamar into Cornwall, and was immediately faced with the stiffest climb I had encountered on the trip—the ascent through Gunnislake village. This was made rather rough by traction engine traffic. The road rises about 600 feet in  $1\frac{1}{2}$  miles. The view looking back towards Devon was magnificent, and reminded me of the cliffs above the Wye at Simonds Yat, with huge rocks standing boldly out amongst the trees.

My way now lay through Callington, Liskeard, down the lovely Glynn Valley, through Bodmin, and over Goss Moor, where there is about three miles of almost dead straight open road on a slightly falling gradient—a very fast stretch—to Indian Queen. Here I turned to the right through the twisty Colon lanes to Newquay—my destination.

**The Third Gallon.**

After a couple of days spent by the sea, I left for home on a drizzly morning, taking the coast road through St. Columb, Wadebridge, and Camelford, as the rain seemed likely to be worse inland. And so it proved, for when I turned away from the coast at the last place and crossed the moors to Launceston, it became much heavier, and I was glad to take

shelter and lunch at Lifton. The weather then improved, but, after skirting Dartmoor to Okehampton, I ran into another storm; however, the delay was not for long. Wishing to avoid Exeter, I made for Bow, but soon lost my way in the country lanes. Fortunately, a pretty girl in a car came to my assistance. At Crediton I turned to the left, taking the direct but hilly road to Tiverton.

The rest of the day's trip through Taunton to Glastonbury, where I stayed the night, was uneventful.

**The Fourth Gallon.**

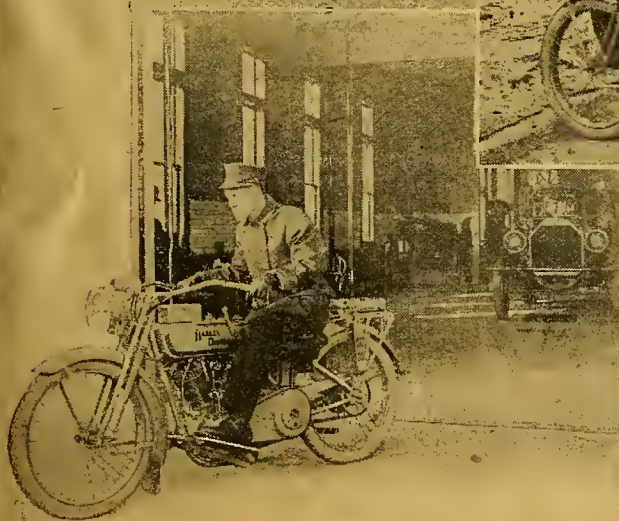
The next morning broke fine, but I did not make a very early start, owing to tyre repairs. Wells was soon passed. Then came a long climb over the Mendips and an undulating road to Bath. After turning off the London Road there is a two-mile ascent on to the Cotswolds, where there is a fine open run skirting some lovely parks, but passing through few villages, till one drops down into Nailsworth and Stroud. The road from Stroud to Cheltenham is very attractive, especially from Painswick to the foot of Birdlip.

There are tramlines all the way from Cheltenham, through Prestbury, to the top of Cleeve Hill, but, after being accustomed to seeing trams always taking the best parts of the road, it was pleasant to see them running unostentatiously in the ditch, and leaving the road almost unobstructed. At Broadway both tyre troubles and rain began, and my trip for the last forty miles was anything but pleasant.

In conclusion, I must pay a tribute to my machine,

**MOTOR CYCLES IN THE SERVICE OF FIRE BRIGADES.**

In America part of the equipment of all modern fire stations is a small fleet of motor cycles, which are very useful for clearing the way for the big motor engines and taking express messages, etc. These photographs show a typical Harley-Davidson fire machine, and it will be noted that four small extinguishers are carried on the carrier.



which ran excellently throughout, and climbed every hill on the route. The petrol consumption was very satisfactory. I had a small quantity in the tank before putting in a gallon at the start. The total distance of the trip was 520 miles, and I rode a further twenty miles before the last gallon was exhausted. The cost of this journey by rail would have been about 50s., and had I gone by train I should not have been able to pay a visit off the main route without further expense in carriage hire. The oil consumption amounted to about half a gallon.

So much for the economy of the motor cycle, even with petrol at its present price!

AURIGA.



## "Motor Cycles and How to Manage Them."

Some Notes on the 17th Edition of the oldest Handbook dealing with the Pastime.

THE seventeenth edition of "Motor Cycles and How to Manage Them" has just made its appearance on the bookstalls throughout the country. At first thought the present may not be considered an altogether opportune moment for bringing out a revised edition of such a book, however popular it may be. As a matter of fact, the demand for a handbook describing in simple language the principles of operation and the care and upkeep of motor cycles of all types has grown as a result of the war, the reason partly being the great expansion of the different military sections in which motor cycles are used. Many riders, with very slight technical knowledge, have joined motor sections, and they have found "Motor Cycles and How to Manage Them" of great use in "polishing up" their knowledge, and so making themselves more efficient soldiers. Then, again, the number of ladies and men above military age who have become motor cyclists continues to increase at a steady rate, and for all these a book such as the one under review is a *sine quâ non*. Hence for these reasons it has given us

opinions expressed therein are not merely one man's point of view, but a condensed composition of all the most useful and instructive features gleaned from all sources, and some of which have appeared from time to time in *The Motor Cycle*.

The revised edition contains a complete and comprehensive list of illustrations, there being no fewer than four hundred. The complete manner in which the book deals with each unit from the bicycle to the engine, gear

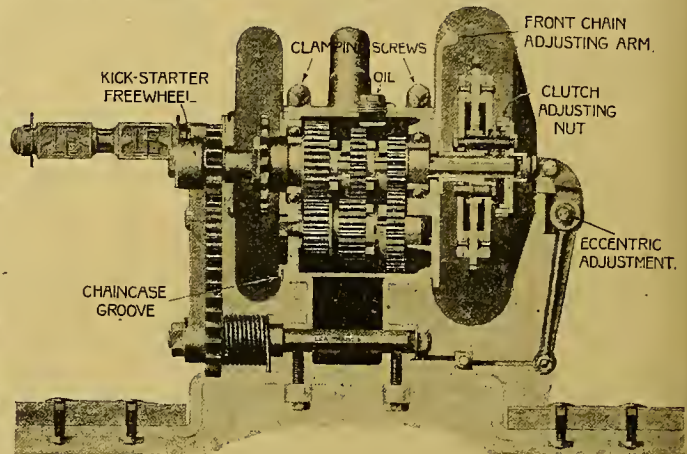


Fig. 42.—Sectional drawing of the three-speed Lea-Francis countershaft gear. (A typical illustration from "Motor Cycles and How to Manage Them," 17th edition.)

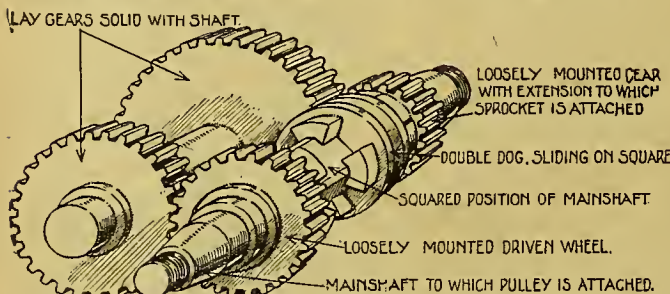


Fig. 32.—Interior mechanism of a simple two-speed gear box of the Douglas type. (A typical illustration from "Motor Cycles and How to Manage Them," 17th edition.)

pleasure in revising, under difficult conditions, the last edition of "Motor Cycles and How to Manage Them."

There are always newcomers to the ranks of motor cyclists, and it is undoubtedly to the interest of all novices to know as much as possible about the construction and the faults from which their machines may suffer, for, even though they may not be inclined to do their own repairs, it is as well to know what is wrong and what may be necessary to do to make the repair. Knowledge of the mechanism has always been both useful and interesting, but never before has it been so essential for the novice to have some knowledge of his mount as it is to-day, with garages depleted of men and the manufacturers' works engaged on munitions, so that private repairs are delayed, if carried out at all. It will, therefore, interest the many newcomers to the ranks of motor cyclists to know that the latest edition of "Motor Cycles and How to Manage Them" is now on sale. This handbook, which is the oldest manual dealing with the pastime of motor cycling, has been compiled and revised from time to time entirely by practical motor cyclists, and the views and

two-stroke lightweight necessary to give this type of engine more prominence than in previous editions, and a special section is devoted to the principle of working of the different types of two-stroke engines, and many useful tips on rectifying faults peculiar to this type are given.

The more experienced motor cyclist will find much to interest him; for instance, the chapter on the balancing of motor cycle engines, illustrated descriptions of different makes of machines and accessories,

cubic capacity table, speed tables, and much other most useful information.

### Change Speed Gears.

The mechanism of change-speed gears is a subject which puzzles a good many practical motor cyclists; the various types of change-speed gear have, therefore, received very special attention, and, with the aid of sectional drawings and diagrams, every rider who takes an interest in the mechanical features of his machine should be able to follow the working of any change-speed gear fitted to a motor cycle.

The lady motor cyclist has been carefully catered for, and a special chapter written by a lady motor cyclist deals with feminine requirements. In fact, "Motor Cycles and How to Manage Them," complete as it was in previous editions, now contains all the information any motor cyclist is likely to require from A to Z.

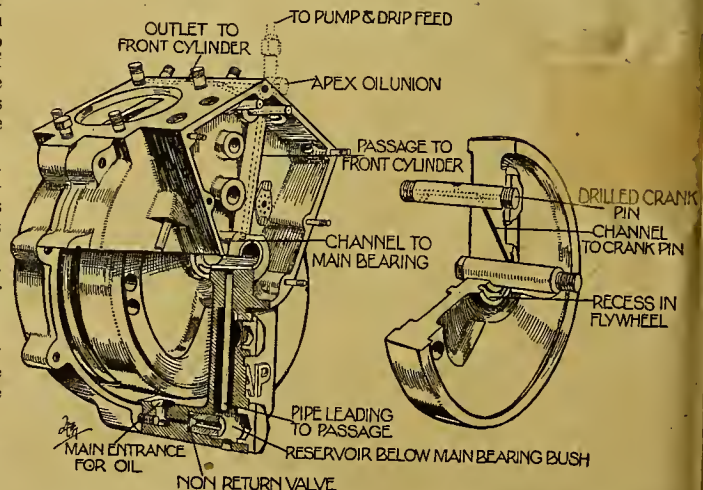


Fig. 12.—Crank case and flywheel of a J.A.P. twin-cylinder engine, showing arrangement of the lubrication system. (A typical illustration from "Motor Cycles and How to Manage Them," 17th edition.)

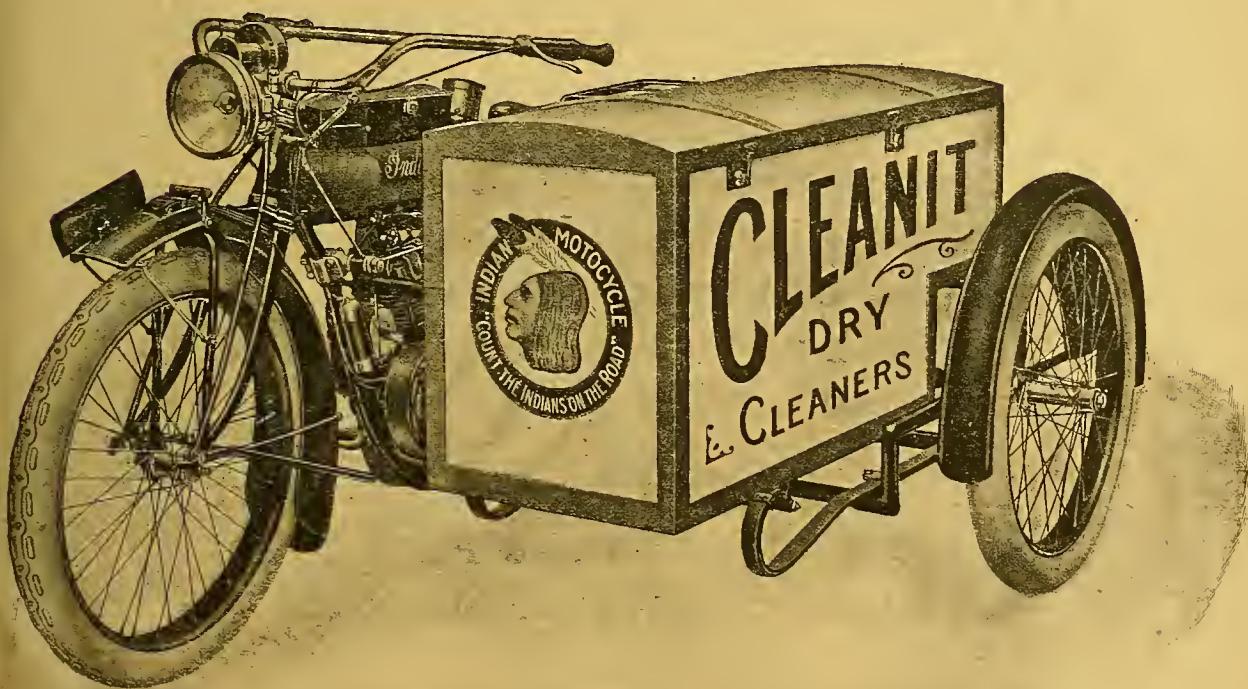


# Use your motor cycle as a delivery van

We have a quantity of

# Indian

## PARCEL CAR BODIES



As shown in illustration, suitable for almost any sidecar chassis.

### DESCRIPTION.

The INDIAN PARCEL CAR is most substantially made with Ash ribs and 6 mm. 3-ply board. It is divided into two separate compartments, the front accessible through a hinged top with two spring locks, and the rear compartment by means of a door opening outwards, which is provided with a lock and key. The overall dimensions of the PARCEL CAR box are 48in. long, 19in. wide, and 24in. deep. Enamelled Indian red, nickel fittings.

**PRICE, BODY ONLY, £3 F.O.B. London.**

*In answering this advertisement it is desirable to mention "The Motor Cycle."*

**Hendee Manufacturing Co.**

"Indian House,"

366-368, Euston Road, LONDON, N.W.

Telephone: Museum 1643.

Telegrams: "Hendian, Eusroad, London."

Irish Branch—10, Wicklow St., Dublin.

Australia—109-113, Russell Street,  
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Canadian Works—12-14, Mercer Street,  
Toronto.



# WARNING!



It has come to our notice that Valves stamped with the letters "B.S.A.," and stated to be suitable for B.S.A. Motor Bicycles, are being offered for sale.

The unwarranted use of the letters B.S.A. in any form is an infringement of our trade mark rights, and proceedings will be instituted against offenders.

Genuine B.S.A. Valves are stamped on the head with three Piled Rifles and letters B.S.A. (as illustrated).

THE BIRMINGHAM SMALL ARMS  
COMPANY, LIMITED, . . . . .  
13, SMALL HEATH, BIRMINGHAM.

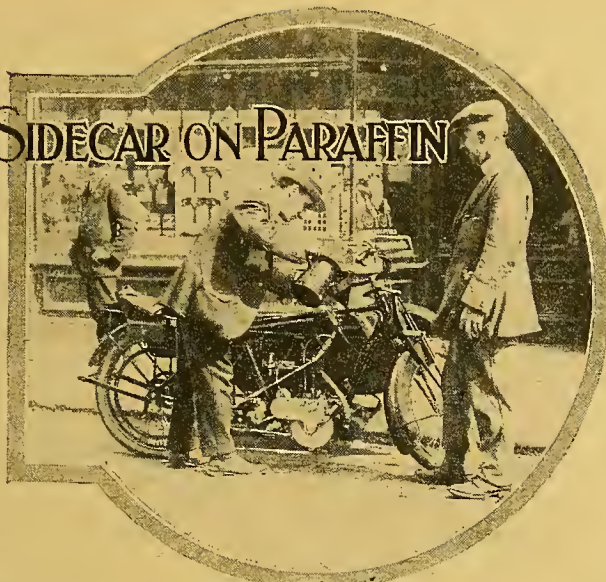


*Latest Catalogue of B.S.A. Motor Bicycles free on request.*



## DRIVING A SIDECAR ON PARAFFIN

A Test of the  
QUADRANT  
PARAFFIN  
VAPORISER  
using "Lamp  
Oil" at 1s. per  
gallon.



Filling up with paraffin at a shilling per gallon. Mr. T. Silver, designer of the vaporiser fitted to the Quadrant, on the right.

OUR brief trial of the post-war  $3\frac{1}{2}$  h.p. Quadrant described in our issue for August 3rd induced us to arrange for a more exhaustive test with the paraffin vaporiser.

Mr. Tom Silver accordingly placed the machine and sidecar at our disposal, with the auxiliary tank filled with petrol. The main tank was empty—in fact, bone dry—and, driving on the lighter fuel, we repaired to an oil shop to fill up with paraffin.

The  $85 \times 88$  mm. engine started at the first kick down of the starter pedal, and we moved off, with Mr. Silver driving, so smoothly and quietly that our first impression of the  $3\frac{1}{2}$  h.p. Quadrant was its silent running.

After a few minutes' running we turned off the petrol and opened the paraffin tap. The air lever had been fully open, and, without changing the positions of either the air or the throttle, we continued our way without noticing any difference in the running. The vaporiser was now warm, but it was still possible to bear the hand upon it.

After several miles had been covered the vaporiser was much warmer; but the running was not materially affected, which rather proved that a very high temperature was not so necessary as might be considered, although the higher temperatures probably would have a beneficial effect upon the engine lubrication, for incompletely vaporised fuel would tend to wash the film of oil from the cylinder walls. On this point it is interesting to note that a more frequent use of the oil pump did not appear to be necessary when paraffin was used.

### Fixed Magneto Timing.

We now called a halt to take the driver's saddle, while Mr. Silver became the passenger. On looking round the controls we noticed the absence of a magneto lever, and were informed that this had been taken off in order that the conditions should be exactly the same for both petrol and paraffin. The timing of the ignition was the Quadrant standard practice, i.e.,  $\frac{3}{16}$ th before the top of the stroke.

The vaporiser by now was almost cool, and, with the air lever fully open and

the throttle about a third open, we continued the run. We found no difference in the driving, and only succeeded in creating a knock under conditions which would have produced similar results with petrol.

### A Light Sidecar.

The first impression in the saddle was one of extreme lightness—in fact, it reminded us very much of the sidecarrette, and enquiry revealed the fact that, despite the coachbuilt sidecar, the weight complete was only 296 lb. We had driven another  $3\frac{1}{2}$  h.p. sidecar the day before, and this weighed 386 lb., hence the light weight of the Quadrant was a decided change.

A drove of cattle emerging from a side road necessitated a quick pull up. However, we were able to pick up speed again without resorting to a lower gear, but for the first time we noticed a difference with paraffin, as it was not possible to accelerate so quickly.

Our objective had been a hill of about 1 in 8 gradient, which we knew sufficiently well to form a comparative test. This hill usually compels the  $3\frac{1}{2}$  h.p. sidecar owner to change down, and we know the exact spots where we have changed down on similar machines and also the speeds at which it has been surmounted. There is a narrow bridge at the foot of the hill which precludes high speeds, and, all things considered, the hill provides a good test for our purpose. We halted about half a mile from the hill in order to verify the pipe connections. We disconnected the unions to make sure that when the petrol tap was turned off

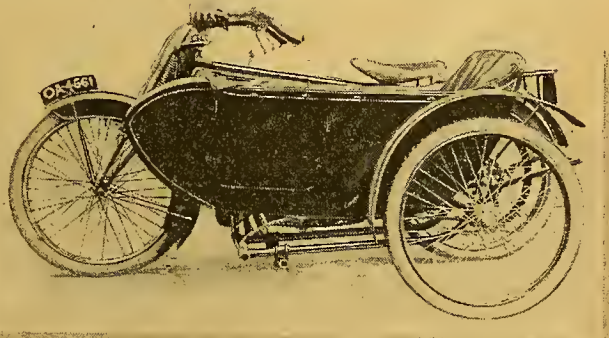
there was no possibility of the spirit percolating through to the carburetter, and, after feeling the vaporiser and cylinder for comparison on a later test with petrol, we resumed the journey, and the hill was climbed with ease and good speed. Turning at the top of the hill, we traced our way to our previous halting place, and, after waiting until the cylinder was approximately the same temperature as when starting on the paraffin test, we re-climbed the hill with petrol, but with no other apparent advantage than a slightly higher speed.

### Starting after a Stop.

Changing over to paraffin again, we journeyed on. To turn the taps is quite a simple matter while under weigh. A further few miles, and we called a halt for tea. When we came to start up again the vaporiser was almost cold, and we realised that we had omitted to change over to petrol before stopping; hence the carburetter was full of paraffin. Should we disconnect the union and drain the float chamber, or try just a priming of petrol? Although anticipating failure, we tried the latter. Even Mr. Silver was doubtful, but the engine fired and continued to fire.

We were very favourably impressed by the Quadrant vaporiser, and, for the summer months at least, the device seems to solve the present fuel problem. From our test there does not appear to be any of the usual disadvantages connected with the use of paraffin. There is no black smoke from the exhaust, nor acrid fumes. Overheating does not take place, neither does the plug soot up, as is sometimes the case when heavy fuels are used. Maximum speeds are not so good as with petrol, probably due to the fact that it is impossible to open the throttle fully for want of more air than the petrol carburetter will give, therefore it would appear that an extra air inlet in the induction pipe, such as is used on cars, might increase the range of throttle supply.

Mr. Silver hopes shortly to be in a position to deliver the fitment complete with auxiliary tank at an approximate price of 25s. In ordering it is only necessary to state the make of engine and size of induction pipe, but it would probably assist if the induction pipe were sent. The fitment will form part of the standard specification on all post-war Quadrants.



The new Quadrant passenger machine on which the paraffin test was made. A light coachbuilt sidecar was fitted, the complete weight being 296 lb.



## MILITARY AND NAVAL NOTES.

## A GLIMPSE AT THE M.M.G.S.

GUNNER J. MARSDEN, of the M.M.G.S., in an interesting letter from the Front, tells us that the Clynos and Triumphs stand a really extraordinary amount of knocking about, the roads being bad enough to ruin the heaviest tractors. He also says that the M.M.G.S. are doing fine work in France, for they can move about so quickly. When the men go into the trenches for a few days the cycles are left behind and they go in cars, but in general, when moving from place to place, the sidecar outfits are employed.

## THE RANK OF D.R.'s.

A DESPATCH rider (R.E.) has written to ask whether he has the same rank as the regimental N.C.O.'s. He says that the D.R.'s are given punishments which would on no account be given to the regimental N.C.O.'s, but that, at other times, they are reprimanded for not acting as such.

## STOLEN MACHINE RECOVERED.

WE hear from L.-Cpl. Godsell, who is with the 11th Light Armoured Motor Battery in Egypt, that he has recovered his stolen motor cycle after six months. This was the result of a notice in *The Motor Cycle*. He tells us that his battery is using Douglas and Triumph motor cycles. The latter especially are doing very well out there in spite of the sand, through which they pull in a most excellent manner.

## A LUCKY SPARE.

CPL. M. TANNER, a despatch rider attached to the R.E. Signal Service, who rides a three-speed Triumph, writes as follows:

"It may perhaps interest you to know how a Clyno outfit offered me great assistance in a tight corner out here some little time ago. I am on special duty that takes me nearer to the line than is generally allowed, and naturally at times it is warmer than desired. It was on one of these occasions that I had the misfortune to break my exhaust valve. After a series of sprints and 'taking covers,' I came across a gunner with a Clyno from which I 'bagged' a valve which fitted O.K. with about 1/2 in. clearance after tappet adjustment, but nevertheless carried me back to semi-civilisation, where I was able to get a Triumph valve."

## MOTOR CYCLING IN GREECE.

A DESPATCH rider whose regiment has spent seven months in Egypt, three in Gallipoli, and six in Greece, considers that road conditions around Salonika are worse than anywhere else. The so-called roads are rough in the extreme, and the motor cyclists have to cross mountain ranges and wade through many rivers. The rider in question, Cpl. H. Russell, concludes with a word of praise for his Triumph and the Sturmey-Archer gear. The only improvement he suggests is a little more ground clearance.

## ANOTHER MOTOR CYCLIST AIRMAN.

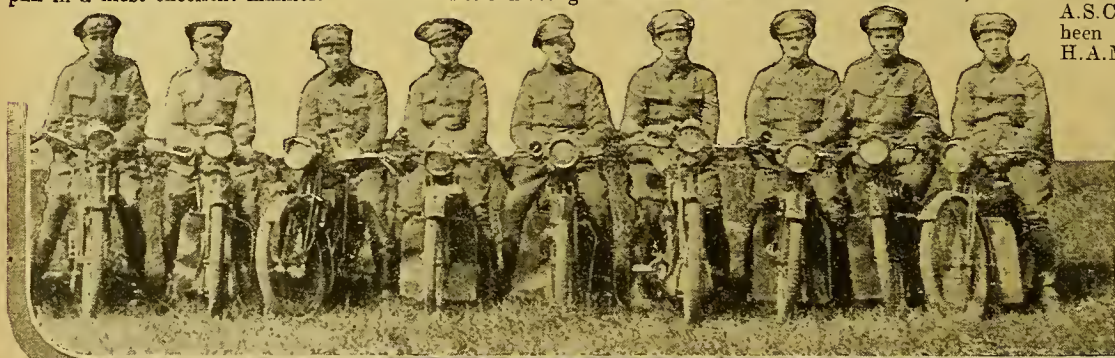
WHILST in Wolverhampton recently we met H. R. Davies, the well-known Sunbeam rider, who tied for second place with O. C. Godfrey in the last Senior T.T. Race.

A short time ago he transferred from the R.E.'s, in which he had a commission for some considerable time, to the R.F.C. He now has his ticket, which he obtained after only a little over two hours' flying on a dual-controlled machine.

## A FINE PERFORMANCE.

MR. TUDOR-HART, who is partner with Mr. Robertson Brown in Robertson Motors, Ltd., is, we regret to say, reported as missing. After joining the Inns of Court O.T.C., he was gazetted Second-Lieutenant in the Northumberland Fusiliers, and at the end of last year was transferred to the Royal Flying Corps. He was one of the heroes of a thrilling fight in the air on June 25th, which called forth the following words of praise from the G.O.C. of the 4th Brigade R.F.C.: "The Army Commander wishes to convey to Capt. W. A. Summers and Lt. W. O. T. Tudor-Hart his appreciation of their bold and plucky performance, which reflects great credit on the pilot and observer."

F. C. Dee, who is quite an old-time motor cyclist and a member of the M.C.C., is now a lieutenant in the A.S.C., and has lately been posted O.C. to an H.A.M.T. Section.



DESPATCH RIDERS OF THE  
67TH DIV. SIG. COY., R.E.

(Top row) Reading left to right : Sgt. H. Leadley, Art.-Cpl. S. Adams, Cpls. F. E. Winter, S. S. Spencer, W. F. J. Harvey, A. Upperton, A. T. Reeve, G. Birkett, and H. F. Tomlin.

(Bottom row) Reading left to right : Cpls. K. R. Gates, G. W. Pearce, S. V. Spiller, H. S. Hunter, T. R. Braybon, P. Grinstead, and W. F. Garrett.





# "THE MOTOR CYCLE" RECRUITING SECTION.

Last Week's Recruits.

Further Inspections Arranged.

INSPECTIONS of recruits for the Motor Machine Gun Service were held at the Coventry Recruiting Office on Tuesday, and at the Recruiting Office, Stanford Street, Nottingham, on Wednesday last. The names of those motor cyclists and car drivers accepted will be found in the list given below.

Aspin, J. W., Ossett.  
Bond, G. S., Taunton.  
Bursall, W., Beverley.  
Chapman, E. B., Gloucester.  
Collier, H. W., Gloucester.  
Comery, H., Long Eaton.  
Dennis, F., Cleethorpes.  
Dunstan, G. C., Nottingham.  
Garrett, H., Harrogate.  
Gibbons, K. M., Stoke-on-Trent.  
Gillett, E. T., Ealing.  
Hillas, H., Bradford.  
Johnson, G. B., North Shields.  
King, G. H., Coventry.  
Massey, W. J., Kirton Lindsey.  
Nixon, W., Nottingham.  
Penn, E., Coventry.  
Pikett, G. A., Mansfield.  
Reeve, C. V., Norwich.  
Ridgway, H., Birmingham.  
Seaman, H. G., Norwich.  
Seddon, R. E., Acton.  
Smith, W., Coventry.  
Wilden, R. J., Northamoor.  
Young, A., Warwick.

## Central Office for Motor Machine Gun

### Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

Appointments with another group of candidates had been arranged for Tuesday this week at the Coventry Recruiting Office, whilst on Saturday next Mr. Geoffrey Smith will be in London, and on Tuesday in Coventry, in order to examine and accept suitable recruits.

Full particulars of enlistment and a form for filling in purposes may be obtained on application, whilst the conditions of enlistment are mentioned on this page. Those prospective recruits conforming to requirements, and who are ready to join up at once, may attend any of the inspections outlined on this page. The two next dates arranged are:

LONDON.—The Motor Cycle Offices, 20, Tudor Street, E.C., Saturday, August 12th, 2.30 p.m. to 4 p.m.

COVENTRY.—The Recruiting Office, Little Park Street, Tuesday, August 15th, 2.30 to 4 p.m.

A free railway warrant will be issued to prospective recruits living at a distance, if the applicant will previously get examined before the Medical Board for his district.

The amended conditions of enlistment in the Motor Machine Gun Service are given hereunder:

EXPERIENCE.—At least one year's motor cycle or car driving experience.

AGE.—18 to 40.

ENLISTMENT.—For duration of the war.

MEDICALLY FIT.—For general service or for garrison duty abroad.

PAY.—1s. 2½d. per day, all found; the usual separation or dependants' allowance.

## PETROL IN THE HOUSE.

Official Figures.

Hopes of the Future.

The Use of Substitutes.

THE petrol supply problem was thoroughly "aired" in the House of Commons on Tuesday of last week, and, though many of our readers doubtless read in the daily press the important speech on the subject made by Mr. Lewis Harcourt (First Commissioner of Works), the subject is of such interest to all our readers as to warrant the main facts made public being placed before them.

The debate was opened by Sir F. Banbury, who criticised the Petrol Control Committee for its lack of discrimination in dealing with claims. Mr. Harcourt then made an official statement on behalf of the Committee, and in the course of his speech the following figures were revealed:

Licences applied for .. .. .	324,000
Private car licences .. .. .	110,000
Demand by civilians (private and commercial) .. .. .	153,000,000 gals.
Available per annum .. .. .	70,000,000 "
Licences issued for .. .. .	75,000,000 "
Available per month for private cars .. .. .	700,000 "
Ditto motor cycles .. .. .	181,250 "

What every motor cyclist would like to know, of course, is what will be the position at the end of three months—will the amount be increased or decreased? On this point Mr. Harcourt could make no promise, merely stating that he hoped that the time we should have to go short might be measured by a few months.

### Not Sufficient Tankers.

The whole trouble, apparently, is due to the lack of tankers, and Mr. Harcourt stated that he hoped the Admiralty would soon be in a position to supply more of these vessels, and so release petrol tankers which are now used for the purpose of bringing the heavy oil for naval purposes. Incidentally, it was

mentioned that the unforeseen and unforeseeable rapidity of output of oil-driven battleships is closely connected with the foregoing. The question of Sunday motoring also came up, and Mr. Harcourt said that its prohibition may yet come.

The scarcity of ships to bring petrol to the country does not, however, explain the lack of discrimination displayed in dealing with claims. Mr. Harcourt said it would be impossible to make detailed enquiries in the case of 324,000 owners. Granted! But surely some discrimination could have been shown between extreme cases, such as the purely pleasure rider and the man who uses his machine solely for business, both stating frankly on their application cards the purposes for which they used their machines. According to Mr. Harcourt the Control Committee hopes to give further consideration to individual cases as time permits. In the meantime motor cyclists must be satisfied with their half-gallon of petrol per week, and avail themselves as far as possible of the use of substitutes. On this subject, however, we direct attention to a leading article in this issue, which urges that substitutes may not be adopted indiscriminately, and gives two valuable tips. We have devoted a good deal of space in *The Motor Cycle* during the past few months to experiences of our own and our readers with paraffin and other substitutes, and this week's issue contains a description of a run on a 3½ h.p. single-cylinder sidecar running on an all-paraffin mixture with most satisfactory results. The conclusion arrived at from these experiences is that all motor cyclists will find it well worth while to experiment with these cheaper fuels.

It is possible that with a wholesale adoption of paraffin mixtures a shortage of that fuel may occur, and it has been

pointed out that if the shortage of petrol is due to lack of tankers the same result will be arrived at with paraffin as soon as its consumption has risen to a certain figure. The price may rise, but it does not seem likely at the moment that there will be any immediate shortage of paraffin, though international affairs and home conditions alter so quickly that it is not safe to prophesy.

### Protesting Too Late.

Some surprise and regret has been caused among motorists and motor cyclists generally that the motoring organisations did not band themselves together for the purpose of looking after the interests of their members earlier than they did, i.e., a fortnight ago. We announced the decision reached at the first meeting, i.e., to offer the assistance of the representative bodies to the Petrol Control Committee in carrying out the new distribution scheme, in our last issue. But this was much too late, and the only hope is that they will look after the interests of motor vehicle owners by keeping closely in touch with future developments of petrol distribution and supply.

### READER'S TEST OF A PETROL SUBSTITUTE.

In these days any fuel that can take the place of petrol is eagerly sought for by motor cyclists. Our readers will, therefore, be interested to hear that we have received a letter from a correspondent who has been using Kempol with very satisfactory results. This rider first used it mixed with a small quantity (20%) of petrol and afterwards by itself. He found that no alterations were required to the carburettor—an Amac. The machine was a 6 h.p. Clyno sidecar.





## TIME TO LIGHT LAMPS

"SUMMER" TIME.

Aug. 10th	...	9.2 p.m.
" 12th	...	8.59 "
" 14th	...	8.55 "
" 16th	...	8.50 "

### Police Traps and the War.

A lady fined at Willesden for exceeding the speed limit wrote that "police traps would never win the war."

### Government Sidecars on the Wrong Side.

Sidecars are still being supplied for use in France attached to the left-hand side of the bicycle, though on the Continent the rule of the road is the opposite to ours.

### We are not Surprised!

20,000 letters are received daily by the Petrol Committee, says Mr. Lewis Harcourt. No doubt a good proportion represent appreciation by motor cyclists of the generous treatment accorded to them! Half a gallon a week in mid-summer!

### Petrol for Volunteers.

Mr. S. W. Philpott, motor cycling officer of the Liverpool Motor Volunteers, tells us that he understands that Volunteer Headquarters may be able to make arrangements with the Petrol Committee to enable motor cyclists of the National Volunteer Corps to obtain petrol at ordinary prices for necessary purposes.

### Adulterated Petrol.

A reader writes complaining in strong terms of the fact that he has purchased petrol which has obviously been adulterated. His denunciation of the petrol companies in extracting the last farthing for their spirit, and then adulterating their spirit on top of this is certainly deserved if it can be proved to be true. Has any other reader noticed any difference?

### More Petrol for Motor Cycle Road Surveyors.

Assistant county surveyors who ride motor cycles in the course of their profession will, we understand, have their claims for additional petrol considered by the Board of Trade. This will be a comfort to, amongst others, our correspondent, Mr. T. Golsworthy Crump, who uses his motor cycle for this particular work. He is one of the oldest motor cyclists in the county of Somerset, and a prominent member of the Taunton and District M.C.C., which was of great value to the A.C.U. on the occasion of the last trial held in that part of the world.

## SPECIAL FEATURES

MORE TESTS OF CHEAP FUELS. TO TEST A CARBURETTER FOR WASTAGE.  
THE 1916 A.B.C. MOTOR BICYCLE.

### The Hard Worked Petrol Committee.

It took eight days to issue a petrol licence to a member of our staff, though he posted a cheque immediately on receipt of the notification of allotment.

### Popularity of the Half-and-half Mixture.

The owner of a 2½ h.p. Popular Levis informs us that he is getting excellent results with half petrol and half paraffin. On this mixture he says the machine runs most satisfactorily, and starts without injection.

### Paraffin Fuel.

Many motor cyclists have the idea that a motor cycle will refuse to fire on paraffin unless a proper vaporiser is fitted. A motor cyclist who was compelled to make a journey of about forty miles with a 5-6 h.p. twin fitted with a Senspray carburetter was unable to obtain any petrol. He accordingly emptied the last few drops of petrol from his tank into an oilcan and filled up with a gallon of ordinary paraffin. He was astonished to find that after injecting the usual amount of petrol into the cylinders for starting the engine fired at the first kick, and continued to run perfectly. The driver assures us that had he not seen the paraffin put in, and for which he paid 1s., he would never have detected any difference in the running. The warm weather undoubtedly makes a big difference when experimenting with petrol substitutes.

### Inaccessibility.

On a new machine which has lately come into our possession the compression tap in each cylinder was loose and that in the rear cylinder was leaking badly. Imagine our horror when we found that the inlet pipe had to be detached from one cylinder and the exhaust pipe from the other before the defects could be remedied.

### National Motor Volunteers.

The motor cyclist section of the Liverpool Motor Volunteers held a parade on Wednesday evening, August 2nd, for the purpose of obtaining motor cycling recruits. About twenty N.C.O.'s and men, with two motor cycle officers, left Sefton Park end of Queen's Drive, and followed a route which practically encircles the city. At every main road or convenient spot a halt was made, and every motor cyclist passing that way was stopped and asked to join the National Motor Volunteers, all the advantages of which were also pointed out to them. They all took the stoppage in good part, though one or two appeared to think they had been stopped by the military authorities for the purpose of having their machines examined. The meeting was a success, and several fresh members obtained.

### An Economical Two-stroke.

In these days of greatly reduced petrol supplies the record of a reader who has run nearly 4,000 miles on a two-stroke Connaught is of interest. Over a distance of 3,850 miles his petrol consumption has averaged 137.5 miles—a remarkably good performance.

### Bad Feeling.

Motor cycle traders in Dodge City, Kansas, U.S.A., have received a shock in the form of an order from the municipal authorities ordering them to move their garages and repair shops from the main business district within ten days. Such high-handed action is difficult to understand. Legal authorities of the motor cycling associations are coming to the assistance of the agents concerned.

### Average Prices of Second-hand Machines.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average that appeared is given, if within four weeks.

Make.	Year.	H.P.	Average for last week.	Latest average obtainable.
A.J.S.	1914	6 3-sp. sidecar	£75	—
"	1916	2½ 3-speed	£54	—
"	1915	6 3-sp. sidecar	—	£92
Allon	1915	2½ 2-sp., 2-stroke	£32	—
Bradbury	1913	4 3-speed	£28	—
"	1914	4 sidecar	—	£37
B.S.A.	1916	4 3-sp. sidecar	£68	—
"	1914	4 3-speed	£41	—
Calthorpe	1915	2½ 2-speed	—	£28
Clyno	1914	6 3-sp. sidecar	£50	—
Chater Lea	1914	6 sidecar	£44	—
Douglas	1915	2½ 3-speed	£42	—
"	1915	4 3-speed	£57	—
"	1914	2½ 2-speed	£37	—
"	1913	2½ 2-speed	£32	—
Enfield	1914	6 2-sp. sidecar	£57	—
"	1915	3 2-speed	—	£40
"	1914	3 2-speed	—	£31
H.-Davidson	1915	7-9 3-sp. sidecar	£63	—
Humber	1913	3½ 3-sp. sidecar	—	£35
Indian	1915	5 3-speed	£51	—
"	1916	Powerplus sidecar	£85	—
"	1914	7 3-sp. sidecar	£60	—
"	1913	7 2-sp. sidecar	£38	—
James	1915	4½ 3-sp. sidecar	—	£62
"	1914	4½ 3-sp. sidecar	£42	—
Lewis	1915	Popular	£25	—
"	1914	2-speed	—	£27
Matchless	1915	8 3-sp. sidecar	£67	—
"	1914	8 3-sp. sidecar	£50	—
New Hudson	1915	2½ 2-speed	£24	—
"	1915	4 3-sp. sidecar	—	£59
"	1913	3½ 3-sp. sidecar	£39	—
New Imperial	1915	2½ 2-speed	£26	—
P. & M.	1914	3½ 2-sp. sidecar	£48	—
"	1913	3½ 2-sp. sidecar	£35	—
Premier	1914	3½ 3-sp. sidecar	£40	—
Rex	1914	6 2-sp. sidecar	—	£51
Rover	1914	3½ T.T.	£35	—
"	1914	3½ 3-sp. sidecar	£42	—
Rudge	1914	3½ Multi sidecar	—	£39
"	1913	3½ Clutch	£28	—
Scott	1914	3½ 2-speed	—	£38
Sunbeam	1914	6 3-sp. sidecar	—	£69
"	1916	3½ 3-speed	—	£70
Triumph	1915	2½ 2-sp. 2-stroke	—	£35
"	1914	4 3-sp. sidecar	£44	—
Williamson	1914	8 2-sp. sidecar	£53	—
Zenith	1913	6 Gradua sidecar	£37	—



**Smelly Exhausts.**

During the last few days the exhaust of most motor vehicles is reminiscent of the pungent odours associated with engines of the early days. This is undoubtedly due to the fairly general use of petrol substitutes or petrol mixtures in carburettors either incorrectly adjusted or unsuited to their use.

**Petrol Requirements.**

The petrol asked for by some car drivers would keep many motor cyclists on the road for lengthy periods. For instance, Mr. H. Massac Buist refers in *The Car* to a family of two persons who have asked for 300 gallons per month. Assuming that they drive on thirty days in each month in cars capable of averaging 20 m.p.g., this means a joint distance of 200 miles a day. What their allotment was we have no means of knowing, but we hope two gallons a month.

**The Transport of Wounded.**

Sitting up cases might quite well be transported from the hospital trains to the hospitals by sidecars during the fine weather. The London Ambulance Column, which carries hundreds of thousands of patients per annum in privately owned motor vehicles, will not countenance their use. More's the pity, we think, especially as the reason is ignorance of the comfort of the sidecar. This course has been followed in Coventry. See photograph on page 100 of our last issue.

**Petrol Restriction and Week-end Traffic.**

We rather anticipated a marked decrease in motor traffic on the roads during the week-end, due to the difficulty of obtaining petrol, but normal numbers were to be seen, while in the vicinity of the Thames we noticed no apparent depletion in the numbers of motor-propelled craft. One of three things is evident—that motorists are making a splash with their full month's supply, that numbers still have a good stock, or are eking out their allowance with paraffin or petrol substitutes; the latter seems the most likely, as the somewhat noticeably smelly exhausts denote.

**The N.C.U. Prisoners of War Fund.**

This fund was originated last summer when it was discovered that several cyclists were prisoners of war in the hands of the Germans, and entirely without food parcels from England. The fund is an excellent one, and has done much to alleviate the sufferings of those who have been taken prisoners, and it is interesting to note that several motor cyclists are among the number of prisoners receiving relief. Funds are very urgently needed, and should be sent to the Secretary, the N.C.U., Lonsdale Chambers, 27, Chancery Lane, W.C. One prisoner, Mr. W. R. Wuest, appealed for relief through the Auto Cycle Union, which forwarded the postcard to *The Motor Cycle*, which in turn sent it to the right quarter, and on receiving his parcels he has written the N.C.U. a very grateful postcard. He is especially thankful for receiving bread parcels. Another motor cyclist, Mr. Gordon Fielding, as well as Mr. Wuest, was touring the country when war broke out, and was interned.

**Petrol from Canada.**

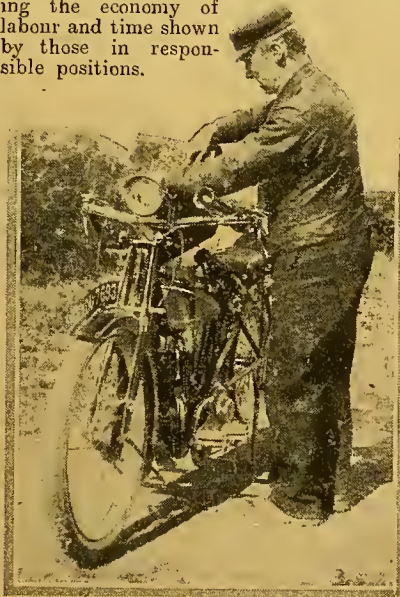
The 4,000,000 gallons per month offer from a Colonial firm, mentioned in our last issue, was referred to in the House last week. The firm is the Crown Oil Co., of Ontario, but it appears that the tankers are still on the stocks, and it would be October before the petrol could be obtained. Even then, if the present heavy military requirements continue, such an amount would considerably relieve the situation all round.

**Lightweights in Africa.**

An officer who has taken part in the Cameroons campaign writes that the two-stroke lightweight should be invaluable in that quarter of Africa. A machine that develops a high speed is not wanted, but one that will burble along at about 20 m.p.h., and yet be capable of attaining 30 m.p.h. What attracts the writer is the possibility of picking a lightweight machine up (figuratively) and putting it in one's pocket when obstacles are encountered. He suggests as an ideal specification: Two-stroke engine, three-speed gear, stout tyres, and fairly sturdy build.

**A Strange Notion of Economy.**

One of the interesting revelations made in the House of Commons last week when Mr. Harcourt made his statement on behalf of the Petrol Control Committee was the fact that petrol for France is first of all brought to England. Here it is taken from the tankers and "canned," and then it is again shipped and sent over to France. Hitherto it has been taken for granted that petrol for the Army in France went direct, and the news that it does not is another instance of the entire lack of appreciation concerning the economy of labour and time shown by those in responsible positions.



G.W.R. porter filling petrol tank of two-stroke Allon at Pilning after machine and rider had come through the Severn Tunnel. At the end of this month the railway company intend discontinuing the practice of refilling petrol tanks at either end of the tunnel. Apparently a motor cyclist will have his tank emptied at one end and find at the other that he has no petrol.

**A.A. Scouts on Service.**

It was stated at the annual meeting of the A.A. and M.U. that 450 patrols had joined the Services. Those now on the road were either rejected or discharged men.

**The National War Funds.**

At the week-end the principal war funds stood as follow:

The Prince of Wales's National Relief Fund (£3,443,250 distributed)	..	..	£5,937,168	0	0
British Red Cross Fund	..	..	4,159,147	0	0
The Queen's Work for Women Fund	..	..	170,141	0	3
The Kitchener National Memorial Fund	..	..	191,000	0	0

**The Admiral Arbuthnot Trophy Fund.**

The latest subscriptions received for the Arbuthnot Trophy are the following:

B.S.A., Ltd.	..	..	£5	5	0
Hummer, Ltd.	..	..	5	5	0
W. Hughes Butterfield	..	..	2	2	0
North Wales Motor Exchange	..	..	1	1	0
L. Francis Jones, R.F.C.	..	..	1	1	0
C. Furlonger, R.F.C.	..	..	5	0	0

The total received now amounts to £93 16s. 0d.

**A New Road in Dorset.**

The Dorset County Council are about to construct a new coast road, and it is proposed to employ on the work a large number of German prisoners of war. The employment of war prisoners on road construction is a course we have advocated many times. In view of what has been done in France in the same direction, it is surprising it has not been done before.

**Petrol and the Severn Tunnel.**

The illustration on this page reminds one that riders of two-stroke machines lubricated on the petrol system find on arrival at either entrance of the Severn Tunnel that the railway company will not give them receipts for the tanks' contents. The petrol-oil mixture has to be emptied out, and, arrived at the other end, the rider must purchase more petrol. The alternative now is to take the Gloucester Road and cross the Severn by the ferry at Newnham.

**The Cheapest Substitute.**

A member of our staff notices no decrease in power with his water-cooled two-stroke when run on ordinary paraffin, purchased at a country store for the sum of 1s. per gallon. A speed of over 50 m.p.h. was obtained, while the consumption was over 70 m.p.g. During the week-end he covered a journey of 200 miles, 120 being done on a half-and-half mixture of petrol substitute and petrol, the return journey being accomplished on common paraffin, as stated above, starting at 5 a.m.

**Auto-wheels in India.**

At the Allahabad High Court, Mr. Justice Walsh, on June 23rd, decided that an Auto-wheel attachment is a bicycle, and should be taken as an ordinary bicycle. The owner had been summoned for using an Auto-wheel without a licence. His lordship held that the vehicle was really not a motor car, neither in the ordinary nor in the commercial sense of the word. A bicycle might be propelled presumably in various ways besides that of the ordinary from the saddle. It might be propelled before the wind with a sail. That was merely a temporary aid or attachment which was independent of the original construction and design of the vehicle.



## THE 1916 A.B.C. MOTOR BICYCLE.



### A Machine of Much Genuine Originality.

**G**ENUINE originality is very refreshing to a jaded journalist in days when most machines follow broadly accepted lines; the thrill of such novelties as the Scott and Douglas *débuts* is not a common experience. The A.B.C. machines occupy a unique position in that everybody is talking about them, whilst comparatively few people know them, since the factory is run on the system of a limited output of *de luxe* machines. They are further unusual in that they outwardly bear some resemblance to several well-known makes, but that inwardly they bristle with striking and valuable innovations. As one of the few riders who have taken delivery of the latest model, I may be allowed to discourse on its merits under two heads, separating the technical and practical aspects.

#### I.—Technical.

The machine is built regardless of cost, and its war price is £75, which is steep for a 500 c.c. twin; but this policy enables the designer to realise engineering ideals in lieu of building down to a price, a consideration which hampers most commercial engineers. The engine is the heart of the machine, and the A.B.C. engine differs from every other engine—car or cycle—which I have ever sampled in that it combines the maximum of efficiency with the maximum of refined running. It can hiss like a snake at 2 m.p.h. or bellow like a bull at 65 m.p.h. The first feature is obtained by an extraordinarily excellent balance; if the engine is run throttled down with the clutch out, a hand, laid on any portion of the machine, will feel no vibration. The speed and revving capacities are probably shared by several other first-class engines, though I fancy the A.B.C. has the legs of most; and in this connection it must be remembered that its specification includes every weighty luxury imaginable, and its total weight is probably about 300 lb. The main feature of its revolution work is that it does not get tired. The second gear ratio of the four provided is  $9\frac{1}{2}$  to 1; I have driven it for ten consecutive miles on this gear as fast as the country roads near my house permitted, and it was perfectly fit and fresh at the finish; I do not know whether it is more remarkable that I could stand this, or that the engine could stand it. Two unusual points of design are mainly responsible. On the average engine both piston and cylinder are made of the same metal (cast iron); the piston gets the hotter of the two and expands more; seizure is always a possibility with such engines under maltreatment. But the A.B.C. has steel cylinders, and either aluminium or cast iron pistons. The cylinders always expand more than the pistons, and seizure is practically impossible, so long as an oil film is maintained. Compression is safeguarded by fitting an overhead exhaust

valve on the top of the inlet valve, so that there is no "hot point" at one side of the cylinder barrel, and the tendency for piston or cylinder to warp, or expand in lop-sided fashion, is all but eliminated.

The technical knowledge and painstaking workmanship underlying these points are characteristic of the entire machine from stem to stern. The clutch, for example, is perfectly smooth in action, and is fitted with both hand and foot control, the leverage in both cases being so good that the little finger suffices to operate either lever or pedal. Both brakes go on as silkily as a spoon enters a tin of treacle; you cannot jam them, and the maximum power of the front brake is insufficient to lock the front wheel or upset the steering. The steering angle and balance are so designed that I can ride "hands off" at 45 m.p.h. Both cylinders can be detached, leaving the crank case *in situ*—an uncommon feature on horizontal twins; so can the magneto—but this point redounds rather to the discredit of other "flat" twins than to the honour of the A.B.C., as its arrangement is obvious. The gear box is made of phosphor bronze; many gear box troubles are ascribable to the shafts being mounted in less rigid materials. The gear lever is mounted at the best height and angle for convenient operation; four ratios—the maximum for practical purposes with a rigid drive—are provided, and the two higher gears, which often require interchanging at high road speeds, can be changed on the valve lifter, which is simpler than the use of the clutch. The chain drive is so adequately cushioned that it feels exactly like a belt in perfect condition; indeed, the machine can be driven with only one cylinder firing, full compression being retained in the idle cylinder without shock or jar being received *via* the transmission. The kick-starter is fully enclosed, and is dirtproof. An automatic carburetter is employed, which gives an approximately perfect mixture at all speeds, after the exhaust pipe, from which hot air is taken, is warmed up; in other words, after the first mile from a cold start. In actual practice, the mixture appears perfect after 300 yards, though there may be a tendency to choke under sudden accelerations for a mile on cold days. The frame is sprung fore and aft, without loss of lateral rigidity, and the springs deal indifferently with either horizontal, vertical, or compound shocks; yet they never bounce or clash. The handle-bar cannot loosen under sudden wrenches, e.g., in "scrapping" a hairpin bend with sidecar attached. The lubrication is mechanical and automatic, the rider's duty being limited to opening a tap on starting out, whilst a tilted sight feed glass informs him whether oil is actually



**The 1916 A.B.C. Motor Bicycle.—**

feeding. The standard engine develops over 12 b.h.p. In other words, the machine embodies all the theoretic ideals which motor cyclists are prone to associate with the millennium.

**II.—Practical.**

In actual riding it is difficult to imagine that the most critical purist could find any point to criticise, except the weight; and weight is naturally inseparable from a luxurious specification combined with substantial workmanship. Does a rider desire to travel slowly? He may climb the test hill at Brooklands at less than 3 m.p.h. without slipping his clutch, supposing he is an adept balancer. Does the user wish for a speed burst? He can do approximately 45 m.p.h. on second gear, 60 m.p.h. on third, and towards 70 m.p.h. on fourth. Does he prefer to potter at an even average of 25 m.p.h.? If he is a clever rider, he may maintain this pace exactly all day long irrespective of wind or gradient, as the machine will run steadily at this speed anywhere, if the correct gears and throttle opening be employed. Road vibration is as near as no matter non-existent. I made my tests over country roads, scarred all over with war potholes, and ridged by two deep ruts and a central hump. I failed to register any bumps up my backbone, and gentle bouncing was equally inconspicuous. The pistons never gum in the cylinders, and on frosty mornings, despite the temporary absence of a hot air

supply for the carburetter, the engine started in response to one or two thrusts of the kick-starter without any priming.

**Silent Gear Changes.**

The novice at gear handling need never be afraid of the changing. Provided he declutches, he may change "up" from first to fourth with his engine doing 4,000 r.p.m. and the gears will go in silently; or he may change "down" from fourth to second at 30 m.p.h. with his throttle shut and again no noise will be heard. Car experts will pardonably regard these two statements as fictions, but they are none the less facts. I do not know why Mr. Bradshaw does not communicate the secrets of his gear change to car designers, or why car designers do not puzzle over the A.B.C. gear box, until their gears are as changeable as his; but the incredible facts are as stated. I have several times all but unsaddled myself with the jerk caused by experimental changes of this character, but I have yet to hear the gear teeth scrape, so that damage to gears through careless changing is likely to be non-existent on the A.B.C.

In conclusion, I am well aware that the glowing claims which I now make for the A.B.C. will be taken with a grain of salt by my readers, but I think that as the machine becomes known riders will gradually be forced to admit that a machine of quite astounding intrinsic excellence has been added to our gallery of stars.

IXION.

**SCENES DURING THE THIRTY-SIX  
HOURS TRIAL OF THE  
DUTCH VOLUNTEER MOTOR BRIGADE.**



The total distance was 560 miles, which was run continuously except for the usual stops for meals. Quite a feature was the number of Douglasses, which performed remarkably well. A couple of two-stroke James also made a very good showing. Thirty-one competitors finished the total distance to time.



The upper of the large pictures shows three Douglas riders coming through Utrecht.  
The lower flashlight scene was taken at 3 a.m. at Leyden.



## PETROL SUBSTITUTES.

WE have had so many enquiries relating to petrol substitutes that the following list of fuels which we know are already on the market will probably be of service to our readers desiring to obtain a supply of any of these fuels:

"Benzolite."	"Wital."
"Petroline."	"Kempol."
"Petrolior."	"Petrofin."
"Beatsol."	"Binks Fuel."
"Russelline."	"Hall's Motor Spirit."
"Harwood's Motor Fuel."	"White Oil."

## SUNDAY MOTORING AGAIN.

THE *Daily Mail* has been taking a motor traffic census during the week-end, and found that on Sunday last between 9 a.m. and noon 86 motor bicycles passed through Maidenhead, 122 through Redhill, 75 through St. Albans, 47 through Tonbridge, 92 through Hatfield, and 21 through Godalming. This covers the Bath, Brighton, Holyhead, Hastings, Great North, and Portsmouth roads respectively. No comment is made upon these figures, the only remarks of importance being that, "Despite the drastic petrol restrictions motor car traffic on some of the great highways leading out of London is no less than it was two months ago."

It seems that the daily paper's idea is to get Sunday motoring stopped. If motor vehicles are used on Sunday only for healthful pleasure, we may say we think it would be an outrage to put a stop to their employment. It is suggested that the use of petrol leads to expenditure of money. Motor cyclists know perfectly well that it does not, but that it is a saving of money, and if one has to travel, even with petrol at the present price and the extra tax, it is cheaper to journey by motor cycle than by train. It

would seem that the census of the figures quoted would lead one to suppose that, despite the Petrol Committee's statements, there is still enough petrol left in the country to supply the needs of the Services and the private owner as well at least once a week.

## THE MEANING OF PROHIBITION.

READERS will share our astonishment upon glancing at the import figures for the month of July, the cause being the fact that, in spite of the so-called prohibition of imported motor vehicles, 253 motor cycles came into the country last month. The prohibition came into force, on paper at any rate, at the end of last March, but vehicles for which a deposit had been paid could be imported after that date. So it is to be presumed that the foregoing is the explanation. In the meanwhile it will be interesting to see which arrives first—the declaration of peace or the end of the stocks of foreign-built motor cycles on which deposit was paid by March 27th.

### IMPORTS.

	July, 1916.	June, 1916.	July, 1915.
Number .. .. .	253	57	495
Value—			
Complete machines	£11,386	£2,341	£24,442
Tyres and parts ..	£15,848	£12,851	£13,385

### EXPORTS.

	July, 1916.	June, 1916.	July, 1915.
Number .. .. .	866	1,016	881
Value—			
Complete machines	£37,227	£42,865	£39,924
Tyres and parts ..	£34,628	£28,322	£24,677

### PETROL IMPORTS.

There is a drop in the amount of petrol imported last month when compared with the same month of last year. The figures are:

July, 1916 ..	11,526,600 gallons.
July, 1915 ..	15,438,800 gallons.

Duty has been paid on 10,528,695 gallons during the month ended July 31st, 1916.

## STILL MORE PETROL FIGURES.

ACCORDING to the experiences of the Petrol Control Committee (and it should know), users, on the whole, did not make out extravagant estimates of their future requirements when filling in the petrol application forms.

The estimated requirements per annum of the owners of some 200,000 private cars and motor cycles show a total of 39,828,000 gallons. In 1915 the actual purchases of petrol by these owners, as indicated by the amount of petrol on which the full duty was paid, were 66,904,000 gallons. The census therefore revealed a voluntary economy of 27,076,000 gallons, which disposes of the idea that applicants in general, fearing a limitation of supplies, inflated their demands.

## "ON SERVICE."

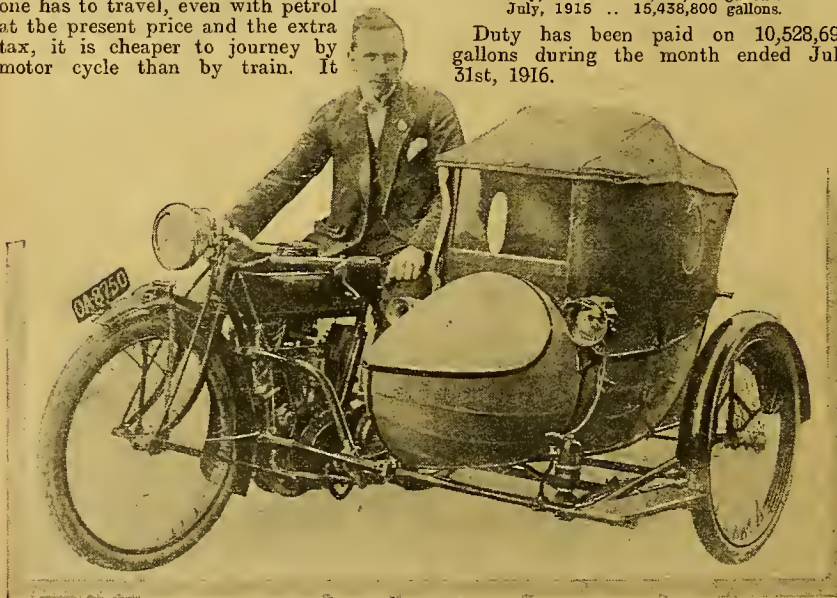
L. T. S. A. ROWLANDSON has sent us a copy of the latest issue of *On Service*. It is quite up to the excellent standard set by previous issues, and there are one or two very amusing bits.

Rowlandson appears to be going strong. He tells us that there is always plenty of work to do. A few days ago some of the men at G.H.Q. were discussing Six Days Trials of the pre-war days, and Rowlandson stated that had he known, when going over the courses in Lakeland and Yorkshire, what machines were to be subjected to during the war he would never have agreed with the complaints made. He has about 400 machines to look after, and he says that even now, after two years of war, many of them are not up to the work in some respects.

## A VIEW OF THE DESPATCH RIDER.

LORD NORTHCLIFFE, in a most interesting article in Monday's *Times*, entitled "The Army behind the Army," pays a tribute to the despatch riders in the following words: "Supplementing the telephonic system is a telegraphic link, and there is also the wireless. The Army Signal Corps is to be congratulated on a fine achievement. Over and above these there are the motor despatch riders, some of whose experiences during the war have been as thrilling as those of our air boys. The noisy nuisance of our peace time roads at home has been a prime factor in the prompt waging of war. Motor cycles and portable telephones appear in the most out of the way spots. Far beyond Fricourt I met these cyclists making their way in and out and around the shell holes.

"A few days later when visiting one of the workshops at the base I saw the wrecks of similar machines twisted and smashed out of all recognition by shrapnel, each speaking of an adventure, and perhaps a tragedy. The fact that these derelicts were being examined for possible repair is a portent of the rigid economy with which, on the French side of the Channel, at any rate, and perhaps on both, the war is now being conducted."



### A SMART, HOME-BUILT SIDECAR.

It is canoe-shaped and ample protection is afforded for the occupant. It is finished in yellow with black lines, and attached to a 5 h.p. Indian. This is not the first body the owner, Mr. Hiskins, of Birmingham, has built, as reference to "The Motor Cycle" of October 7th, 1915, will show.



# TO TEST A CARBURETTER FOR WASTAGE.

## HOW THE LOSS OF FUEL WAS DISCOVERED AND REMEDIED.

IN the days when I used petrol as a fuel I carefully tuned one of my machines to give what I thought were maximum results as regards power and consumption for sidecar use. It accomplished approximately 75 m.p.g. at an average speed of 28 m.p.h., which was quite passable for a  $3\frac{1}{2}$  h.p. two-speed, used over really mountainous roads and during the truly appalling weather conditions which prevailed when the tests were made.

Then I took to using a heavy fuel with a flash point well above normal atmospheric temperature, and discovered, to my utter astonishment, that not only did the carburetter leak abominably, but that, at full throttle openings, it was losing almost as much fuel as it used, owing to blow-back.

At first I jumped to the conclusion that this loss occurred *only* with the *heavy* fuel, and since the leakage conveyed unsavoury reminiscences of the road to my own person (my right leg being near to the carburetter) I promptly put it down as one of the disadvantages in the use of a heavy fuel. A little careful reasoning, however, revealed the fact that if the wastage occurred with the aforesaid heavy fuel it must, indeed, occur also with petrol, *i.e.*, it had been going

engine, unless the induction pipe be of such length that it holds sufficient gas to damp the fluctuations of pressure, *i.e.*, to act as an air cushion. The up and down movement of a large inlet valve at the end of a short induction pipe is quite sufficient to cause blow-back.

The timing was next altered—result, tremendous “revs,” no British pluck on hills, quite unsuitable for sidecar use, original timing resumed. Other experiments proved equally fruitless—the blow-back could not be cured by any practical means.

The next step, then, was to prevent the wastage of the fuel which escaped from the air holes. This was finally effected by placing a muffle round the air holes, and by fitting, at the bottom of this muffle, a short length of copper piping connected with the hot air intake.

The accompanying sketch explains matters. Now this system has two huge advantages. The first is that any blow-back from the jets is caught by the muffle, and is at liberty to flow down into the hot air pipe, which is (or should be) warm enough to vaporise it completely. The second advantage is that warm air is drawn, *via* the copper pipe, into the muffle and past the jets, thus assisting carburation. Unless this air is warmed the effect of the hot air intake is very much modified by the cold draught meeting it from the jets. After running a mile or two, the muffle on my carburetter is quite perceptibly above the temperature of my hand.

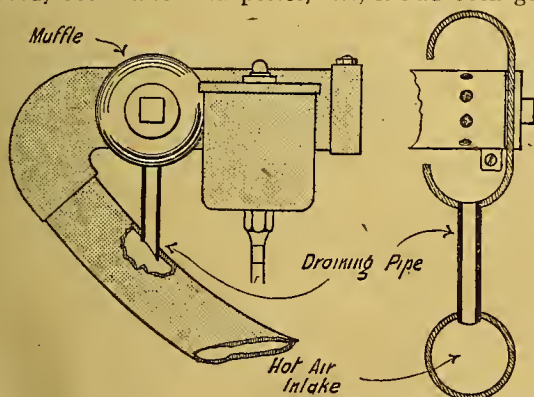
These notes are written with reference to the Binks carburetter, but they apply to all carburetters excepting those which take all air past the jets.

### The Necessity of Warming the Carburetter.

In these days, when the quality of petrol varies, every opportunity should be taken for warming, not only the air supply, but also the carburetter body. By dint of careful adjustment and the inclusion of the above-named fitment, I now regularly obtain 100 miles per gallon with sidecar occupied, and 120, or thereabouts, solo—and this over distinctly trying roads. Moreover, it is always possible to run on paraffin, though the engine shows a tendency to overheat, so that there is no danger of being held up for want of fuel. On Binks fuel I obtain better all-round results than on petrol, and Broxburn light combustion oil, containing one quarter petrol, yields results as good, on a normal road, as petrol. I have convinced myself that these heavy fuels are completely vaporised, so that their use is not likely to damage the engine.

The pith of the article is, however, “If you wish to learn how wasteful your carburetter really is, try it with a heavy fuel. The leaks and splashes which are not shown with petrol will then become visible.”

H.M.B.



Method adopted to prevent wastage of petrol blown back from the jets.

on all the time, only it was not visible when petrol was the fuel used, owing to the instant evaporation of the spirit. With the heavy fuel, however, which did not vaporise at atmospheric temperature, solid chunks of the precious fluid could be seen dripping and spurting from the carburetter with each fluctuation in acceleration. Thus, by using the heavy fuel, it was found that the carburetter was, in reality, most wasteful in operation, though I should have dwelt in blissful ignorance of the fact so long as petrol was the only fuel used. Now, however, I realised why it was that the right leg of my overalls always became unspeakably disreputable when a small quantity of cylinder oil was mixed with the petrol.

### Preventing the Wastage.

The next thing was to prevent this wastage. The valve timing was carefully checked, and a stiffer inlet spring fitted. This did not improve matters, probably because the timing was already dead accurate, and the spring quite stiff enough. I am of the opinion that blow-back occurs with every single cylinder

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

LILFFE & SONS LTD.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

### A Query.

Sir,—Have any of your readers heard of any experiments made with a petrol-paraffin mixture doped with methylated spirit? As methylated spirit contains little carbon, it might keep the cylinders clean. It is dear now (about 7s. 6d. per gallon), but my idea is that a small quantity added to plain paraffin would help it.

R. L. BOYD.

### A Variable Compression.

Sir,—I have been experimenting with Binks fuel, and find that lowering the compression makes a world of difference. In my engine, 8 h.p. M.A.G. twin, there are alternative plug positions, the unused ones being filled with a solid plug. I took out those solid plugs and put in a couple of spare sparking plugs. This had the effect of reducing compression, and the difference was most marked. I then had a couple of hollow dummy plugs made, and this was a further improvement.

I feel convinced from this that variable compression would be a great advantage at all times. It would postpone the period for decarbonisation, as knocking, I am convinced, is caused (with petrol) by the increased compression in a foul engine from the thickness of the carbon deposit, and not so much from overheating.

If one could increase the compression space as the engine got dirty, one could run for a much longer time without decarbonising.

DOUGLAS C. GROVE.

### A Youngster's Desire Fulfilled.

Sir,—I wish to thank you very much for recommending me for the Royal Flying Corps by forwarding my letter to Lt. B. V. Grealy. It was kind on his part also recommending me on the test card.

I may say I am very happy and hopeful of success after they have made me a soldier. I shall recommend your paper also, because it is the best and cheapest motor paper on the market to-day.

I send this with much joy and thankfulness for your kindness.

CYRIL P. MARRIOTT (2nd Air Mechanic, R.F.C.)

[The above is from the eighteen-year-old boy who, as mentioned in *The Motor Cycle* last week, page 77, had made such great efforts to enlist in the R.F.C. He had written to H.M. the King and the headquarters at Farnborough.—Ed.]

### Petrol Permits.

Sir,—With respect to the petrol restriction, upon which you commented in the last issue of *The Motor Cycle*, my licence is for two gallons per month, normal quantity eight gallons per month. A friend of mine has a light car, chiefly for pleasure, using four gallons per month; he has a licence for six gallons per month! My district is large and populous, and I have 208 miles of highways, many being sett-paved. We cannot grumble at restrictions, but surely, after being supplied with the nature of use and amount of stock (in my case none), the Petrol Committee might be fair.

R. CURTIS CORDON.

Sir,—The form sent out by the Petrol Control Committee telling us our fate bore these words, "The committee has considered your estimate of the amount you require . . ." Now I do not believe that the Committee have done anything of the kind. From what I hear they seem simply to have assigned to every owner of a motor cycle (doctors

excepted) six gallons in three months, and to every owner of a car twenty-four gallons, *irrespective altogether of the power of the cycle or car, and of the purpose for which it is to be used.* Could anyone have imagined a more futile arrangement?

Here am I, a country minister with a widely scattered parish to care for, sick people miles apart to visit, religious services in outlying villages to conduct, and I am to get a beggarly half gallon a week wherewith to do it. And here beside me is a man who does nothing, and keeps a small car solely for his own amusement, and he is to get two gallons a week to play with. Is it not stupid?

CLERICUS.

Sir,—As surveyor on a wide rural district, I use a motor bicycle. When applying for the petrol licence, I stated what it was used for, and hoped I would get a reasonable supply, as it was used on public work. I asked for eight gallons per month, and got two gallons. A motor driver here who uses a bicycle to come to town once a week asked for one gallon per month, and gets as much as I do. My district is full of soldiers. The traffic is extraordinarily heavy, and only one-third of my men are left, which means more running about for the surveyor. The military have broken down one large footbridge six times since the war started, which has cost me two hundred miles extra travelling to see it repaired. If I could only get the petrol wasted by the military in my district, I would be in luxury. One military friend told me when he wanted to clean his overalls he took a bucket of petrol.

One good may come of the shortage of supply. I ride a 2½ h.p. Sunbeam with Amac carburetter. Thanks to a tip in your paper, I put pins in the holes above the jet, and increased my mileage per gallon from 90 to 108. Then I added Spots, and on the last two-gallon can of Pratt's I got 134 miles per gallon. My running is done with many stops, and on a long run I am sure I could improve on those figures.

M.I.MUN.E.

### Petrol Waste.

Sir,—I fear that Mr. Addenbrooke's suggestion for running on coal gas is impracticable. My figures are probably not accurate as I have only memory to go on, but I think they are sufficiently near to prove my point. Coal gas is chiefly a mixture of hydrogen and methane (about 86% on an average). One vol. of this mixture requires, roughly, five vols. of air for its explosion—a much smaller proportion than petrol gas. The capacity of an ordinary 3½ h.p. engine is 500 c.c. or 30.5 cu.in., therefore in each charge there must be 6.1 cu. in. of coal gas, i.e., a cubic foot of coal gas will last for 286.5 explosions, or ten feet of gas will give 5,730 revolutions, say two and a half minutes' running of the engine. So that if Mr. Addenbrooke wishes to eke out his two gallons a month with coal gas he must be prepared to carry a sidecar full of gas cylinders!

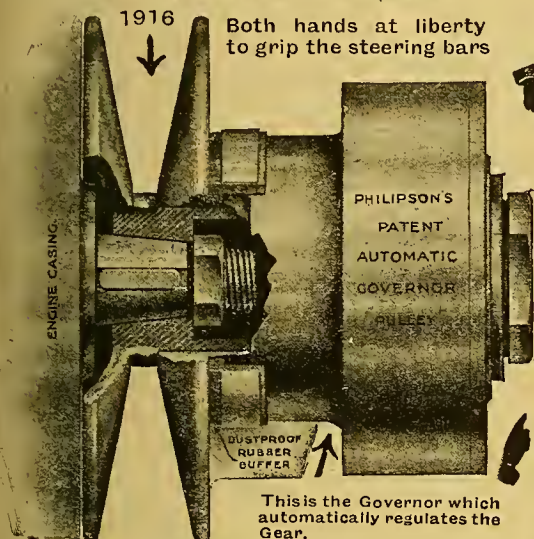
(Rev.) J. M. PHILPOTT.

[We agree with our correspondent. *Gas*, of August 2nd, has a leading article on this subject, in which it is stated that 1,000 cu. ft. of gas roughly equal four gallons of petrol. A cylinder which will hold 100 cu.ft. of gas compressed to 120 atmospheres measures 4ft. in length and 6in. in diameter, and the weight of it is 1 cwt. This would suffice for forty miles on a motor cycle capable of doing 100 m.p.g.—Ed.]



**YOU** cannot purchase a simpler or more perfect variable gear.  
**AS SUPPLIED TO HIS MAJESTY'S**  
**FORCES (MOTOR CYCLE SECTION)**  
**PHILIPSON'S Patent AUTOMATIC**  
**GOVERNOR PULLEY.**

(No holes or grooves in pulley flanges.)



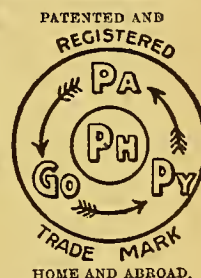
This is the Governor which automatically regulates the Gear.

Douglas machines are wonderfully improved by fitting this Gear—Clutch models excepted.

THIS GEAR HAS A WORLD-WIDE REPUTATION FOR SIMPLICITY AND EFFICIENCY.

**ACCEPT NO GEAR AS GENUINE UNLESS IT BEARS THIS TRADE MARK** →

**ENTIRELY FREE** from troublesome and weighty complications—only **2 working parts**—no levers, rods, wheels, etc., to worry about. Simply takes the place of the ordinary pulley (**one not only secures the complete gear to the engine**)—can be fitted without any alteration to most engines in a few minutes—Send for booklet.



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*In answering this advertisement it is desirable to mention "The Motor Cycle."*

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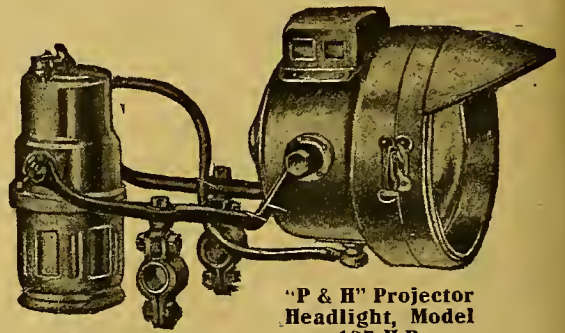
## Restrict your lighting

—if **ECONOMY**—additional to the Lighting Laws—demands such a vital step, but restrict it wisely to the "Economical" service of the "P & H"—The **RELIABLE** Lamps.

"Restrict" it to the Dependable Lamp we illustrate—the "P & H" Projector Headlight, Model 127 H.B.

This widely-bought Lamp will efficiently meet your every lighting need—and to know fully about it let us send you our Art Booklet of the "P & H" MOTOR CYCLE LAMPS.

**Powell & Hanmer, Ltd.,** Chester Street, B'ham.

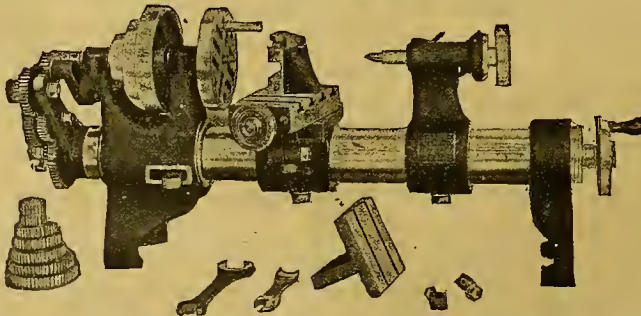


"P & H" Projector Headlight, Model 127 H.B.

This model is designed on ample proportions to ensure an exceptionally good light, and withstand excessive vibration. Has 6 1/2 in. Front; Real Mangin Mirror Reflector; Bray's "RONI" Burner, 17 1/2 Litres with Patent Adjustment for properly focussing the light; 5 1/2 in. Plate Glass Convex Lens; a new Registered design Improved Generator of large capacity and highest efficiency, and special Adjustable Carrier made of finest solid steel stampings fitting any shape handle-bar with lamp and generator in the necessary level position. Nickel-plated or Ebony Finish.

## The Secret of Tune

Lies in keeping *every little* detail of your engine and transmission in perfect condition. Good compression by no means ensures this—the valve heads may be perfect, while the stems and guides are worn. This will cause slight leakage, often affecting the mixture, and always causing noise and vibration when running on high speed. There may be a slight slackness at the gudgeon pin bearing, so slight that you hesitate to renew it. But if you had a lathe you would be enabled to turn up bushes, guides, valves, etc., at a trivial cost. *Then* you would not hesitate. Write for particulars of The "Drummond" 4in. Screw-cutting Lathe.



**DRUMMOND BROS., Ltd.,** Reed Hill, Guildford, SURREY.



**Drummond**  
LATHES



**A Praiseworthy Ambition.**

Sir,—In answer to the letter of T. Bardley, I should be pleased to give him free lessons on my  $3\frac{1}{2}$  h.p. Triumph. I am a school teacher on holiday for a month, and have ridden for four years. The only difficulty seems supply of petrol. Perhaps some other Manchester man could oblige. If not we can make the best of the gallon I have on hand.

HARRY WREN.

60, Gorton Lane, West Gorton, Manchester.

**Parts for Existing Machines.**

Sir,—Your article in July 6th issue on getting parts for existing machines has touched us in a very sore place, as here in Toronto we have between 130 and 140 Triumph machines running. We have always made it a rule to have every part in stock. We ordered in February parts worth hundreds of dollars, but we have not yet heard when we shall receive them. We are as patriotic as anyone, and would sink our business if it would help the Allies, but we have clamouring customers who want parts, as many use their machines for business purposes. We help out as well as we can by making spares, but you know this is impossible to do in lots of parts. We have now a score of people who have put their machines on one side, but we are helpless, and we know the Triumph people are on war work or they would send them. With the Indian agents here selling their twins for 275 dollars, England cannot compete. The English trade has certainly got a black eye in Canada.

The Excelsior lightweight, a copy of the Triumph, is selling here for 185 dollars, and the Triumph would cost us about 225 dollars to land here. What chance have we of getting a fair price?

Toronto.

TANGENT CYCLE CO.

**Is it in the Air?**

Sir,—In reply to the letter of "J.H." (August 3rd), we, the undersigned triumvirate, wish to convey to "J.H." that we will individually or collectively guarantee to trim him to a standstill over any road he may choose, and we will ride an American twin against him. He may choose any make of English twin. His letter shows him to be insular in the extreme. Before going further, we may state that we are three Canadian-born despatch riders, who have had board and dirt track experience; in fact, one of us holds the world's record at 104 m.p.h. on a three lap to the mile track on a machine which he built up himself in the factory.

The records of the Norton, Rudge, Triumph, etc., are a credit to their makers. Do we deny that they are authentic? Do we calmly sit down and practically accuse the officials who timed these machines of acting falsely? Then why should "J.H." insinuate that the Federation of American Motor Cyclists has falsified the rate of speed made by the Harley-Davidson? Has "J.H." forgotten that the Indian still holds the record for England, and that the Indian was beaten to a finish on July 4th, 1916 (not saying that the Indian will not give the others as good as it got before the season is out, it being a characteristic of this firm)?

Spread out, "J.H.," see what the world is doing around you—your heart is probably in the right place—and do not be too sceptical about what is going on a few miles from your back door.

H.F.M.  
L.M.P.  
J.A.M.

**American Motor Cycles.**

Sir,—Being an enthusiastic reader of your paper and a keen follower of readers' opinions, as expressed in your correspondence columns, I should like thoroughly to endorse "H.E.R.'s" letters re "Twins." With him, as with me, singles are anathema; in fact, I may say, in my opinion, the three most popular brands of singles are the worst. I had better not mention names.

I have constant riding experience of all classes of machines, and I find the machine for solo riding is undeniably the 7-9 h.p. clutch model Indian, and for sidecar work I use a 7-9 h.p. American Excelsior. These two I ride constantly, together with a  $2\frac{1}{2}$  h.p. Campion two-stroke for short journeys, and, with "H.E.R.," I can honestly say that for power, springing, design, steering, large wheels, tyres, saddles, and ready-to-ride machines, the 7-9 h.p. Yank undoubtedly gets there every time.

HUGH BROCKLEBANK.

Sir,—There seems in your columns of late a tendency to criticise British machines unfairly, and to hold up the American motor cycle as the acme of perfection. Especially is this noticeable in the letters from Colonial correspondents.

I am sure many readers, like myself, must have waited patiently for some answer to these criticisms from the British manufacturers, but apparently none is forthcoming.

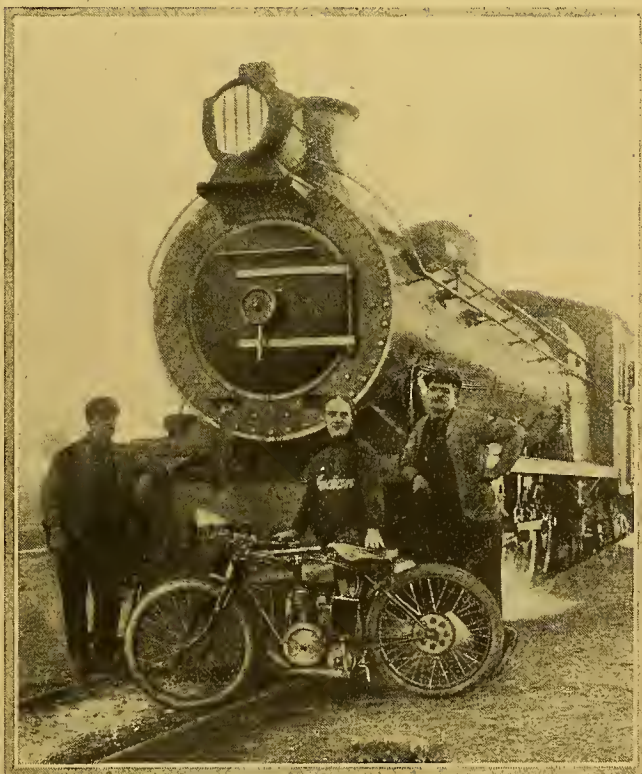
Possibly our makers are content to let their wares speak for themselves, and leave the matter to the intelligence of the motor cycling public, but are they not depending too much on public intelligence (which is always an unknown factor), and is "the man in the street" capable of judging a sound engineering job when he sees it? In any case their silence seems questionable business policy.

Undoubtedly it is a small minority in this case that makes itself heard, but I am afraid in this world a noisy minority will always be a more potent factor than a silent majority. The new recruit to motor cycling is likely to be prejudiced by adverse criticisms, which are allowed to go unchallenged.

The American manufacturer is to be congratulated on making an almost foolproof machine, embodying an automatic carburetter, mechanical oiling, etc.; he will always find an extensive market amongst a certain class of rider, who demands an absolutely foolproof machine, with a large reserve of engine power to allow for his shortcomings in tuning, driving, etc. There is, however, a far larger class of man, who takes an intelligent interest in his machine, who keeps his engine in respectable tune, who can be trusted with a two-lever carburetter and a positive oiling system, to whom the economy of the medium-powered mount will always make an irresistible appeal, and it is for this class mainly, I think, that the English maker caters.

I think I may say, without fear of serious contradiction, that our English manufacturers have nothing to fear in the matter of workmanship, material, or design from any of the foreign rivals.

P. C. KERSLAKE-SMITH.

**A COMPARISON—LIGHTWEIGHT MOTOR CYCLE AND HEAVYWEIGHT LOCOMOTIVE.**

If a South African were asked the quickest means of travel, he would say on rails of course! But the motor cycle has proved otherwise. One of the new two-stroke Indians, ridden by Jordan, raced a train from Johannesburg to Durban and beat it by 1 hour 39 min. Jordan's time for the 470 miles was 19 hours 59 min. =  $23\frac{1}{2}$  miles per hour.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### How to treat a New Mount.

**?** I am taking delivery of a new 6 h.p. motor cycle, and as I have never had experience of a new machine before, perhaps you could give me some tips as to the best way to run the engine in. Should I drive the engine slowly for some time?—T.L.

The great thing is to run the machine well within its power, and give it plenty of oil. You may reckon the machine will be run in after about 1,000 miles, but it should be greatly improved at the end of 500. You should on no account over-drive it. This is most essential in the case of a new machine.

### Magneto Timing.

**?** Having removed the magneto chain from my  $3\frac{1}{2}$  h.p. single, I am experiencing difficulty in re-timing the magneto. I should therefore be glad of your advice on the matter. Would you also tell me the cause of petrol spraying back through the air inlet opening? A friend tells me that a longer inlet pipe would stop this.—R.G.

The usual timing for the magneto is as follows: Place the piston on top of the firing stroke—that is, first top dead centre after inlet valve has closed. Place the ignition lever two-thirds retarded, and connect up the driving chain with the contact points just about to break. Some machines will take more advance than this, others less. Blow back from the air intake is fairly common on some machines, and excessive blow back may be caused through wrong timing or weak

valve springs. A short length of pipe attached to the air intake opening will save much petrol wastage from this trouble.

### Carburettor Adjustment.

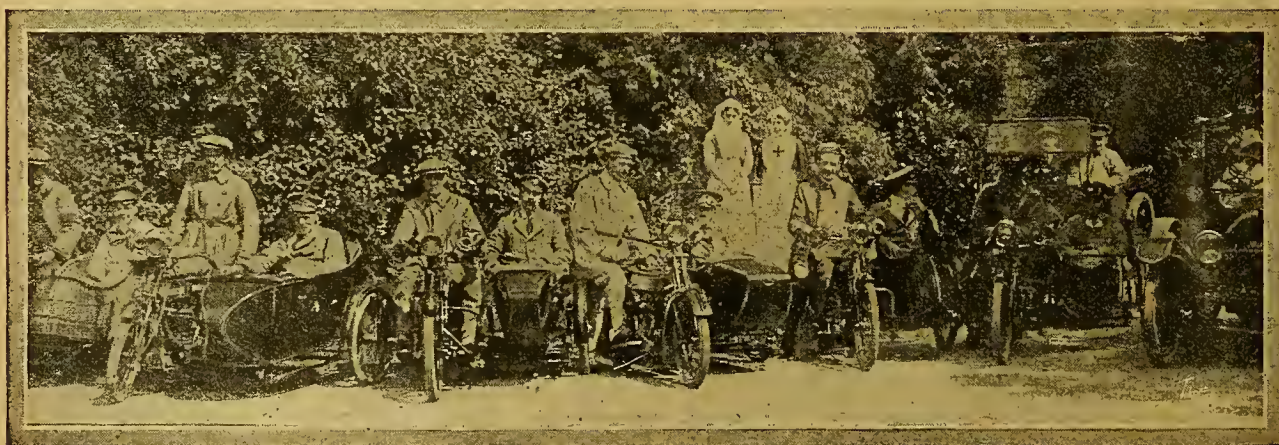
**?** (1.) I have a  $2\frac{1}{2}$  h.p. Villiers engined two-stroke motor cycle, with an Amac carburettor. I consider that the petrol consumption is high. I cannot get more than 70 m.p.g. Can I do anything to improve this? The engine runs well with the air lever wide open on the level, but if the lever is closed slightly the engine fires back into the carburettor until the lever is only open about one-third. On hills the air lever has to be closed to about one-third open. This seems to me queer. (2.) Do you consider half petrol and half paraffin could be used on a two-stroke without damage to the engine? I am afraid of the paraffin condensing in the crank chamber.—J.E.V.

(1.) Two-stroke engines are naturally rather heavy on petrol, but we consider you ought to be able to get rather more than the figure you state. The only thing you can do is to experiment with different sized jets. To get the best possible results you need to have the engine and machine generally in perfect order. (2.) We think you will be quite safe in using a percentage of paraffin mixed with your petrol; but when doing this it is advisable to have some means of heating the mixture before it is admitted to the engine—fitting a hot air intake pipe to the carburettor will assist matters. Provided the mixture is properly vaporised no trouble will be experienced.

### Swivelling Head Lamps.

**?** I understand that certain lamps are taboo in sundry coastal districts. This is a very difficult matter for novices like myself, as we cannot be expected to understand fully the requirements of the law if those requirements are made to vary in different towns. Personally, I should like an expression of opinion from you as to what kind of lamp fully satisfies all demands. I have a P. and H. head lamp fastened to the handle-bars by two nuts, and this can be tilted by simply releasing the nuts. Is this lamp all right?—J.C.

Swivelling lamps, or lamps which are capable of movement in any direction independent of the machine, are illegal throughout the country. You should have your lamp securely fixed to the bracket. This can be done either by means of riveting, or it might be securely sweated. At a recent court proceeding, the magistrate stated that the only really satisfactory method of securing the lamp was by brazing, but this is a lamp maker's job. The regulations which vary according to district are the dimming regulations. In all coast towns discs with six  $\frac{1}{4}$  in. holes, in addition to one thickness of tissue paper, are necessary. This amount of dimming is quite satisfactory for any part of the country, though in many parts inland the perforated disc is not compulsory, while out of towns in certain parts no dimming at all is necessary. Particulars of this appeared in *The Motor Cycle* of January 13th.



Sidecar outing for convalescent soldiers at Basingstoke. A few of the passengers with the motor cycles and sidecars in the grounds of the hospital.



# 10,000 GALLONS

**FREE FROM  
PARAFFIN**

## PETROLIOR

**NO SPECIAL  
CARBURETTOR  
REQUIRED**

### The Petrol Shortage Solved

#### THE PRODUCT.

A straight distilled water white spirit of petrol type and odour.

Flash approximate .. 78°-80°

Total distillation .. 195°-200°

#### ITS USES.

Used neat or mixed with petrol or paraffin as desired, a far cleaner and sweeter spirit than much of the petrols now on sale.

#### CARBURETTORS.

Will vaporise in any and every type of carburettor. Machines fitted with controlled air inlet or a rough warming jacket round induction pipe gives absolutely perfect results.

## "THE HISTORY OF PETROLIOR."

### 2/11

Per gallon cash.

Free on Rail London.

Prices of Packages see below.

### 2/11

Per gallon cash.

Prices of Packages  
see below.

For many years past we have handled hundreds of thousands of gallons of this spirit for special technical work, and the discovery of its adaptability as a motor propellant is due to old clients' reports as to the uses to which they were adopting this spirit. The regular flow of repeat business proves the efficiency of the product.

#### PRICES OF PACKAGES:

5-gallon Drums.

**3/-**

10-gallon Drums.

**4/6**

42-gallon Barrels.

**7/6**

*This amount must be added to your cheque for spirit, and we will allow in full on return, carriage paid, in good condition to our works.*

**CONTAINS NO PARAFFIN.**

**VAPORISES IN ANY TYPE OF CARBURETTOR.**

**THE PETROLIOR CO., 28, Kingly Street, Regent Street, London, W.**

'Phone—2446 Central.

**CASH WITH ORDER ONLY.**



### Removing a Two-stroke Cylinder.



I shall be glad if you would kindly tell me how I can take off the cylinder of my two-stroke without removing the magneto.

When I have taken off the petrol pipe and carburetter and want to remove the exhaust pipe, one end of which is in the cylinder and the other end in the silencer, can I do so without lowering the silencer? The magneto is on top of the silencer and appears to me to be fixed to the silencer and not on a separate platform, therefore, to decarbonise the cylinder, it seems that I have practically to take down the whole thing, which, I think, ought not to be necessary. I do not want to interfere with the timing if I can help it. I shall be obliged if you can give me the necessary instructions.—NOVICE.

After removing the holding-on nut you could very probably remove the exhaust pipe by unscrewing the holding-down nuts of the cylinder, and slightly raising it from the pipe. If you have to remove the magneto it is perfectly easy to replace it properly and set the timing as follows: You must get the piston on the top of its stroke, fully retard the magneto, and turn it till the points are just breaking, then couple up.

### Throttle not Shutting.



I am not satisfied with the carburation of my machine, and should be grateful to you for advice. It is a Chater-Lea combination, with 8 h.p. J.A.P. engine and Amac carburetter, date 1913. When I got it last year, following instructions and my practice with a former machine of 3½ h.p., I used to set the air lever open one-third and then run on the throttle lever. This was excellent against the wind or an incline, but on the level speed was far too great for the narrow roads hereabouts, and my progress was by a series of bursts, disconcerting to myself and passenger. I found by experiment that on a favourable road I could run at an easy 20 m.p.h. with the throttle lever shut tightly, varying the speed by the alteration of the air lever, opening or shutting it as less or more power was needed. Also in town driving I found it best to run on second speed with the throttle shut and manipulating the air lever. If the third speed is in and the throttle shut the air lever has to be open wide to keep the engine from roaring; but then there may be a sudden stop if I am not quick in regulating the air. It seems as though there were some arrangement in the setting of the throttle barrel so that it never quite shuts, and the suction is so perfect that enough gas can be got if the air does not make it too weak. The running is quite good at fair speeds, and I get 50 m.p.g. with self and passenger weighing over 20 st., but I feel that something better should be had when slow running is necessary.—N.B.H.

There is something very wrong in your carburetter adjustment, for if correctly set you should be able to stop the engine by shutting the throttle fully, irrespective of the position of the air lever. Running the machine as you have been doing is both extravagant and likely to do damage

to the engine. It appears as though the throttle slide is sticking for some reason or other. The return spring may be broken, or may have lost its strength. There may be grit between the slides, or the Bowden cable may be insufficiently long to allow the slide to shut completely. You should remove the control slides—a very simple operation—and make sure none of the above faults exist.

### READERS' REPLIES.

#### Firing with a Closed Throttle.

I notice in your "Questions and Replies" column in your issue of July 20th a letter from one "S.B.P." complaining of intermittent explosions after closing the throttle on his two-stroke. I used to have the same trouble with my own engine, although the throttle seemed quite shut, but I have cured it now by fitting an ordinary compression tap in the induction pipe, which I open when descending a hill. Incidentally, I generally keep it open when the engine has become warm, as I find it pleasanter to be able to shut off the engine at all times without the objectionable spluttering which occurred formerly, and at the same time it makes little difference to the running—except at starting—and only means a less frequent manipulation of the air lever. Some weeks ago your correspondent "Ixion" mentioned the advantages of the B. and B. variable jet carburetter on two-stroke engines, and I can quite endorse his remarks, as I find it has cured my engine of four-stroking at all speeds, and has given me much more power on hills, while it has improved the petrol consumption, now enabling me to get forty miles per gallon more than the previous fixed-jet carburetter. My machine, a 1915 Connaught standard, has run the last 3,850 miles on twenty-eight gallons of petrol, this working out at 137.5 miles per gallon. I have found with my machine that a carburetter addicted to four-stroking habits causes a much more rapid carbonisation of the engine, for the original single-jet carburetter made cleaning necessary every 400 to 500 miles, while the present B. and B. only makes it necessary every 800 to 1,000.—RALPH CHAPMAN.

#### EXPERIENCES WANTED.

"J.P." (Lincoln).—3½ h.p. Scott running with petrol and paraffin mixture.

"A.L.M." (Portsmouth).—Running of 2½ h.p. James or similar machine on paraffin (100% or less mixture), especially with regard to effect on engine lubrication.

### SPECIAL NOTICE.

#### "THE MOTOR CYCLE" FOR NEUTRAL COUNTRIES.

Under the existing regulations, copies of newspapers may now only be sent to neutral countries in Europe, America, and Africa if posted direct from the office of the publishers or by newagents who have obtained permission from the War Office for the purpose. The publishers of *The Motor Cycle* have obtained the necessary permission, and, consequently, can post copies for subscribers as usual. The subscription rates to all neutral countries are 10/10 per annum; six months, 5/5.

THE PUBLISHERS,  
"The Motor Cycle," 20, Tudor St., London, E.C.



### Bradbury Balance Sheet.

The statement of accounts of Bradbury and Co., Ltd., Oldham, for the year ending June 30th, 1916, shows a profit on the year's trading of £33,910 2s. 1d. The directors recommend a dividend of 10% on the preference shares and 1s. per share on the ordinary shares.

### A New Darlington Firm.

Mr. C. W. Smith, a Darlington motor cycle agent, has gone into partnership with Messrs. A. E. Oates and R. Oates, formerly of the Northern Sidecar and Motor Co. (Darlington), Ltd., which went voluntarily into liquidation. The headquarters of the new concern are in Northgate, and the building of sidecars will shortly be proceeding apace.

### Catalogues Received.

The latest catalogue of Messrs. Brown Brothers, Ltd., 15, Newman St., W., is, as usual, an instructive volume. A novel feature is the section devoted exclusively to motor cycle accessories. It begins by giving illustrations and specifications of the two types of the Vindec motor bicycle, which is one of Brown Brothers' specialities. Of these there is the 2½ h.p. two-stroke and the 6 h.p. sidecar. Among the accessories we notice all the very latest in the motor cycle line.

### Good Hill-climbing by a Lightweight.

The owner of a 2½ h.p. two-speed Calthorpe-Jap writes that during a holiday tour in Devon he made clean ascents of Lynmouth and Dartmeet Hills, the latter with a passenger on the carrier. The total distance covered was 770 miles, and the petrol consumption, we are told, worked out at 102 m.p.g.

### Engineering Standards Committee.

At a special meeting of the Main Committee (Sir John Wolfe Barry, K.C.B., chairman), held on July 27th, Mr. Charles le Maistre, A.M.Inst.C.E., M.Inst.E.E., who has been in charge of the work of the Electrical Section since 1903, was appointed secretary to the committee in succession to the late Leslie S. Robertson, M.Inst.C.E., who was lost with Lord Kitchener in H.M.S. *Hampshire*.

### History of a Great Company.

The Crimean war was responsible for the bringing into being of concerns which in these days are a great national asset—the Birmingham Small Arms Co., Ltd., of Birmingham, for instance. The origin of this company dates from 1855, when the gun makers of Birmingham were called upon by the Government to furnish arms for use in the Crimea. A history of this concern has been published, entitled "B.S.A. History from the Days of the Crimea to the Great War." The illustrations show the Enfield muzzle-loader of 1857, as well as illustrations of all the rifles made by the company up to the present Service rifle.



# BOWDEN WIRE LTD

Contractors  
to H.M. &  
Allied  
Foreign  
Governments

ESTABLISHED 1897.

*Makers of the Famous  
Wire Mechanism  
and Controls*

Manufacturers of Bowden Wire  
and of all Levers and Accessories  
used in its application.

### Trade Marks and Names :

Bowdensolo Bowdenamel Bowdensilver  
Bowdenoir Bowdenite Bowdenbrass

Orders filled only as Government  
requirements permit.

# LONDON

VICTORIA ROAD NW  
WILLESDEN JUNCTION  
Godbolds

THE BELT FOR RUDGE, ZENITH, PHILIPSON,  
GRADO, BRAMPTON, or ANY GRADUAL GEAR.



## SPECIAL OFFER.

7"	1"	1 1/8"	1 1/4"
28/-	30/-	34/-	36/-
22/-	24/-	26/-	28/-

USUAL PRICE for 8ft.

SPECIAL PRICE  
for any length up to 8ft.  
Plus 8d. Postage.

### EXTRACTS FROM RECENT LETTERS.

"I cannot give even an approximation of the mileage belt has done, as I ride, more or less, every day, winter and summer. Since I have had the belt I have twice toured the Lake District (it having taken me over Honister and Kirkstone), once through Derbyshire and North Wales, and once through South Wales and Somersetshire; also to the South and West of Scotland. A lot of my riding is done over the Yorkshire Moor and Coast roads."

"Having tested your belt and given it a good trial I think it only right to let you know the result. Since I took up motor cycling, eight years ago, I have had nothing but trouble with belts—slipping, stretching, and short life; since using the 'ZILLA' I have been quite free from all belt trouble. Anyone using a Rudge-Multi or other variable geared machine should not hesitate but use a 'ZILLA' and say good-bye to other makes."

Take the advice of experienced riders and order at once.

Address all communications to—  
The ZILLA PATENT BELT COMPANY, Ltd.,  
101, Great Western Street, MANCHESTER.

# I SUBMIT

there  
is a solid reason why you should adopt a  
**BINKS CARBURETTER, viz.:**  
**YOU CUT YOUR FUEL BILL IN TWO**

if you adopt my system and use my  
fuel. You can, of course, use petrol or  
benzol without alteration.

Price of  
Carburetter  
complete—

## 49/-

plus 10% extra  
war cost.

FIT ANY  
MACHINE.

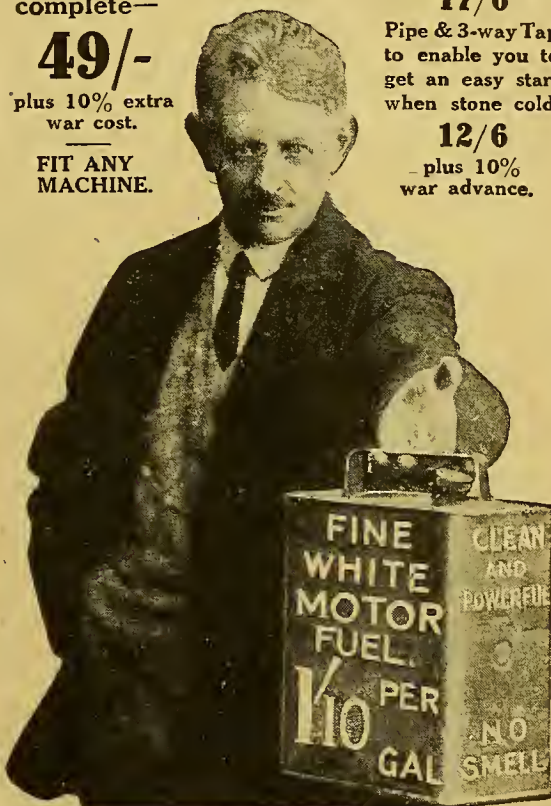
Small extra Tank  
to clip on Frame,

## 17/6

Pipe & 3-way Tap  
to enable you to  
get an easy start  
when stone cold,

## 12/6

plus 10%  
war advance.



## READ!

### MY 3-PHASE JET DAMPING CARBURETTERS

have such perfect vapourising properties that they enable you to use fuel at 1/10 per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at 2/9 a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

## C. BINKS, Ltd., Eccles.



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

1916 2½h.p. A.J.S. 3-speed Motor Cycle, actually in stock; £58.—Sanders, Garage, Kidderminster. [X5411]

A.J.S., 2½h.p., 1914, 3-speed, kick starter, just thoroughly overhauled; £34.—Norton, Gunwharf, Sheerness. [X5359]

1916 2½h.p. A.J.S., 3-speed, very little used, as new; 50 gns.—Julians, Broad St., Reading. Phone: 1024. [X4701]

1913 2½h.p. A.J.S., 2-speed countershaft, clutch, lamps, horn, etc.; £23.—Breeze Hill, West St., Bolton. [X5390]

A.J.S. Latest 6h.p. Combination, hood, screen, etc., brand new, in stock.—A. J. Young and Co., Ltd., Newmarket. [X632]

A.J.S., late 1914, 6h.p. twin, 3-speed, enclosed chain drive, Watford, first-class condition, 12 months' use only, property of officer on active service; £55, or near offer.—Apply, W. A. Dodd, Woolton Hill, Newbury. [X5236]

A.J.S. 6h.p. 1914 Combination, double lighting, electric and acetylene, Klaxon £4/4 horn, Lucas hand horn, Cowey speedometer, trip recorder, hood, screen, and side curtains, spares, etc., cost £120, mileage about 1,700; offers. Roscoe, 1, Denman Grove, Seacombe, Ches. [X5457]

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Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

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## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S. 1913 6h.p. Coachbuilt Combination, speedometer, 2 lamp sets, Schaebler carburettor, nearly new Kempshall tyres, excellent condition and tune; £43; after 7 p.m.—193, Broomwood Rd., Clapham Common, S.W. [X330]

A.J.S. 1915 Combination, detachable and interchangeable wheels, spare wheel, complete, coachbuilt tandem sidecar, adult and child, both seats spring upholstered, wind screen, lamps unused, as good as new; £29;—Daladay, High St., Newhaven. [X433]

### Alldays.

1914 3½h.p. Alldays Matchless, 2-speed, splendid condition; £33.—Parker and Son, St. Ives, Hunt. [X41]

ALLDAYS, 1914, 2½h.p., new condition, little used bargain, £16/16.—D., 7, East Rd., Maidenhead. [X355]

ALLDAYS Allon, 1916, 2 speeds, 2-stroke, brand new; listed £45, accept £40.—6, Warren St., London. [X37]

COLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Allday Allon. [X79]

ALLDAYS Matchless 1915 8h.p. Combination, 1 speed, kick starter, perfect; £55.—H. Wright Arlesey, Beds. [X33]

ALLDAYS Allon, 2-speed, new; special bargain £38/17 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [X76]

### Ariel.

1912 Ariel, 3½h.p., variable gear; £18; perfect running order.—Capell, North Lodge, Baldock. [X25]

ARIEL, 4h.p., free engine, handle starter, overhauled owner sacrifice £20, lowest.—Crescent House, Herford Rd., Edmonston. [X530]

ARIEL Combination, 1913, 3½h.p., coachbuilt, speeds, clutch, lamps, etc.; £30.—11, Luna Rd Thornton Heath, Croydon. [X34]

COLMORE Depot, 31, Colmore Row, Birmingham have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [X79]

### Auto-Wheels.

AUTO-WHEEL and Humber Bicycle (3-speed) gear in good condition; £12.—Crump, Farningham, Kent. [X28]

B.S.A. Auto-Wheel, very little used, in perfect running order; £8/10.—Cambridge, Greattham, near Stockton-on-Tees. [X530]

AUTO-WHEEL de Luxe, Gent's, 1916, very little used, perfect condition; £12.—Nunns, Menor House, Abbotkerswell, Devon. [X26]

AUTO-WHEEL, £6/17/6; excellent condition; perfect cash for good motor cycle or combination.—Newham, 223, Hammersmith Rd., W. [X43]

THREE Auto-wheels, Wall's, late models, in splendid condition and running, little used; £7, £8, £10.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X537]

### Bat.

BAT, 5-6h.p., 1915, T.T., 3-speed, all in good condition; £45, or exchange 3½h.p., offer.—455, York Rd., Wandsworth. [X44]

BATS in stock, latest 4-5h.p., 2-speed, 60 gns.; also 1914 4-5h.p. sporting 2-speed twin, £35.—P. J. Evans, John Bright St., Birmingham. [X539]



## MOTOR CYCLES FOR SALE.

## Bat.

BAT-J.A.P., 5-6h.p., overhead, late 1914 model, sporty mount, 3-speed H. gear, and enamelled French grey; £45.—Moors Motor Works, West Croydon. [X5089]

BAT-J.A.P., 7-9h.p., 2 speeds, engine just overhauled, excellent condition throughout, Gloria sidecar, all accessories, spares; £45.—Phillips, 88, Bruford Rd., Wolverhampton. [X5365]

## Bradbury.

1911 Bradbury, free engine model; £16.—Cross, Jeweller, Rotherham. [X5419]

BRADBURY, 4h.p., N.S.U. 2 speeds, in good order; £17/10.—6, Warren St., London. [X9372]

1914 3½h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [X8822]

BRADBURY, 1913, with 1915 Stomery 3-speed gear, perfect; 27 gns., including 6 galls. petrol.—Troward, 78, High St., Hampstead. [X9392]

BRADBURY Combination, 4h.p., 2-speed, clutch, kick starter, 95 m.p.g., excellent condition; £35.—A. Smith, 15, Bramshot Av., Charlton, S.E. [X9222]

1915 6h.p. Bradbury, 3-speed, kick starter, all chain drive, coachbuilt sidecar, lamps, horn, speedometer, mechanically perfect; first cheque for £47 secures.—Colmore Depot, 261, Deansgate, Manchester. [X9265]

1914 6h.p. 3-speed Countershaft Bradbury Combination, chain drive, De Luxe coachbuilt sidecar, wind screen, large head lamp, etc., Stewart speedometer, recently overhauled, splendid condition; £55, or near offer.—5, Albany Rd., Manor Park, E. [X9298]

BRADBURY, 1915, 4h.p., countershaft 3-speed, h.b.c. clutch, all chain drive, with coachbuilt sidecar, lamps, horn, speedometer, an exceptionally fine combination, had most careful use, 75 m.p.g., runs well on substitute; worth £60 easily, accept £52/10.—Laytons' Garage, Bicester, Oxon. [X5452]

## Brough.

BROUGH, 1916 (June), 3½h.p., horizontal twin, overhead valves, 3-speed countershaft gear, clutch, kick starter, well equipped, mileage 300, practically brand new; £60; might entertain part exchange.—Sinclair, East Molesey. [X5387]

## Brown.

15 Gns.—5h.p. Brown, m.o.v. twin, strong, fast, tyres good, coil.—Railway Garage, Staines. [X9290]

3½h.p. Brown, perfect condition, T.T. bars, drop frame and tank, spring forks, mag., adjustable pulley; £2 gns.—Box 677, clo The Motor Cycle. [X5363]

## B.S.A.

B.S.A. New 1916 Models H and K, actually in stock, no waiting.—Moss, Wem. [X5420]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [X0798]

B.S.A., 1916 model K, 4h.p., countershaft 3-speed, perfect, lamp, horn; £55.—Tollady, Bicester, Oxon. [X5454]

B.S.A. 1914 T.T. Model, in perfect condition, tyres good; £30.—Montresor, 84, Port St., Evesham. [X5385]

B.S.A. 1916 Model K, 4h.p., used 300 miles only, and as new, guaranteed perfect; £55.—Tollady, Hemingford, Bicester. [X5447]

B.S.A., 1915 model, 4h.p., 3-speed countershaft, good condition, overhauled; £46.—Laytons' Garage, Bicester, Oxon. [X5453]

B.S.A. 1916 Models H and K in stock, immediate delivery; prices £64 and £62.—Wallace, Fountain Buildings, Bath. [X9020]

B.S.A., 1912-13, 3½h.p., 2-speed, sidecar, speedometer, B strong detachable motor shed, complete; £35 cash, view by appointment.—Hill View, Queen's Rd., Lough-on. [X9317]

B.S.A. Models H and K actually in stock, with 2 sidecar; deferred terms by arrangement; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Nos. Walthamstow 69, Hornsey 1956. [X9316]

B.S.A. 1916 models in stock, ready for immediate delivery, 4½h.p. 3-speed countershaft gear, chain-cum-belt drive £62, all chain drive £64; exchanges or extended payment terms quoted.—Elce and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [X0551]

## Calthorpe.

CALTHORPE Junior, 1914, 2-speed, good condition; £11.—Batten, 20, Featherstone Lane, Featherstone, Yorks. [X5359]

CALTHORPE-J.A.P., 1915, 2½h.p., perfect condition, private owner; £27/10.—Tideswell Rd., Putney. Phone: 1660 Putney. [X9455]

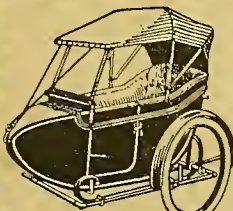
COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [X0799]

CALTHORPE-J.A.P., 2½h.p., 2-speed, as new, bought May, mileage 500, cost £38; condition perfect; also £28 speedy sale.—Bright, Owleshayes, Aylesbeare. [X9473]

CALTHORPE-J.A.P., 1916, latest model, 2½h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X240]

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7-9h.p. PREMIER, 1914, 2-speed countershaft, with £13 ros. new coach Sidecar..... £49 15

6 h.p. REX, 2-speed, magneto..... £11 15

2½ h.p. DOUGLAS, 1910..... £13 15

2½ h.p. MINERVA, magneto, variable gear..... £9 15

7-9h.p. INDIAN, 1915, 3-speed, electrical model, and £15 Montgomery Sidecar..... £69 15

1916 7-9 h.p. HARLEY-DAVIDSON..... £80 15

1916 ditto, electrical model..... £39

1914 FORD Touring Car, detachable wheels..... £25 0

2½ h.p. WOLF, 1916, 2-speed..... £33 10

20 h.p. FORD Van, new, 1916 model..... £130 0

20 h.p. FORD Van, 1915 model..... £90 0

2½ h.p. TYLER, 1915, 2-speed model..... £24 15

3 h.p. TRIUMPH, 1910 model..... £16 15

3 h.p. LINCOLN-ELK, 1912 model..... £13 15

8 h.p. WILLIAMSON, 1913, with torpedo coach-built Sidecar..... £45 0

3½ h.p. HUMBER, 1913, 2-speed, Sidecar..... £29 15

3½ h.p. PREMIER, 1913, 2-speed countershaft gear, belt and chain..... £26 15

3 h.p. LINCOLN-ELK, 1911, magneto..... £12 15

3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn..... £25 15

2½ h.p. PREMIER, 1912, 3-speed model..... £16 15

7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar..... £69 15

3½ h.p. HUMBER, 1911, 2-speed..... £17 15

2½ h.p. MATCHLESS-J.A.P., 1910..... £10 15

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## MOTOR CYCLES FOR SALE.

## Calthorpe.

CALTHORPE 2-stroke 1916 Latest Model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9241]

CALTHORPE-J.A.P.'s with Enfield gears; 5 models actually in stock, £37/16; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X9311]

CALTHORPE-J.A.P., late 1915, 2½h.p., Enfield 2-speed, with pretty little coachbuilt sidecar, electric horn and lamps, all in first-class condition; trial willingly; accept £35.—24, Silchester Rd., W. [X9283]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [X0815]

CALTHORPE Motor Cycles.—Latest 1916 models in stock: 2½h.p. J.A.P., 2-speed, free engine, 36 gns.; 2½h.p. 2-speed 2-stroke lady's model, 34 gns.; 4h.p. twin J.A.P. lightweight combination, 67 gns.; exchanges or extended payment terms quoted.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.O. City agents. [X0480]

## Camplon.

CAMPION-VILLIERS, 1915, 2½h.p., extra good engine, thoroughly sound machine; offered at £17/10, worth much more.—Laytons' Garage, Bicester, Oxon. [X5449]

1915 6h.p. Camplon and sidecar, splendid condition, several spares; £70, or would exchange for 2-stroke 2-speed, cash adjustment.—Roots, 27, Neville St., Cleethorpes. [X5315]

1914-15 6h.p. Camplon, Jap twin, chain drive, kick start, Jardine two-speed gear and clutch, Ivy sidecar, a very fine combination, and in good condition; separate belt attachment for solo work, with adjustable pulley; price £58, no offers.—O. Bush, King's Standing, Burton-on-Trent. [X5332]

## Chater-Lea.

3½h.p. Chater-Lea, Bosch, £12; Triumph 1912, £23. [X5374]

1913 Chater-Lea 8h.p. Combination, splendid coach-built sidecar, Pillion seat, twin-cyl., 3 speeds, countershaft, speedometer, F.H.S. lamps, horn, extra wide mudguards, waterproof apron, very good lot; £50, or exchange light cycle car.—McKenzie, Barriest St., Welshpool. [X5265]

## Chater-Sarolea.

6h.p. Twin Chater-Sarolea, Bosch, 2-speed, free engine, coachbuilt sidecar, tyres excellent; trial; £18, or nearest offer; must sell.—17, Norris Rd., Reading. [X9322]

## Clyno.

CLYNO 6h.p. Coachbuilt Combination, 2-speed, free, kick starter; £28.—54, Shaftesbury Av., Roundhay, Leeds. [X5378]

1912 5-6h.p. Clyno, 2-speed countershaft gear, 18 gn. Turner sidecar, lamp, horn, speedometer; only £40.—Parker and Soa, St. Ives, Hunts. [X9414]

## Connaught.

CONNAUGHT, 2-stroke, 1916, indistinguishable from new, run 500 miles; £27.—6, Warren St., London. [X9370]

CONNAUGHTS in stock for immediate delivery; miniature, standard, and 2-speed models; prices from £28/17/6.—P. J. Evans, John Bight St., Birmingham. [X5400]

## Coventry Eagle.

COVENTRY Eagle, 1916 2-stroke Triumph, 2 speeds, indistinguishable from new; £32.—6, Warren St., London. [X9377]

COVENTRY Eagle, 2½h.p., late 1915, 2-strokes, all accessories, very little used, new condition; £25, or near offer.—3, Carson Rd., W. Dulwich. [X9463]

## Dalm.

DALM 2-stroke, 1915, 3 speeds, clutch, snit lady rider, perfect condition; £25.—11, Lana Rd., Thornton Heath, Croydon. [X9344]

## Douglas.

DOUGLAS, 2½h.p., 1911, good order; bargain, £15.—14, Dodbrooke Rd., West Norwood. [X9421]

DOUGLAS, 1911, 2½h.p., good tyres, etc.; must be sold.—58, Garfield Rd., Lavender Hill, S.W. [X9330]

DOUGLAS, 1915, V.O. model, 2½h.p., 2-speed, complete; £45, or near offer.—Laytons' Garage, Bicester. [X5448]

DOUGLAS, 2½h.p., 2-speed gear and kick start and clutch; £33/10.—Colmore Depot, 51, Colmore Row, Birmingham. [X5309]

4h.p. Douglas, 1915 machine, and coachbuilt sidecar, speedometer, lamps and horn, good condition; £56.—Moffat Yeovil. [X9342]

1916 Douglas, 2-speed, footboards, new, not used; having to join up; what offers over £55?—4, Water Lane, Lincoln. [X5426]

£9, first cheque.—2½h.p. Douglas, new tyre, running, but wants attention; snip.—Butlin, Bungalow, Galleywood, Chelmsford. [X5258]

DOUGLAS, 2½h.p., 2-speed, free engine, footboards, head, tail lamps, good condition; £28.—Lord, 16, Wentworth Rd., Manor Park. [X9266]



## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 2½ h.p., 1914 T.T., 2-speed, speedometer, lamp, tools, just overhauled; £25.—Randolph, 3rd Coy., E.M.A., Woolwich. [X5380]

1914 2½ h.p. Douglas, 2-speed, nice condition throughout, equipped, £35; also ditto Alldays Matchless, £20.—Matthews, Stansted, Essex. [X4558]

DOUGLAS, 1915, 2½ h.p., 3 speeds, as new, £45; a 1914 at £38, a 1913 at £31, a 1912 at £27, a 1911 at £16.—6, Warren St., London. [X9373]

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [X5855]

DOUGLAS, 1913, 2-speed, clutch, tyres nearly new, overhauled recently, speedy machine; £35.—Vanstone, Higgs and Hill, Hayes, Middlesex. [X4559]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [X1189]

2½ h.p. Douglas, about 1911, engine just been overhauled, good tyres and belt, in fine running order; a bargain, £14.—16, Haverstock Hill, Chalk Farm. [X9430]

1913 Douglas, exceptional order, new throughout, 2½ tyres, new wheels; £35; lightweight part; offers, particulars.—12, Albion Place, Winchfield, Hants. [X2550]

IT.—1916 Douglas, 3-speed, clutch, Colonial model, speedometer, horn, lamp, generator, perfect; no dealers; cost £72, quick sale £52.—L1, 906, c/o The Motor Cycle. [X2321]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [X0800]

DOUGLAS, 2½ h.p., 1914 T.T. model, done less than 2,000 miles, just been overhauled.—For trial, at Armstrong's, Station Rd., Harrow-on-the-Hill. Owner gone war. [X2655]

DOUGLAS, 1913, single speed, engine, tyres, etc., splendid condition, P.R.E.S. lamp, spares, fast, reliable machine; £24.—Hardiman, 24, Fairlawn Av., East Finchley. [X9350]

1916 Douglas, War Office model, 2-speed, footrests, semi-T.T. bars, latest pattern, brand new, one only in stock; immediate delivery.—Robinson's Garage, Green St., Cambridge. [X3686]

DOUGLAS, 2½ h.p., 1914, 2-speed, T.T., good order, complete accessories, £40; also Watsonian featherweight sporting case, speedometer, disc wheel, £25.—Millard, 166, West Hill, Putney. [X3040]

1913 Douglas, 2½ h.p., model W, clutch, kick start, footboards, touring bars, 2 lamps, horn, tools, etc., condition engine perfect; £33/10.—Robinson's Garage, Green St., Cambridge. [X9387]

1914 2½ h.p. Douglas, 2-speed model W, horn, Lycett La Grande saddle, Stewart speedometer, Bosch mag., Dunlop belt, tyres fair condition, engine perfect; £42.—Robinson's Garage, Green St., Cambridge. [X9388]

DOUGLAS, 1914, 2½ h.p., 2 speeds, clutch, kick starter, T.T. or touring bars, long or short exhaust, Amal jacketed carburettor, fully equipped, running on 50% paraffin without alteration; best offer above £35 gets it.—136, Dalnally Rd., Croydon. [X4667]

1916 Douglas, T.T. model, Lucas lamps and horn, long exhaust, very fast, £44; 1913 2½ h.p. model, clutch and kick start, wide mudguards, had very little use, grand order, bargain, £35.—Jarvis, Corner House, Southgate. Phone: 3986 Hampstead. [X5407]

4 h.p. Douglas, very latest model, in use for demonstration purposes only, complete with luxurious coach-built sidecar, Lucas dynamo lighting set, electric horn, speedometer, complete set tools, ridden under 2,000 miles, condition as new throughout guaranteed; £95/10.—Robinson's Garage, Green St., Cambridge. [X9383]

## Enfield.

3 h.p. Royal Enfield, 2-speed; £28/10.—Chilton, High St., Watford. [X9336]

ENFIELD, late 1915, complete; any trial; £68.—P. Corby, 88a, High St., Merton. [X9440]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [X0801]

ENFIELD, 3 h.p., 2-speed, new Dunlops, lamps, tools, as new; £33.—Sibley, jun., 72, South St., Romford, Essex. [X5298]

ENFIELD Combination, 6 h.p., 1915½, in splendid condition, wide mudguards; 65 gns.—280, Camberwell Rd., S.E. [X9258]

ROYAL Enfield, 2½ h.p. twin, 2-speed, new tyre; quick sale 20 gns., bargain.—Butlin, Bungalow, Galleywood, Chelmsford. [X5269]

ROYAL Enfield, 2½ h.p., twin-cyl., splendid order guaranteed; £18/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X5308]

1914 2½ h.p. Enfield, 2-speed, kick starter, almost new condition throughout; best offer over £27.—Watsons, Dawson Sq., Burnley. [X5351]

ENFIELD 1916 6 h.p. Combination, latest model, just arrived from works; 90 gns.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9238]

ENFIELDS actually in stock for immediate delivery, 6 h.p. combinations, 3 h.p. and 2½ h.p. models, ready to drive away.—P. J. Evans, John Bright St., Birmingham. [X5404]



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A.J.S., 1914, 6 h.p., 3-speed, lamps, horn, speedometer, and Millford Sidecar, as new	£73
HARLEY, 1914, 7 h.p., 2-speed, and coach-built S'car	£44
INDIAN, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar	£65
INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame	£48
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KERRY-ABINGTON, 3½ h.p., magneto, 2-speed	£15
TRIUMPH, 1912, 3½ h.p., clutch model	£28
NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine	£38
TRIUMPH, 1912, 3½ h.p., clutch model	£30
ROYAL RUBY, 2½ h.p., 1915, J.A.P., 2-speed	£33
TRIUMPH, 1912, 3½ h.p., clutch, Phillips pulley	£23
N.U.T., 1914, 2½ h.p., T.T., twin, overhead valves	£38
BAT-J.A.P., 1911, 8 h.p., 2-speed, spring frame	£25
TRIUMPH, 1914, 4 h.p., 3-speed	£48
RUDGE, 1913, 3½ h.p., multi, large tank	£32
REX, 1913, 3½ h.p., 2-speed, and clutch	£29
BROUGH, 1914, 8 h.p., T.T. model, original road racing model	£45

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LAGONDA 10 h.p. 1915 Coupé, just repainted	£120
MORRIS-OXFORD 10 h.p. 1913, dickey seat; very good order	£140
TALBOT 15 h.p. Coupé, Mulliner body, Bedford cord, C.A.V. 12 volt set; like new	£375
SUNBEAM, late 1912, 12-16 h.p., open five-seater touring; very fast; being repainted	£295
G.W.K., 10 h.p., 4 speeds, 80 mm. tyres, 1914 model, just being repainted	£120
FORD, 1913, 20 h.p., 4-seater, detachable wheels; make a splendid light van	£60
CADILLAC, 1914, 20-30 h.p., 6-speed model, 7-seater, just overhauled, dynamo light and starting, just being repainted; make a very fine hire car	£320
A.C., 5-6 h.p., late 1913, hood and screen, lamps, all tyres new, splendid condition	£50
MINERVA, 28 h.p., 1910, 5-seater; £6 6s. tax; just being overhauled	£155
KNIGHT Junior, 1914, 11 h.p., sporting body, excellent order	£170
G.W.K., 1915, 10 h.p., special finish, domed guards, speedometer	£170

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## Enfield.

ENFIELD 1916, immediate delivery of latest 6 h.p. combination, now in stock; 90 gns.; make sure of this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9239]

1915 Enfield Coachbuilt Combination, Hutchinsover size tyres, 3 lamps, horn, speedometer, hood and screen; cost £120, sell £85.—8, Holmes St., Enry Rd., Rochdale. [X5297]

ENFIELD 5 h.p. 1916 latest model, just arrived from works, immediate delivery, make sure of this now; 55 gns.; we are Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9240]

1915 Royal Enfield 2-stroke Lightweight, chain drive, countershaft 2-speed gear, Palmer tyres, complete with accessories, in excellent condition; £30.—The Premier Motor Co., Aston Rd., Birmingham. [X9273]

ENFIELD Combination, 1916, 6 h.p., 2-speed, delivery from stock; 90 gns.; exchanges or extended terms quoted.—Eles and Co., 15-16, Bishopsgate Av., Camomile St., E.C. Enfield agents. [X5552]

ENFIELDS.—Birmingham agent, P. J. Evans, 87-91, John Bright St. Immediate delivery all models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination; also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X5598]

ENFIELDS, 8 h.p., 6 h.p., and 3 h.p. models actually in stock; also an 8 h.p. 1916 combination, hood and screen, Lucas accessories, £90; and a 6 h.p. 1915 De Luxe, electrically equipped, hood and screen, £89/10; deferred terms by mutual arrangement; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Nos. Walthamstow 169, Hornsey 1956. [X9315]

## Fafnir.

3 h.p. Fafnir, Chater-Lea frame, re-bushed, new piston, pulley, belt, stand, and carburettor, also Michelin tyre; absolute bargain; coil and battery; £5/10.—Clark, Garage, Long Melford, Suffolk. [X9329]

## F.N.

1914 4-cyl. 7 h.p. F.N., wicker sidecar, lamps, complete; £65.—Miller, Brighouse. [X5431]

F.N., 7 h.p. 3-speed gear, and coachbuilt sidecar; £65.—Box L1, 923, c/o The Motor Cycle. [X9277]

## Grandex.

GRANDEX-PRECISION, 2-stroke, excellent condition; owner buying more powerful machine.—Marere, West Cliff, Herne Bay. [X9362]

## Harley-Davidson.

BRAND New Harley-Davidsons.—See below.

MODEL F, 7-9 h.p., 3-speed; £68.—The Premier Motor Co.

MODEL J, 7-9 h.p., 3-speed, with dynamo electric lighting outfit; £75.—The Premier Motor Co.

THE Above are guaranteed brand new; standard specification and standard equipment.—The Premier Motor Co., Birmingham.

SPECIAL Gloria Sidecars, to match; 19 and 25 gns. You save £17 by purchasing your new combination direct from the recognised H.D. experts. Delivery carriage paid to any address.—The Premier Motor Co., Aston Rd., Birmingham. [X835]

HARLEY-DAVIDSON, late 1915, 7-9 h.p., little used with sidecar; £60.—Baue, 25, Gower Rd., Forest Gate. [X9235]

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Denagate Manchester. [X0833]

HARLEY-DAVIDSON, 1915, and coachbuilt sidecar; good tyres, accessories, in perfect order; £68.—Vincent Motors, Rugeley. [X4440]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [X0800]

HARLEY-DAVIDSON, 7-9 h.p., 11F, late 1915, with Mills-Fulford sidecar, original tyres, accessories, in perfect condition; £75.—No. 678, c/o The Motor Cycle. [X535]

HARLEY-DAVIDSON, 1916 model J, electric light set, electric horn, electric welded sidecar, not done 600; lightweight taken in part payment.—Covey, Fleet Hants. [X930]

HARLEY-DAVIDSON, late 1915, Montgomery coach built sidecar to match, with accessories, outfit, new, small mileage; must sell; £65.—29, Brigstock Rd. Thornton Heath. [X942]

7-9 h.p. Harley-Davidson Combination, 3-speed, dynamo electric lighting, absolute new condition throughout; not done 400 miles; any trial; sacrifice £75, cost £95.—Eles, Dimple, Matlock. [X541]

HARLEY-DAVIDSON, 1916, 7-9 h.p., 3-speed, done 200, lamps, mechanical horn, semi T.T. bars, Swan sporting sidecar; cost £103/18 month ago, accept £87, carriage paid.—2, Castle Terrace, Edinburgh. [X927]

HARLEY-DAVIDSON Combinations actually in stock, £101/15 and £110, or solo £80/15 and £89; deferred payments if desired; liberal exchange.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X931]



## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**HARLEY-DAVIDSON** 8hp. Combination, 1915, 3 speeds, 2 lamps, mechanical horn, speedometer, run only 2,000 miles, condition unscratched; £67/10.—Cass's Motor Mart, only address 5, Warren St., Euston Rd., W. Museum 623. [9379]

**HARLEY-DAVIDSON** and Sidecar, property of naval officer who is unable to make use of it, 1915 model 11F, lamp, horn, and accessories, new back tyre; done 100 miles; £60, or near offer.—Macrae and Telford, 2, Castle Terrace, Edinburgh. [X5353]

**HARLEY-DAVIDSON**, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [10817]

**HARLEY-DAVIDSON**, 1915 model 11J, 7.9hp., 3-speed, dynamo electric lighting outfit, Harley-Davidson coachbuilt sidecar, 21 gn. model, with disc wheel, speedometer, sidecar lamp, wind screen, etc., combination cost over £110, has not done 2,000 miles, and is guaranteed in perfect condition; £82.—The Premier Motor Co., Aston Rd., Birmingham. [9274]

## Henderson.

**HENDERSON**, 1914, 4-cyl., 10hp., with coachbuilt sidecar, speedometer, 3 electric lamps and batteries, completely fitted, and in first-rate condition; £55.—Inke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, London, N. [9456]

## Hobart.

**HOBART** 3-speed 4hp. Twin, and 9 gn. Gloria sidecar, all accessories; only trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [10832]

**HOBART-VILLIERS**, 1915, 2½hp.: we have an extra fine sample, exceptionally fine engine, good appearance, well tried; £21; approval anywhere.—Layton's Garage, Bicester, Oxon. [X5450]

## Humber.

**HUMBER**, 3½hp., 1912, 2 speeds, free, handle start, and sidecar, driven away; £22.—14, Doddbrook Rd., West Norwood. [9422]

**HUMBER**, 2hp., splendid order, equal to 1916 machine; £16, with accessories.—Colmore Depot, 31, Colmore Row, Birmingham. [X5305]

**1915 Humber**, 3½hp., 3-speed, Canoelet sidecar, 19 Cowey, Lucas set, and spares, tyres as new; £40.—Wilke, 217, Hampstead Rd., N.W. [9405]

**2hp. Humber**, 1911, 2-speed, free engine, handle start, wicker sidecar, all new tyres; £26.—Parkinson, 62, Richmond Rd., Newport, Mon. [X5334]

**HUMBER**, 3½hp., Sturmeys gears and clutch, new coachbuilt sidecar, wind screen, good condition; sacrifice £30 cash. Also wicker sidecar body, well upholstered, with door, 18/-—38, Replingham Rd., Southfields, S.W. [9408]

## Indian.

**INDIAN**, 1914, 7hp., clutch, good condition; £30.—Lewis, 70, Twicken Rd., Highgate. [9235]

**1916 7.9hp. Powerplus Indian**, £65, with 20 gn. sidecar, £78.—H. Wright, Arlesey, Beds. [9337]

**INDIAN**, 7hp., 1914, Swan sidecar, all in excellent order; £50.—Richardson, Scone Hills, Newark. [X5336]

**INDIAN**, late 1915, 7.9hp., in exceptional nice order and condition; £46.—6, Warren St., London. [9375]

**INDIAN**, T.T., 1915, 5hp., 3 speeds, clutch, only run 200 miles; £43.—11, Luna Rd., Thornton Heath, Croydon. [9343]

**7hp. Indian**, double seated S.C., Sept. 1915, done 1,200; perfect; £85, or offer.—Gandy, 111, Edenfield Rd., Rochdale. [X5339]

**INDIAN**, 1913, 7.9hp., 2-speed, spring frame, coachbuilt sidecar, in sound mechanical order, exceptional bargain, £36.—Below. [9340]

**INDIAN**, 1915, 5hp., T.T., 3-speed, clutch and kick starter, complete with accessories; £48.—Elice and Co., 15-16, Bishopgate Av., Camomile St., E.C. [0481]

**INDIAN**, 1915, 5hp., and sidecar, 3 speeds, clutch and kick starter, new condition; £65.—P. J. Evans, John Bright St., Birmingham. [X5406]

**1915 5.7hp. Indian**, 3 speeds, kick starter, new condition; £46, or combination £5 extra, bargain.—Pike, 102a, Church St., Chelsea. [9320]

**1915 T.T. Indian**, 3½hp. twin, 3 speeds, and light sidecar, sporty turnout; £55 cash, no offers.—29, Portland Rd., Southall, Middlesex. [9157]

**INDIAN**, 7.9hp., clutch, free engine, bought January, 1916, in perfect condition, very fast, done only 1,400 miles; £47.—N.F.S., 10, Vulcan St., Bedford. [X4854]

**INDIAN**, 1915, 5hp., 3-speed, kick starter, electric head and tail lamps, Dunlop tyres, Lucas horn; 50 gns.—Julians, Broad St., Reading. 'Phone: 1024. [X4131]

**1915 Indian**, 3-speed, kick starter, free engine, coachbuilt sidecar, splendid condition, tyres, engine, and appearance.—Rees, 7, Burwash Rd., Plumstead. [X5388]

**INDIAN Powerplus**, 7hp., 3-speed, T.T., rigid frame model, Dunlop tyres; £75; in stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X5399]

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1914 6 h.p. A.J.S. and Canoelet, hood and screen.....	70 0	25 0	80/8
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## MOTOR CYCLES FOR SALE.

## Indian.

**LATE 1913 Indian** 7.9hp. Combination, 2-speed countershaft, h.c. clutch, absolute perfect order, bargain, £38/10.—Lee, 30, Cholmeley Rd., Reading. [9427]

**INDIAN Powerplus**, 7hp., 3-speed, and spring frame, dynamo lighting set, 2 lamps, horn, and speedometer; £90.—P. J. Evans, John Bright St., Birmingham. [X5403]

**1915 7.9hp. T.T. Indian**, engine and clutch just overhauled, battery electric lighting, new Dunlop back tyre, front very good condition; £45.—Sub-Lion Booth, R.N.A.S., Howden. [X5121]

**INDIAN**, 1914, 7.9hp., electrically equipped, speedometer, disc wheels, does 20 m.p.h., 2-speed, clutch, kick start; 39 gns., including 6 galls. petrol.—Troward, 78, High St., Hampstead. [9394]

**INDIAN 1914 7.9hp. Coachbuilt Combination**, 3-speed, clutch, accumulator lighting set, electric horn, disc wheels, speedometer, first-class condition; £80, or near offer.—Fox and Goddington, Cambridge. [X5326]

**INDIAN**, 1914 model, good condition, run 5,000 miles, T.T. bars, electric lamps and horn, kick start, good tyres, and spare parts; £50, or nearest offer.—M. Morton, 1, Osborne Villas, Newcastle-on-Tyne. [9303]

**INDIAN**, T.T., 5hp., 3 speeds, foot and hand clutch, and racing Phoenix sidecar, with new tyre and disc, engine just overhauled, perfect condition; £67, or nearest.—Kennedy, Seaview, Isle of Wight. [X5295]

**INDIANS**—Birmingham agent, P. J. Evans, 87-91, John Bright St. Immediate delivery ex-stock 5hp. 3-speed standard and sporting models, with and without sidecar; price £70; sidecars from 11 gns. [X5397]

**5-hp. Indian**, 3-speed, with sporting sidecar, T.T. bars, new September, original tyres unpunctured, many extras, fast and economical; £60; must sell, got car; photo.—6, Churchways Crescent, Horfield, Bristol. [9205]

**INDIANS in Stock**—Latest models, Powerplus combinations, Sporting Powerplus 3 speeds models, Standard 7hp. overhead inlet combinations, with lighting set. The famous 5hp. 3-speed double-purpose mount.—P. J. Evans, John Bright St., Birmingham. [X5401]

**INDIAN**, 7hp., late 1915 (Sept.), model G, countershaft 3-speed gear, clutch, kick starter, footboards, electric horn, head and tail lamps, and speedometer, with £17 Montgomery sidecar to match, all guaranteed perfect, only run 2,500 miles; £75, bargain.—Moss, Wem. [X5421]

## Ivy.

**IVY 2-stroke**, 3-speed Sturmeys-Archer gear, in splendid going order; £24, or best offer.—Johnson, 24, Portmill Lane, Hitchin. [9268]

**1916 Ivy-Jap**, 4hp. twin, Sturmeys countershaft 3-speed, Lucas lamps, Stewart horn, Mills-Fulford Skiff sidecar, ridden 500 miles; cost £85, accept £75, or near offer; called up.—Denne, Matlock Bath, Derbyshire. [X5358]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES**, 1914, 4½hp., 3-speed, clutch, kick starter, all in good condition; £40, offer.—455, York Rd., Wandsworth. [9442]

**JAMES 1914 Combination**, Model de Luxe sidecar, excellent condition; £49.—Apply by appointment, Foot, 72, Wellwood Rd., Goddams, Essex. [9237]

**JAMES 1916 4½hp. Combination**, 3-speed, clutch, and kick starter; delivered from stock; £80/15.—Elice and Co., 15-16, Bishopgate Av., Camomile St., E.C. [0491]

**JAMES 4½hp. 1914 Combination**, 3-speed, all chain drive, Lucas lamps and horn, all spares, excellent condition; lowest £45/10.—21, Durnsford Av., Wimbledon Park. [9354]

## J.H.

**J.H.**, 1916, 2½hp., only run 200 miles; bargain, £31.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9014]

## Kerry.

**KERRY-ABINDON**, 3½hp., 2-speed, free engine, re-enameled and re-plated, electric horn, and speedometer; £30.—Hatcher, 69, Dock Rd., Victoria Docks, E. [9446]

## Levis.

**1915 2½hp. Levis Popular**; £20.—Shorland, c/o Eyles, Welford, Rugby. [X5442]

**1915 Levis** and accessories, in good condition; £22; seen any time.—Bounds' Garage, High Rd., Kilburn. [9282]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**LEVIS Popular**, new; special bargain; cannot repeat; £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

**LEVIS 1916 Popular Model**, 2½hp., slightly shop-soiled; special bargain, £29.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9243]

**LEVIS Model E**, 2-speed Enfield gear, splendid condition, Lucas lamp, generator, rear light, and horn; £38.—Bowers, 320, Broad St., Birmingham. [X5361]



## MOTOR CYCLES FOR SALE.

## Levis.

**LEVIS** 2-stroke Motor Cycles, latest 1916 models.—Sole London and district agents. Cars and Motor Sundries Ltd., 175-177, Shaftesbury Av., London, W.C. Phone: 1432 Regent. [0711]

**LEVISES**—Three Populars, £32, and two model E's with Enfield gears, £47/10, actually in stock; deferred payments by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9312]

## Lincoln-Elk.

**LINCOLN-ELK**, 1913, 4½ h.p., 2-speed, free, Montgomery sidecar, spares, good condition; £28.—Hartley, 29, Common, Thornhill, Dawsbury. [X5434]

**LINCOLN-ELK**, 3½ h.p., 1914, recently overhauled and enamelled, 1916 Senspray; owner going to France; accept any reasonable offer.—Clegg, 1, Shirley Rd., Southampton. [X5430]

## Martin.

**MARTIN-J.A.P.**, 2½ h.p., overhead inlet and exhaust valves, Amac forced feed carburetter, lamp, horn, speedometer, in new condition throughout; £23.—Vincent Motors, Rugeley. [X4491]

## Matchless.

**MATCHLESS**, 3½ h.p., all in good condition, and good tyres; £16.—455, York Rd., Wandsworth. [9443]

**MATCHLESS**, 1914, 2-strokes, all accessories, perfect running condition; £20.—Wilda, Ness, Neston, Cheshire. [X5354]

**MATCHLESS** Combination, 1915, 7-h.p., 3-speed, horns, lamps, speedometer, equipped, run on Binks fuel, absolutely as new; £84.—Woodcote, Knebworth. [9401]

**MATCHLESS**, 6-h.p., 2-speed, Canelet sidecar, F.R.S. head light, Cowey speedometer, etc., mileage about 6,000; a genuine bargain, £45.—C. Kendall, Nantlyn, Coventry. [X5463]

**MATCHLESS** 1915 8-h.p. 3-speed Combination, fine order, accessories; 70 gns.; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9314]

**MATCHLESS**, 1913, 6-h.p., twin belt, Lucas head lamp, Dunlop extra heavy tyre, 2-speed gear and hand clutch, kick starter, and sidecar; 45 gns.—Julians, Broad St., Reading. Phone 1024. [X4129]

**3½ h.p.** Twin Matchless Motor Cycle, 3 speeds, free 2" engine clutch, kick starter, countershaft, new tyres, lamps, and horn, in excellent condition, very fast and flexible; price £38.—John C. Beadle, Ltd., Motor Engineers, Dartford. [0827]

## Minerva.

**MINERVA**, 3½ h.p., in real good order; £5; suit beginner.—6, Warren St., London. [9371]

**MINERVA**, 2½ h.p., ready ride away, excellent condition; £6.—Hunt, 39, Carter St., Gt. Oola. [X5093]

**3½ h.p.** Minerva, low Chater frame, overhauled, complete, less tank and mag.; £6.—540, Fishponds Rd., Bristol. [X5096]

**MINERVA**, 3-5½ h.p., spring forks, Bosch mag., perfect; £10; owner enlisted.—J. Pearce, Woodman-cote, Cirencester. [9466]

**MINERVA**, 24, battery ignition, new shaft, coil, petrol tap, B. and B. carburetter, tyres good.—Hutchinson, Lammerlaw, Helensburgh. [X5266]

**MINERVA**, 2-h.p., B. and B., accumulator ignition, good tyres; £5; can be viewed by appointment only.—Binstead, 36, Braydon Rd., Stamford Hill. [9246]

## Moto-Reve.

**1911 Moto-Reve**, 2½ h.p., perfect; £7/10.—Tugwood, 42, Brecon Rd., Hammersmith. [9230]

**MOTO-REVE** 2½ h.p. Twin, late model, good light machine, lamps, etc., owner joined the army; £12, or nearest.—Apply, Green's Garage, Villiers St., Charing Cross, W. [9223]

## Motosacoche.

**MOTOSACOCHE** Lightweight, Druids, mag., in nice condition; 12 gns.—Leo, 104, Trafalgar Rd., Peckham. [9229]

**1912 Motosacoche**, 2½ h.p., mag., B. and B., Druids, touring handle-bars, footrests, good condition, Denlop tyres; bargain, £6/10.—Evans, 2, Race St., Newcastle-on-Tyne. [X5301]

## New Hudson.

**1915 New Hudson**, 2-stroke, single speed, lamps, horn, etc.; £20; any trial.—Deane, Matlock Bath, Derbyshire. [X5357]

**1915 6-h.p.** New Hudson Combination, in excellent order, very little used; £65.—Turpins, 22-29, Preston Rd., Brighton. [0716]

**1914 6-h.p.** 3 speeds New Hudson, and sidecar, coachbuilt, newly decorated and upholstered, splendid condition, all accessories; £50.—Baird, Spence St., Edinburgh. [X5264]

**NEW Hudson**, 1913, 3-speed, 23 gns.; New Hudson combination, coachbuilt, 1915, 3-speed, 28 gns.; includes 8 galls. petrol.—Troward, 78, High St., Hampstead. [9393]

**1916 New Hudson**, 2-stroke, 2-speed, lightweight, delivered June, 1916, very carefully kept; owner going abroad; offers: trial by appointment.—Brooks, Bagley Wood, Oxford. [9445]

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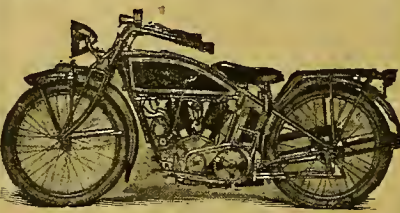
7 h.p., twin, 84 x 80, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple disc clutch with hand and foot control, handle-bar control, spring seat-pillar, gin. non-skid tyres, finish Excelsior grey; £75.

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<b>1915 2½ h.p.</b> 2-stroke 2-speed <b>IVY</b> .....	£26 10
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<b>INDIAN</b> , 1912, 4 h.p., 2-speed .....	£29 10
<b>1913 2½ h.p.</b> <b>PRECISION</b> lightweight .....	£15 10
<b>1912 3½ h.p.</b> <b>ZENITH-GRADUA</b> .....	£28 10
<b>1912 3½ h.p.</b> 2-sp. <b>BRADBURY</b> , chain drive	£29 10
<b>CHATER-LEA J.A.P.</b> , 8 h.p., 3-speed .....	£33 10
<b>BRADBURY</b> , 1911, T.T. ....	£19 10
<b>ENFIELD</b> , 2½ h.p., twin, chain drive .....	£17 10
<b>RUDGE</b> , 2½ h.p., F.E., good order .....	£19 10
<b>EXCELSIOR</b> , 3½ h.p., 3-speed, Druid forks ..	£17 10
<b>ALLDAYS</b> , 3½ h.p., 2-speed .....	£25 10
<b>TRIUMPH</b> , magneto, spring forks, new tyres	£14 10
<b>DOUGLAS</b> , 1911, 2½ h.p., twin .....	£15 10
<b>F.N.</b> , 2½ h.p., 2-speed, shaft drive .....	£17 10
<b>REX</b> , 1910, 3½ h.p., semi T.T. ....	£16 10
<b>VICTORIA-PRECISION</b> Lightweight .....	£17 10
<b>CALTHORPE-JUNIOR</b> , 2-speed .....	£19 10
<b>PREMIER</b> , 2½ h.p., piston damaged .....	£15 10

## SIDECAR COMBINATIONS.

<b>6 h.p. (new) REX</b> Sidecar; reduced to .....	£71 0
<b>1916 5-h.p. COVENTRY EAGLE</b> Combin'n	£72 10
<b>1915 7-h.p. HARLEY-DAVIDSON</b> and S'car	£64 0
<b>1914 6 h.p. ARIEL</b> , chain drive, and Sidecar	£45 0
<b>1914 7-h.p.</b> 2-speed <b>INDIAN</b> Combination ..	£53 10
<b>1914 6 h.p. REX</b> Sidecar, almost as new ..	£49 10
<b>1913 6 h.p.</b> 2-speed <b>REX</b> and Sidecar .....	£43 10
<b>3½ h.p.</b> 3-speed <b>TRIUMPH</b> and Sidecar .....	£27 10
<b>QUADRANT</b> , 7-9 h.p., 2-speed, twin, chain	
drive, and coach Sidecar. Fine lot .....	£45 10
<b>1912 3½ h.p.</b> 2-speed <b>PREMIER</b> and Sidecar	£33 10
<b>1909 3½ h.p.</b> 2-speed <b>TRIUMPH</b> and Sidecar	£26 10
<b>HAZLEWOOD</b> , 4-5 h.p., twin, and coach	
Sidecar, 3-speed, countershaft .....	£42 0

## MISCELLANEOUS.

<b>RENO</b> 15 h.p. 4-cylinder Touring Car .....	£65 0
<b>1913 MORGAN</b> , 8 h.p., repainted, as new ..	£57 10
<b>BRAMBLE</b> Coach-built Sidecar (new) .....	£14 14
<b>WILLIAMSON</b> Sidecar, as new .....	£9 15
<b>1915 REX</b> Coach Sidecar, with apron (new)	£12 10
<b>New Mechanical Horns</b> ; usual price 25/- ..	17/11
<b>WANTED</b> , 1915 G.P. Morgan, Sunbeam Combination, and Douglas.	

Halifax Motor Exchange  
68, HORTON ST., HALIFAX.

'Phone—766.

Telegrams—"Perfection."

## MOTOR CYCLES FOR SALE.

## New Imperial.

**1916 New Imperial-Jap**, 2-speed; £33.—Parker and Son, St. Ives, Hunts. [9416]

**NEW Imperial-Jap**, latest models, in stock, £38 and £44/8.—Crow Bros., Guildford. [8336]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**1916 2½ h.p.** New Imperial and Canelet Minor Combination, in stock; £48/7/6.—Crow Bros., Guildford. [9342]

**NEW Imperial**, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%.—Referees Cycle Co., 332, High Holborn. [0765]

**NEW Imperial-Jap**, 1915, 2-speed; 24 gns., including 6 galls. petrol.—Troward, 78, High St., Hampstead. Phone: 5392. [9396]

**NEW Imperials**, latest models in stock; 2-speed, also kick-starter hand-controlled clutch models.—P. J. Evans, John Bright St., Birmingham. [X5402]

**1915 New Imperial-Jap**, 2½ h.p., 2-speed, F.E.; £27/10; would accept clutch Triumph, or B.S.A., with cash.—Newham, 223, Hammersmith Rd., W. [9436]

**NEW Imperial-Jap**, 1916, 2½ h.p., 2-speed, variable mag., lamps, horn, spares; sacrifice, £31.—D. Young, Neuk Villa, Edgell Rd., Staines, Middlesex. [X5350]

**NEW Imperial-Jap**, 1916 models, delivery from stock; 2½ h.p., 2-speed, £38; 2½ h.p. ladies' model, 2-speed, clutch, and kick-starter, £46/8.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

**NEW Imperials**, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## Norton.

**1914 3½ h.p.** 3-speed Norton, plating and enamel as new; only £40.—Parker and Son, St. Ives, Hunts. [9415]

**BIG 4 Norton** Combination, S.A. countershaft; delivery from stock.—A. J. Young and Co., Ltd., Newmarket. [8633]

**NORTON** 1915-16 Big Four, Sturmer-Archer 3-speed countershaft gear, handle-bar clutch, kick start, coach sidecar, fully equipped; 63 gns., including 10 galls. petrol.—Troward, 78, High St., Hampstead. [9395]

## N.S.U.

**1914 N.S.U.**, 2-h.p., spring frame, Gradua gear, speedometer, Klaxon, has been very little used; £16.—46, Alfred St., Islington, N. [9053]

## N.U.T.

**N.U.T.** 3½ h.p. Twin, 3-speed, clutch; £32.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9012]

## O.K.

**O.K. Junior**, 2-speed, 1915 model, been 300 miles; what offers.—65a, Rosendale Rd., Dulwich. [9324]

**1916 O.K.**, Mark III, open frame, 2-speed, hand-controlled clutch, Clincher de Luxe tyres, in perfect condition, sold only; £36.—Robinson's Garage, Greens St., Cambridge. [9365]

## Omega.

**OMEGA**, 3-h.p., Oct., 1915, 2 speeds, lamps, horn, etc., run under 1,000 miles, condition as new; £30, or near offer.—3, Carson Rd., W. Dulwich. [9464]

**1914 2½ h.p.** T.T. Sporting 2-stroke Omega, spring frame, 2½ tyres, electric head and tail lamps, excellent condition; absolute sacrifice, £14 cash only.—West, Baddow Rd., Chelmsford. [X5414]

## P. and M.

**1914½ Phelon-Moore** Combination, fully equipped; bargain, £58/15.—Abson, 49, Kirkgate, Whitefield. [X5359]

**P. and M.**, new 1913, 2-speed and free, kick starter; £35, or exchange Indian.—12, Corn St., Witney, Oxon. [9439]

**P. and M.**, 1910, 3½ h.p., 2-speed, F.E., good condition; bargain, £18.—10, Stackdale Terrace, Woodhouse, Leeds. [X5366]

**1914 3½ h.p.** P. and M., 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [0721]

**P. and M.**, 1914, condition equal to new, Coronet sidecar, coachbuilt, all accessories, 3 new spare covers, 2 spare butt-end tubes, one engine chain, 10 gallon petrol, No. 1, lamps, 2 horns, 1 valve; £58.—Pickle, 230, Queen's Rd., Halifax. [8769]

## Phoenix.

**1916 Model H**, Phoenix sporting sidecar, does 50 miles; cost £78, accept £63; lightweight part; condition no object.—Particulars, offers, 12, Albion Place, Winchfield, Hants. [9249]

## Premier.

**1914 3½ h.p.** Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## Are Imports Prohibited?—No!

**W**HAT must have occasioned a good deal of surprise to our readers was the mention in our last issue of the large number of motor cycles imported during the month of July. Our figures, which were culled from Board of Trade returns, showed that 253 machines, of a value of £11,386, and parts to the value of £15,848, were imported into this country. Seeing that imports of motor vehicles were supposed to be totally prohibited in March last, the extent of the figures will cause much astonishment. One can well understand that machines expressly made for the British market, and embodying some more or less special detail in their specification, have a right to find their way to this country. Particularly is this the case when a deposit has been paid on the order. As no differentiation is made in the Board of Trade returns between touring and commercial motor cycles, it is impossible to tell how many of the 253 machines received in this country last month have sidecarriers attached or are intended for goods delivery. At the same time it is well to recall that as from July 6th last the importation of commercial motor vehicles (in which are included sidecarriers) and chassis was prohibited except under certain conditions, the latter being more generous than in the case of pleasure cars and cycles. Even allowing for all this, however, it does seem extraordinary that during the four months ended July, a total of 1,020 machines, which together with parts were valued at £99,558, should find their way to this country. Quite apart from the question of whether or not such imports should be accepted, one wonders what the future owners of these thousand odd machines will do in the matter of petrol. If they are to be allotted the usual amount, then the petrol situation will become more acute. For comparison, the British exports during the same period totalled 3,403 machines of a value of £276,500, including parts.

## Progress.

**I**N spite of the war and the fact that many motor cycle factories are at present engaged on Government work and the manufacture of munitions, we have been enabled to chronicle in recent issues the introduction of many striking innovations and improvements as well as much real progress in the matter of detail. We will refer briefly to a few examples only, which prove that the brains of our designers have not been idle.

No sidecarist, actual or potential, can have failed to be impressed with the great ingenuity of the weatherproof sociable sidecar outfit recently illustrated and described. Whatever individual views may be held as to the general appearance or the desirability of adding a fourth wheel at a considerable increase in the first cost, in taxation, and in running expenses owing to extra weight, there can be no two opinions as to the excellence and originality of the mechanical details, which go to make up the complete whole, or to the great amount of study and consideration involved in the production of such a vehicle.

Another innovation is a motor cycle frame which is duplex throughout and so arranged that any engine, single or twin, can be accommodated within the side members. The springing of the saddle has not been forgotten, but we think it would increase the comfort of the rider if the footrests or the rear ends of the footboards were suspended on the same springs.

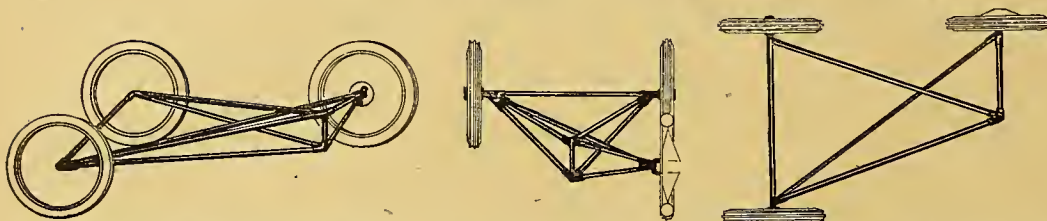
A large step in the right direction has been taken in the matter of lubrication, and a mechanical pump is being placed on the market which can quickly be fitted to almost any make of motor cycle. The amount of oil is controlled by the throttle lever so that more oil is given when required.

We also hear that a firm renowned for single-cylinder engines has an experimental twin on the road. All this is good and indicates keenness and progress.



## SOCIABLE SIDECAR DESIGN.

Flat Triangulated Frame and Rear Steering.



Side and end views and plan of the Vickers sociable rear-steering sidecar.

NOW that the Scott sociable has set the fashion in sidecar design, we may expect to see many examples of similar constructions in the near future. It seems fairly obvious that the luxurious sidecar outfit in which the sidecar is intended to be permanently attached to the motor cycle must, if it survive at all, follow these lines.

The designs which we publish on this page are the patent of Sir Arthur Trevor Dawson and George Thomas Buckham, both of Vickers, Ltd.; patent No. 9,392, 1915. Contrary to usual sidecar practice, the steering wheel is in the rear, and

either, or both, of the front wheels can be made to drive. Rear steering tricycles have, of course, been made before, but the steering wheel has generally been in the middle, thus making a three-track vehicle.

### Constructional Details.

In the design under review the main frame consists of two isosceles triangles lying obliquely one above the other and having the axle of the front wheels as their common base. These are joined at the apex by a short strut, which thus forms two other isosceles triangles having

the strut for their common base. From this base another triangle is carried to the right, to which is fixed the trailing wheel, and this last triangle is further supported by a tube connecting it to the other end of the axle. This results in a very stiff and strong frame, which is entirely triangular. It is intended that the occupants of the vehicle shall be seated side by side well forward over the front axle. The position of the engine is not indicated, but, presumably, it would be fixed much as in the Scott machine. We await further details with interest.

## DOUBLE PLUG IGNITION.

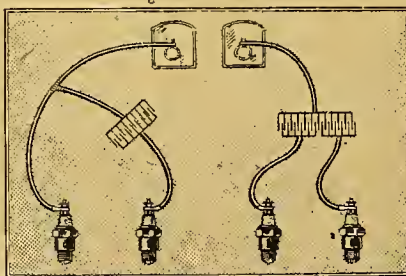
Are Two Sparks More Effective than One?

THE query in our issue of August 3rd with regard to having two plugs in each cylinder igniting simultaneously has brought a most interesting note from Messrs. The Sphinx Mfg. Co., who have been conducting experiments with double plug ignition. They tell us they have succeeded in obtaining fairly satisfactory results without either a special magneto or a double-pole plug. The first method they adopted was as follows: The high-tension wire was conducted in the ordinary way to one plug, the current for the other plug being induced by taking a branch lead from the main high-tension cable to a condenser, and so to the second plug. The condenser has the effect of producing an induced spark in the plug of an intense nature upon the breaking of each impulse of the main high-tension current. In practice this is practically instantaneous with the original spark. Another method tried was by leading the main high-tension cable direct to the condenser, and then both the plug cables are taken from the condenser, which divides the

current, so to speak, into two separate sparks. Either of the above methods is capable of producing two instantaneous sparks of sufficient intensity to cause ignition.

### Actual Tests.

These two methods were tested on



Two methods adopted by Messrs. The Sphinx Mfg. Co. for producing two sparks simultaneously without using either a special magneto or spark plugs.

several types of a well-known make of engine, but the results have not been too promising, the increase in power being negligible, and, in fact, a single plug placed in the usual place, over the inlet valve, gave better results than one plug in this position and one in the cylinder head. The exhaust gas was analysed and found to contain a certain quantity of unexploded gas. Upon analysis when using the two sparks the exhaust was found to contain less unburned gas, yet the actual results were in no other way superior to those obtained with a single plug. The cause for lack of improvement is suggested to be that the multiple sparks are individually weaker than the single spark, which occasions difficulty in starting and a tendency for the plugs to become easily fouled. Under the circumstances it would seem that, unless a means of producing two really powerful sparks is at hand, better results are obtained by using one fat, healthy spark, which causes very rapid ignition, rather than two separate sparks of somewhat doubtful quality.

## A TEST OF PETROLIOR.

A MEMBER of our staff has been trying a petrol substitute known as Petrolior, which is a colourless spirit emanating from the same origin as petrol, but one that does not come within the regulations affecting petroleum spirit. The flash-point is between 78° and 86°, and the total distillation between 195° and 200°, while the specific gravity is .778. It can be used pure or mixed with from 5% to 25% of petrol. It has no objectionable smell.

The engine started on the fuel with-

out difficulty. At first it did not run very regularly, but improved a little when warm. Petrol was then added in the proportion of two parts of petrol to one of Petrolior. Starting was not easy, and the engine ran rather erratically until it had warmed up, when little difference could be detected between the running on Petrolior and on petrol. In the open country the power on hills seemed to be just as good as ever, but there seemed to be a rather greater tendency to knock. This was the first

of a series of experiments with the fuel, which we shall try with varying proportions of petrol. It is to be sold in any quantity, and information concerning it can be obtained from the Petrolior Co., 23, Kingly Street, Regent Street, W.

A buttonhole badge is being distributed by Douglas Bros., of Bristol, and any reader may have one on application. They are in two varieties, one for buttonholes and a second pattern with a brooch for ladies' use.



## OCCASIONAL



## COMMENTS

By "IXION"

Sydney R. Jones

**Petrol that is not Petrol.**

A rider of my acquaintance has been using the petrol-paraffin mixture, not for the past three months, but for the past three years! He asks me to warn readers that the stuff now sold as petrol will not stand anything like the admixture of paraffin which the petrol of, say, 1912, would bear, and that experimentalists should be careful to use one of the alleged higher grades, and not No. 2 or commercial spirit. I publish the tip for what it may be worth, as I noticed a similar suggestion in a recent issue.

**Some Control Oddities.**

I see the Petrol Committee is attempting to excuse some of the oddities of its procedure by explaining that its staff is rather inexperienced. Its inexperience has been kind to me, as my book authorises me to buy just twice the amount of petrol specified in the original docket. For a similar reason, one supposes, a friend of mine has been allotted 50% more fuel than he asked for. Neither of us is inclined to be harsh in our criticisms. On the other hand, some severity should be applied in revising the lists at the end of the first quarter. Many users have been ranked in Class B who have no earthly right to be there. The astute cynics who applied for three and four times their past consumption have in many cases received more petrol than they ever dreamt of buying in the halcyon days of peace. Petrol has been claimed for starred occupations, so to speak, by persons who actually employ it partly in joy rides and partly in hiring work, minus a hackney licence, and so forth. The scheme is by no means as bad as some critics pretend, seeing that it was necessarily rushed through on very scanty and unreliable information, and that amid the pressure of a great war; but it badly needs the equivalent of a King's Proctor to eliminate many injustices, many hardships, and many dishonesties.

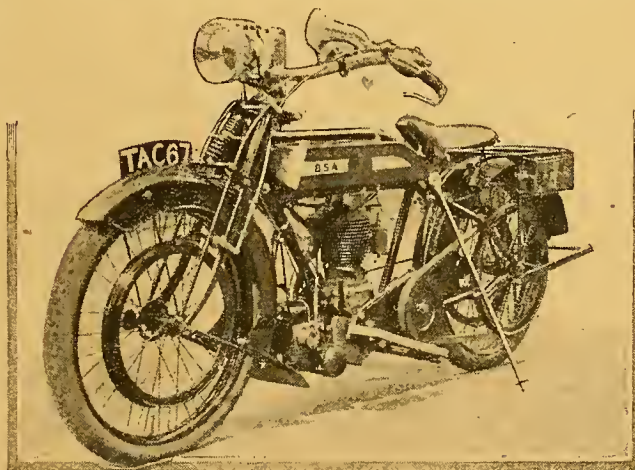
**Inflated Estimates.**

Personally, I was rather surprised that Mr. Harcourt meekly swallowed users' estimates, and, further, went out of his way to compliment motorists on their honesty. He explained, on the one hand, that the civilian consumption in 1915 was 111,000,000 gallons, and that the estimates for the next twelve months amounted to 153,000,000. This one fact is sufficient to make us smell a rat, for we all know that pleasure motoring has dwindled extraordinarily during the last twelve months; and if the defects of war railway services and the loss of men and horses have induced many firms to resort to motor transport, the net result of reduced pleasure motoring and increased motor delivery work cannot possibly produce a 42,000,000 gallon rise in civilian consumption. Mr. Harcourt's estimate of our honesty as a class is based on the fact that "85% of motorists only asked for

from eight to twenty-four gallons a month." Striking a mean, this implies that the bulk of private owners asked for, say, four gallons a week, *i.e.*, at the rate of nearly 20,000 miles per annum for motor cyclists, or of 6,000 miles per annum for light cars. The authorities should know, probably do know, exactly what percentage of the motorists of the country own motor cycles and light cars (*i.e.*, comparatively economical vehicles in respect of fuel); but, from my private experiments and tests with the returns, I should say that the mileage indicated by the total estimates works out at about four times what is actually being covered. Further, I know that many patriotic owners deliberately cut down their requirements to the absolute minimum, and asked for half the amount of fuel which they were actually buying at the time of the committee's appeal. It would, therefore, seem that a selfish minority indulged in some particularly steep lying, and that the guileless Mr. Harcourt has been pretty outrageously hoodwinked by some of these dishonest gentry.

**A Side-prop Stand for Heavyweights.**

Does any reader know if an old type of stand, once fitted to the Matchless machines (and consisting of two separate legs, each of which could be used to prop up the machine or both simultaneously to lift it) is still being made? I have one or two enquiries from elderly users of heavy solo machines for a stand of this type. They say, with some justice, that they do not care to raise the tail of a 3 cwt. machine six inches off the ground except when it is absolutely necessary; and that a side prop is all that is needed at stoppages where no serious repairs are in contemplation.

**THE RESULT OF MILITARY EXPERIENCE OVERSEAS.**

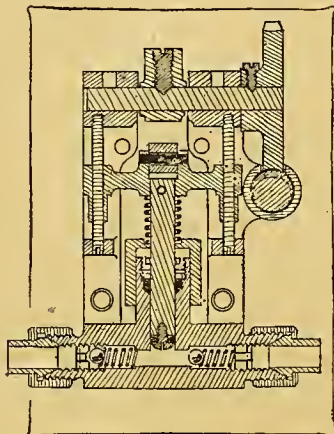
The B.S.A. machines used in the German East African campaign are fitted with auxiliary back stands in the form of props as illustrated. These are very necessary in sand and loose ground.



## Controllable Mechanical Lubrication.

A Best and Lloyd Positive Feed Oil Pump, having a Variable Stroke, governed by the Throttle Lever.

FOR years motor cyclists have clamoured for a more certain method of lubrication than the usual "hit or miss" hand pump type or the drip feed. We have urged, in this journal, from time to time, the



Sectional view of the new Best and Lloyd pump.

development of mechanical lubrication, and it has been our belief that perfection will not be approached until the feed of oil to the engine is governed with the throttle opening, so that the engine shall supply itself with just the proper amount of oil needed according to the work it is called upon to do.

We have seen in the past mechanical lubrication alone, and throttle controlled lubrication alone, but what, we believe, is the first attempt to combine the two methods is now being developed by Messrs. Best and Lloyd, of Cambray Works, Handsworth, Birmingham. It consists of a small pump run preferably off the timing gear by worm drive. It is intended to be fitted to the side of the crank case. An eccentric cam operating on the roller head of the pump plunger makes the necessary down-stroke, the return being given by a small spring of piano wire. Two ball valves in the lower part of the casting alternately admit and let out the oil.

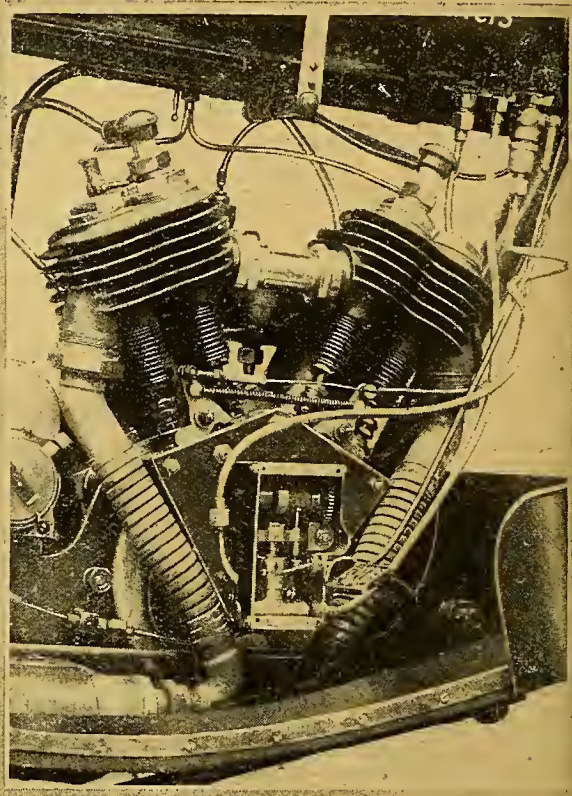
### The Variable Stroke.

So far the construction is simple. The unique point of this pump is in the control of the stroke. Surrounding the pump shaft is a movable drum, slotted first vertically and then diagonally to a stop. There are three of these slots, and the diagonal portions vary, being  $\frac{1}{4}$  in.,  $\frac{1}{2}$  in., and  $\frac{3}{4}$  in. high respectively. Only one of these slots is in action at a time, and the shape of the slot

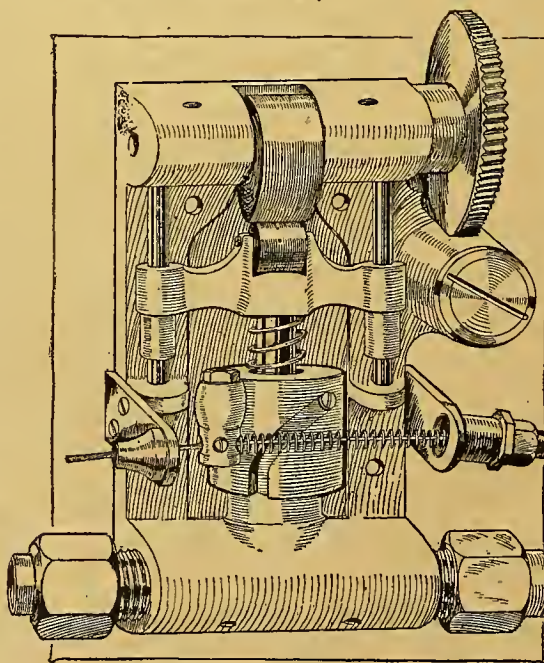
determines the stroke of the plunger. Having once found, by experiment, the slot most suitable to the engine, it need not be altered, except to allow for big changes in temperature and consequent thickening of the oil, as from summer to winter. The wire from the handle-bar control to the throttle lever is passed through the guides provided, and coupled up to a peg on the movable drum, so as to rotate the drum to and fro at the same time as the throttle opens and shuts. The diagonal part of the slot then comes into operation, the drum rises as it turns, and so allows a greater lift to the plunger, thereby increasing the flow of oil to the engine. The actual lifting of the plunger is done by the coil spring, the slotted drum only controlling the amount of the lift, whilst the revolving cam above compels the down-stroke.

### The Sight Feed.

The oil supply is taken from the usual position in front of the tank,



The variable stroke pump is shown fitted to a Lea-Francis twin to supply through a sight feed on the tank and thence to the engine. A cover is, of course, provided.



Front view of the pump.

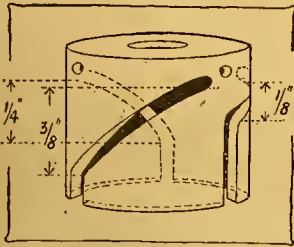
and the delivery may be either direct to the engine or back to a sight feed on the tank, and thence to the engine. With a sight feed in use the variations can be distinctly seen, from an occasional drop every five or ten seconds when the throttle is shut to a considerable jet of oil every one or two seconds when the throttle is fully open. Also a distinct difference in amount passing is noticeable, according to which of the three slots is in operation.

The cable control need not be in one with the throttle; a separate lever and wire could be used, or one lever on the bar could operate two separate wires at the same time. The worm drive is geared very low—about 62 to 1—and as this and the sliding parts are the only points of friction, the chance of wearing is very slight. It appears that there are only two things which could stop the pump's action—the breaking of the control wire and the possible



**Controllable Mechanical Lubrication.—**

breakage of the coil spring. In the first case, repair is a simple matter; the



Slotted drum which gives the variations in stroke.

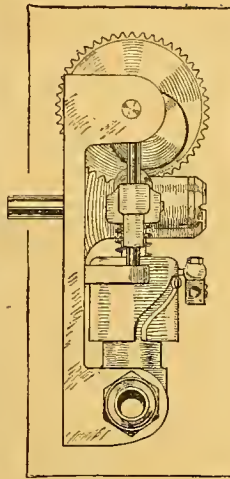
chances of the latter mishap are very small, and fitting a spare spring is very easy.

**A Practical Test.**

We have seen the pump working both on the bench and fitted to a twin motor cycle. In both cases there was not the slightest doubt about its action. The oil feed increases or decreases exactly as

the throttle lever is moved. For all practical purposes, it does not impose any extra load on the engine, is quite noiseless, and, being small, only 4in. by 3in., and projecting 1 1/2 in., in no way does it affect appearance or accessibility. The approximate weight is 20 oz. The makers say that only a couple of hours' work by a mechanic are necessary to fit it to any motor cycle. The use of aluminium wherever possible makes the additional weight very little, and a neat metal cover renders it quite weatherproof.

We are quite sure that this innovation, despite its small size, does not lack



Side view of pump showing projecting shaft driven off timing gear.

efficiency, and that it, or further developments of it, will become a regular fitting to all motor cycles worthy of the name.

Messrs. Best and Lloyd have already built up a big reputation. Their many types of lubrication fittings are well known throughout the motor world, and this variable stroke oil pump promises considerably to enhance that reputation. At the present time the pump is not on the market, but the makers will be pleased to supply specimens for experimental work to interested firms. Their factory is one of the many Government controlled establishments, and supplies to the motor cycle market must be deferred until *après la guerre*.

**FOUR DESPATCH RIDERS PROMOTED.**

WE hear that Sgts. F. C. Schofield and E. S. Howard and Cpls. E. R. Swanston and W. E. Jupe, all R.E. despatch riders, "who have been motor cycling in France for a very considerable period, having all enlisted at the beginning of the war, have been granted commissions as second lieutenants in the R.E. Signal Service, after having successfully passed through a cadet course.

**MOTOR CYCLE RACING ON A GRASS TRACK IN HOLLAND.**

These photographs were taken on the occasion of a race meeting, the first of its kind, organised by the Motor Club "Noord-Holland." British machines performed very well, winning four events out of a total of five. Successful riders on Velocette (left) and James (right) are shown in the inset picture.



## A DOT DEVELOPMENT.

## DUPLEX FRAME; SADDLE ON LAMINATED SPRINGS.

**M**ESSRS. HARRY REED and Co., manufacturers of the well-known Dot motor cycle, have recently produced a new design of lightweight frame, the lines of which are clearly shown in our illustrations. It consists of a double framework of small gauge tubing, while the power unit, tank, etc., are carried between the two frames. The two sections are connected together at several points by small cross members, so that they form a rigid structure, and the design is of special advantage in that the frame members do not come in the way of any portion of the internal mechanism, so that any design of twin-cylinder engine can be fitted. Since the engine lies between the frame members, moreover, these members are subjected to no twisting stresses, the tubes being either in direct tension or compression.

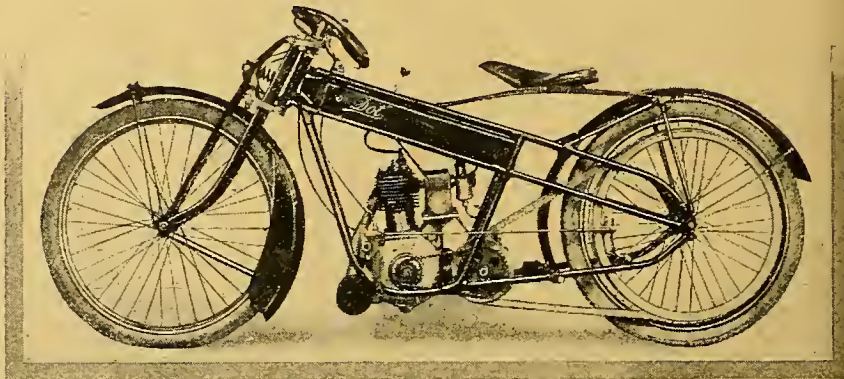
The accompanying sketch illustrates the point clearly. A represents a single tube frame on which twisting stresses are imposed in the direction indicated by the arrows. The down tube tends to distort as shown in sketch. B represents a double frame on the lines of the Dot, but in this case the tube members are subjected only to direct tension and compression.

The makers claim that this new frame is very considerably stronger than the single frame, while it weighs only 2 lb. heavier.

In the case of a sidecar outfit a rigid framework is desirable for many reasons, but in dealing with a solo mount the weakness of a frame may lie in its very rigidity. An extremely rigid solo mount is often uncomfortable to ride, and in the old days of high-powered racing motor cycles it was found that when the heavy and powerful engines were mounted in very rigid frames, the frames invariably broke, whereas resilient frames stood up to the work.

## The Advantages of a Resilient Frame.

A correctly designed resilient frame is, therefore, superior in most respects to a rigid frame, and two light tube members are obviously more resilient than are heavy ones as regards absorbing



The new Dot lightweight with  $2\frac{1}{2}$  h.p. J.A.P. engine and duplex frame. The saddle is mounted on two laminated springs.

road shock. Thus, while the Dot frame would appear to be of good design as regards resisting intermediate twisting stresses, it affords a high degree of resiliency which adds to the comfort of the rider.

The makers claim that this frame possesses extraordinary shock absorbing qualities, and it will be observed that the saddle is mounted on two laminated

but it was found that the design fell short of mechanical perfection in that there was insufficient stiffness to maintain the vertical position of the rear wheel.

The transmission is inside the framework, and by a simple arrangement of shields attached to the frame members the whole of the mechanism can be enclosed.



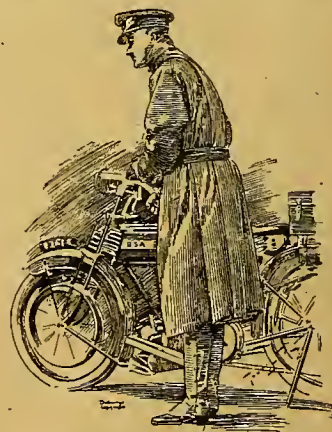
Diagram showing the advantages of a duplex frame.

springs, which should impart a luxurious floating motion to the rider. The saddle position is extremely low.

The engineering mind may possibly criticise the two curved members extending from the rear wheel junction lug, pointing out that the design renders it possible to employ straight tube triangular construction throughout. The first frame built was of the latter order,

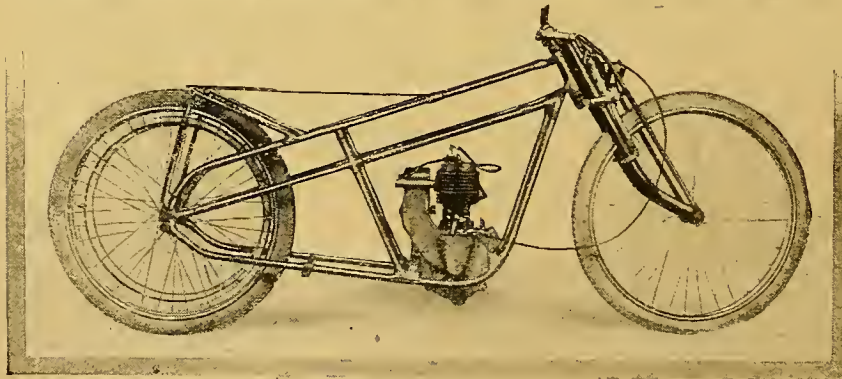
## A NEW BURBERRY COAT.

**B**URBERRYS have lately introduced a new coat which is quite ideal for the motor cyclist. In appearance it is exceedingly neat. It possesses the advantage of fastening up in a practically invisible manner at the left-hand side of the back, while the front is so designed



The new "Burfron" Burberry waterproof coat.

to form a conduit over which water flows away completely free of the legs. There are two buttons only, one at the collar and the other at the waist, while a belt is supplied—certainly a great asset when a motor cycle is ridden. Altogether we consider that the "Burfron," as the new coat is called, is quite a practical garment.



Valve side of the Dot duplex frame, showing how the engine is attached to the lower members. Note alternative saddle springing.





## Mr. A. A. Scott's Reply to a Criticism which is Typical of Many Received.

Undoubtedly, the introduction of the ingenious design of the Scott double-seated sidecar with its 5 h.p. two-cylinder two-stroke engine, three-speed gear, shaft-drive, and detachable wheels, marks a most important step toward the solution of the passenger motor cycle problem. Criticisms have on the whole been favourable, but many correspondents take a dislike to its appearance. The fitting of a fourth wheel is to them the obvious course. Consequently we invited Mr. Scott to expound his reasons for the adoption of a flat frame and three wheels in answer to such critics. A typical letter is appended:

To the Editor, "The Motor Cycle."

SIR,—The Scott sociable is horrible.

You say that its exclusive features will be studied with interest, that it possesses real novelty, and all this is true. The mechanical features are distinctly attractive, but the finished article has an extremely ugly and clumsy appearance.

It reminds one of the cycle cars which appeared at the motor cycle show a few years ago—when the alleged boom was on. Much could be said in favour of any one of them, but most of them have never been seen since, as no self-respecting person would make himself look ridiculous by riding in one.

The man who wants comfort and cleanliness *will* have a four-wheeler, but there is not one motorist in a thousand who will look at a lop-sided contraption like the Scott sociable, and I sincerely hope that no more atrocities like this will be perpetrated.

I speak merely as a private motorist (cycle and car) of ten years' experience.

S. L. BURNARD.

We submitted the above letter to Mr. Scott, and his reply is given hereunder:

### Mr. Scott's Reply.

Sir,—I welcome Mr. Burnard's letter, as it gives me the opportunity of answering this criticism scientifically.

First of all, let me say that at the outset and all along I have anticipated (and met many instances of) the fierce opposition of the man who wants a car on four wheels exactly like, and equipped with all the luxury of modern practice at the same price as, a modern motor bicycle and sidecar. This type of man despises anything but a car, and so I am quite unmoved by this outburst. I am *not* appealing to him, and never expected to interest him to any extent in my machine.

It was with *this* in mind that I strongly advised you to show a threequarter view from the "ugly side" of an ordinary standard motor bicycle and sidecar in contrast with the same view of my three-wheel combination, and ask your readers which is the more attractive in appearance? The conservative will, of course, have one reply; the analytical mind will differ. However, the Mr. Burnard type of man is of minor importance: even if he paid the price for what he wants his following is still a comparatively insignificant one. The output of the light car is only a fraction of the total production of four-wheel cars for *all* purposes. I note from the local returns that the registrations of motor bicycles exceed all the cars put together, so if I can succeed in interesting only one-tenth of this market—the *motor bicycle and sidecar*—at the same price, surely I am more usefully employed in thus attempting to meet the wants of the multitudinous motor cyclist rather than pandering to the select few by adding one more light car (at, say, £200) to the existing list.

I would analyse Mr. Burnard's letter as follows:

(1.) *The Scott Sociable is horrible.*  
The finished article has an extremely ugly and clumsy appearance.

Probably any motor bicycle and sidecar outfit is *horrible* from the standpoint of a car owner.

*Conservatism.* In 1900 I was repeatedly told that the Scott motor bicycle was quite the ugliest machine that had ever appeared. In 1916 I am frequently told that it has the most graceful appearance of any machine on the road. There is no permanence in unconsidered opinions of this sort.

*Ugliness.* Although the primitive mind has derived unending amusement from the unsymmetrical effect—the parti-coloured fool, for instance—beauty does not essentially depend upon symmetry. (The lop-sided effect of Amiens Cathedral towers is professionally admired.)

I prefer the frank disclaimer of the labourer who remarked, "I don't know much about them things, but seems to me t'wheel ought to be in t'middle."

*Clumsiness* is more a matter of movement than appearance. The machine was made for action, not merely to look at.

Hitherto, the man wanting comfort and cleanliness has had no other alternative. *If* he can get this at half the expense in first cost, taxation, and running costs, with the additional advantage of mobility, he is very likely to jump at the opportunity.

What I think is really intended by this statement is—the man who wants "swank" *will* have a four-wheeler.

Additional comfort and cleanliness can scarcely be gained merely by the addition of a fourth wheel—rather otherwise.

A reckless statement! Mr. Burnard should look before he leaps. There are, as a matter of fact, somewhere about ten motorists to every one Burnard—who are enjoying the looking at and riding of lop-sided contraptions of all sorts of frightfulness from the basket-work sidecar to the luxurious coach-built windscreened outfit.

*Why?* Mr. Burnard must every day see hundreds of lop-sided atrocities in the street, and they are constantly being perpetrated, and cannot be killed like the cycle car.

Is it because Mr. Burnard objects to any development which may put off the production of his four-wheel ideal? Why not realise that, in spite of his sincere hoping for the contrary, the motor bicycle and sidecar has done more than any four-wheel car to meet the wants of the many, and so is worthy of the fullest development and improvement.

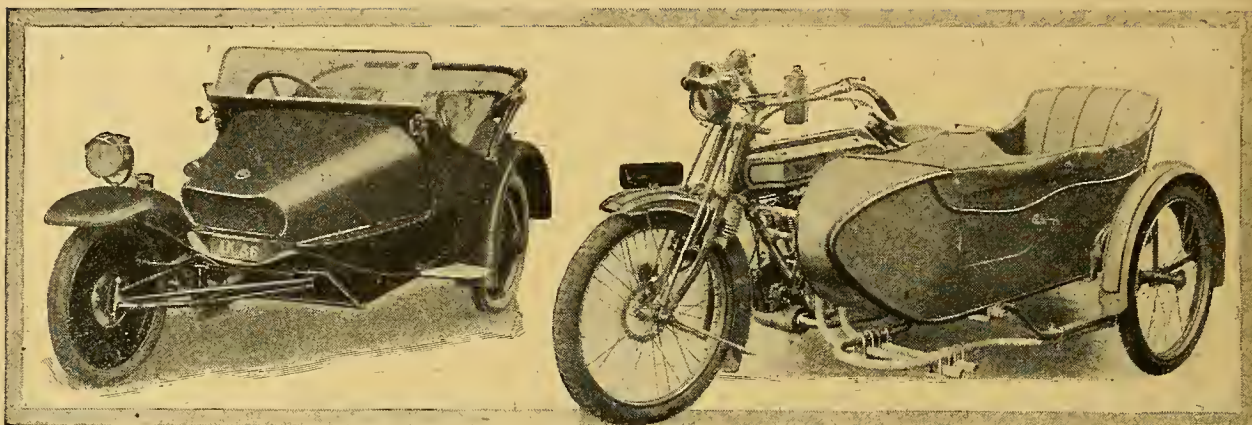
If this extravagant letter had been written with some knowledge of the running of the machine—what it can do, etc., or criticising the principles of design—the remarks might be worth more attention. I am sure you will agree

(2.) The man who wants comfort and cleanliness *will* have a four-wheeler.

(3.) There is not one motorist in a thousand who will look at a lop-sided contraption like the Scott sociable.

(4.) I sincerely hope that no more atrocities like the Scott sociable will be perpetrated.





WHICH DO YOU PREFER? A Scott sociable and a typical sidecar, both viewed from the "ugly" side.

that it betrays an extremely uninformed point of view, formed entirely by appearances as viewed from the conventional standpoint.

However, I find from experience that, although I am not out for the car owners' approval, I can always make them change their views a bit after a trial trip.

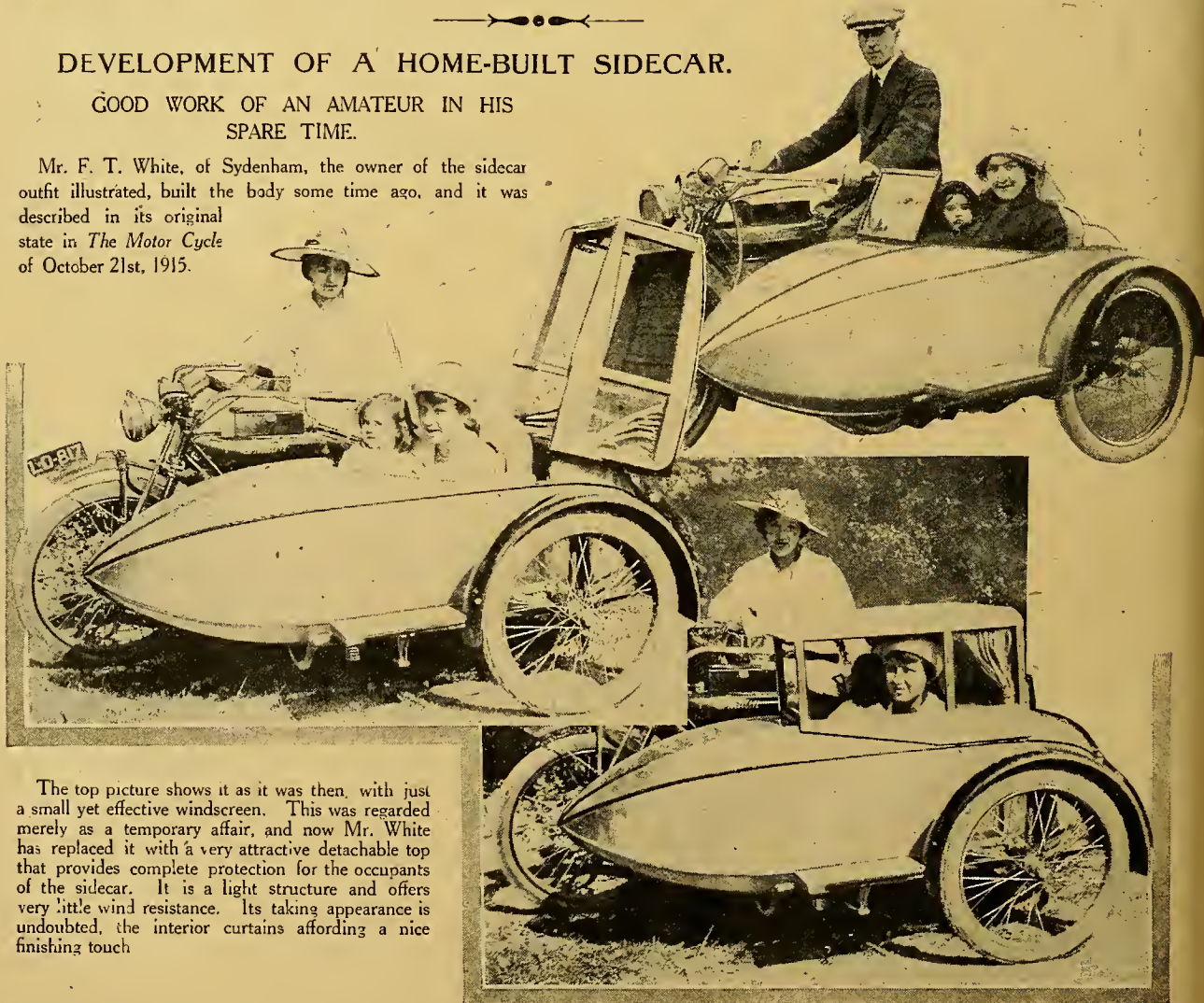
The *passenger inside cannot see*, and, consequently, *does not care* whether there is a fourth wheel or not, and the opinion of the people outside does not materially affect his comfort. It is the approval of the man with a motor cycle and sidecar that I want and hope to get.

ALFRED A. SCOTT.

## DEVELOPMENT OF A HOME-BUILT SIDECAR.

### GOOD WORK OF AN AMATEUR IN HIS SPARE TIME.

Mr. F. T. White, of Sydenham, the owner of the sidecar outfit illustrated, built the body some time ago, and it was described in its original state in *The Motor Cycle* of October 21st, 1915.



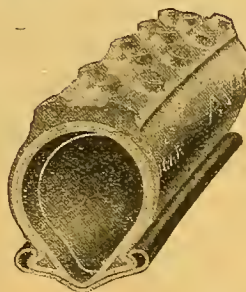
The top picture shows it as it was then, with just a small yet effective windscreen. This was regarded merely as a temporary affair, and now Mr. White has replaced it with a very attractive detachable top that provides complete protection for the occupants of the sidecar. It is a light structure and offers very little wind resistance. Its taking appearance is undoubted, the interior curtains affording a nice finishing touch.



## TYPES OF AVON TYRES—No. 4

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THIS Cover is extremely popular for the driving wheels of medium-power solo machines, and as an “all-round” equipment for sidecar combinations up to 5-6 h.p.



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\* For high-powered machines with motor rims. Also made 650 x 65 at 40/- and 43/8.  
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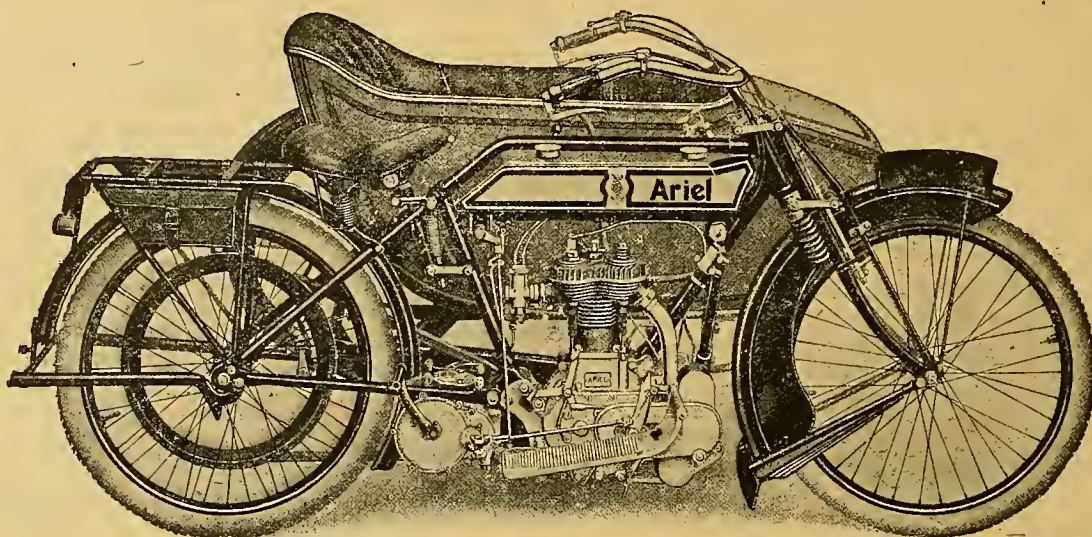
Swansea,

Paris.

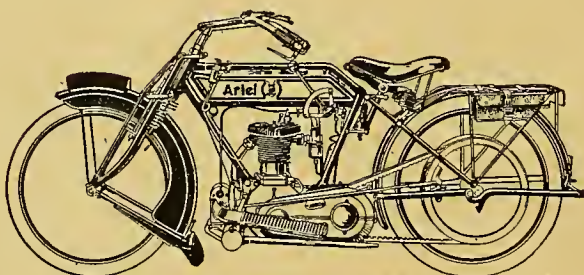
1,000 Agents hold stocks. Ample supplies available.

In answering this advertisement it is desirable to mention “The Motor Cycle.”

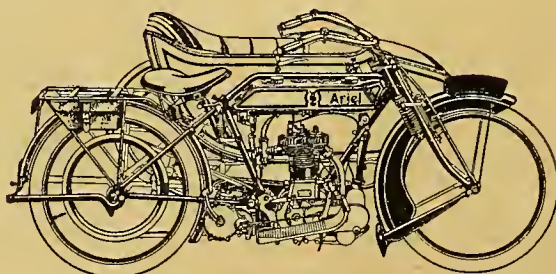




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## HOW TO ECONOMISE.

Another Contribution to our Series bearing upon the Fuel Question, containing Useful General Advice on Obtaining the Maximum Mileage from a Given Quantity of Spirit.

**E**CONOMY in petrol consumption, at all times desirable, and, since the rapid rise in prices, more or less vital, has now become absolutely compulsory to all, except the lucky few, whose requirements, being not more than two gallons per month, are to obtain all, or more than all, they asked. The average motor cyclist has now three courses open to him:

1. He may curtail his motoring by reaching his business on certain days by means of the railway or a push-cycle.
2. He may use one of the many substitutes now on the market either by itself or mixed with a certain amount of petrol, according to the extent to which his requirements exceed his supply.
3. He may so adjust his carburetter as to obtain an increased mileage per gallon, at the same time paying attention to those parts of the engine and cycle which have some effect upon easy running, and therefore upon consumption. In this connection it cannot be too strongly emphasised that perfect compression is absolutely necessary for the best consumption.

### Petrol Substitutes.

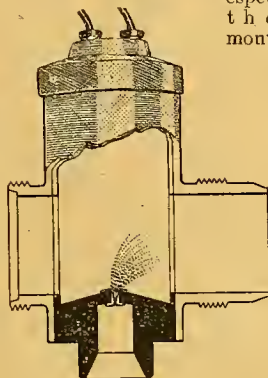
On the first of these points nothing further need be said, for each rider can judge for himself how far economy can be exercised in this direction. In some cases both train and push-cycle will be equally out of the question; in others one of these methods might entirely supersede the use of a motor cycle for the time being, but, of course, with a great sacrifice of time or money, or both.

It will be necessary, therefore, for most regular riders to turn to the second or third points. If a man's mileage is much in excess of that attainable on two gallons per month,

he must, of course, fall back upon substitutes. These can be obtained at varying prices, from paraffin at about 1s. per gallon to a prepared fuel which costs more than petrol.

### Cheap Fuels the only Alternative.

Every careful reader knows that *The Motor Cycle* has devoted much space, especially during the last few months, to experi-



A simple device to assist in breaking up the petrol spray fitted to an Amac carburetter.

ences and tests of the cheaper fuels, paraffin-petrol mixtures, etc. There is, of course, nothing new in the use of paraffin. The writer used a mixture upwards of ten years ago in a machine fitted with a Longuemare carburetter with quite satisfactory results, and later on a small twin with a Motosacoche carburetter. Hill-climbing was certainly improved on this machine, which is contrary to the usual experience when using paraffin. (This was referred to in a leading article on July 31st, 1913.) But paraffin is messy. The white oils and other substitutes are probably much cleaner than paraffin, both inside the engine and outside the machine.

### Carburetter Adjustment.

If, however, a rider can accomplish almost his required mileage on his allotment of petrol it is possible that careful carburetter adjustment may give him the extra miles that he requires. Generally speaking, a small jet increases the mileage, but a smaller jet usually necessitates a correspondingly smaller choke. A No. 24 jet recently fitted to an Amac carburetter in place of a No. 26 gave an increase of 17 m.p.g., viz., from 98 to 115, the machine being used under the same conditions throughout. The running of the engine is not so pleasant, and the air lever requires more frequent manipulation, but the power is more than sufficient for present requirements, and the speed ample.

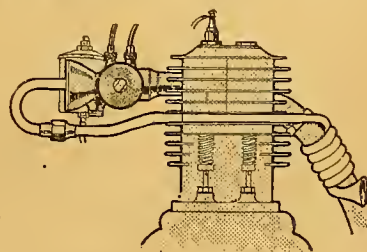
Lowering the petrol level also tends to economy, but this must not be overdone. In general, if the petrol is about an eighth of an

inch below the top of the jet the results will be good, but this does not apply to every carburetter. For instance, the level in a Senspray can be much lower, and an Amac must not be tested with the working jet in position (for the normal level is above this, as is also the case with some of the automatic carburetters), but with the special testing jet supplied with every carburetter.

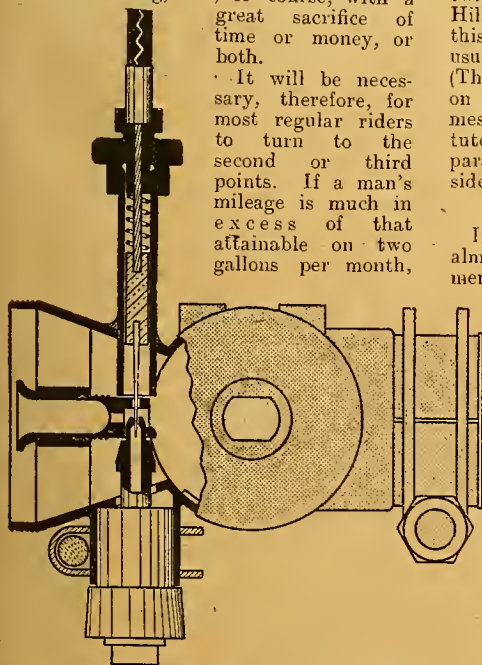
The B. and B. Universal is a handy carburetter on which to carry out experiments in jet size, and very economical results can be obtained. 160 m.p.g. has been covered with a B. and B. fitted to a 2½ h.p. twin, but the reserve of power was not great. The jet can, however, be operated from the saddle.

### Useful Tips.

Many useful dodges and hints have been given from time to time in the pages of *The Motor Cycle*. On April 6th last Mr. J. W. G. Brooker advised that the spraying holes in an Amac should be enlarged and pins inserted, with the object of breaking up the petrol spray more completely. This effected an improvement in consumption of about 25 m.p.g. The writer of a letter in last week's issue improved his consumption by 18 m.p.g. by the same means. On January 15th, 1916, a method of making the jet of a Senspray variable is described; this, it is claimed, improved the consumption of a two-stroke from 60 to 120 m.p.g. It is to be presumed, however, that the original jet, while it gave easy starting, was much larger than it need have been.



A method of supplying hot air above the jet of a Senspray carburetter.

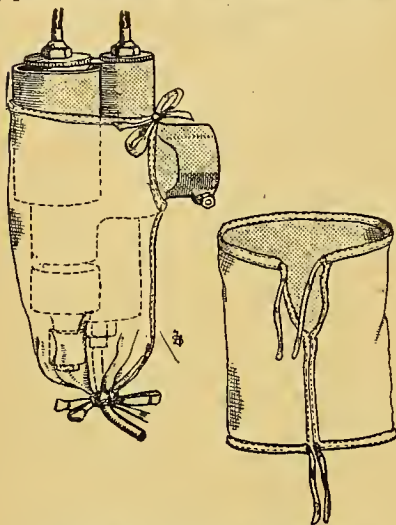


A variable jet controlled from the handle-bar applied to a Senspray carburetter.



### How to Economise.—

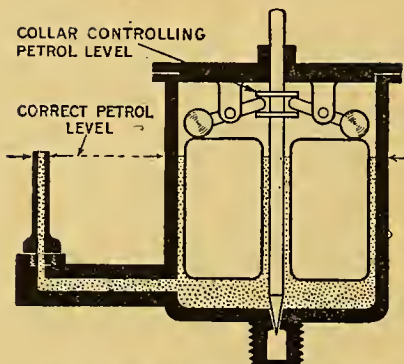
When using a heavy fuel it is desirable to decrease the size of the jet, and also to fit a gauze or some device which will assist in the vaporisation of the fuel. We know of one rider who has used paraffin most successfully for four months, and he advises a piece of flannelette to be placed across the inlet pipe to assist in vaporising the fuel,



Linen bag covering carburettor to prevent ingress of dirt and grit, and also collecting any fuel which may drip.

while he also states that a little lubricating oil mixed with the fuel prevents any risk of damage through impoverished lubricating oil. An extension pipe fitted to the air inlet is also an aid to economy, especially when it is so arranged as to convey warm air from the neighbourhood of the cylinder flanges. A pilot jet or by-pass, too, can be fitted with advantage when a carburettor is not already provided with such a device.

The chief difficulty which will be experienced by the rider when utilising one of the heavy fuel substitutes will be the difficulty in starting from cold. Many machines will give equally good results on the heavy fuels, and in some instances

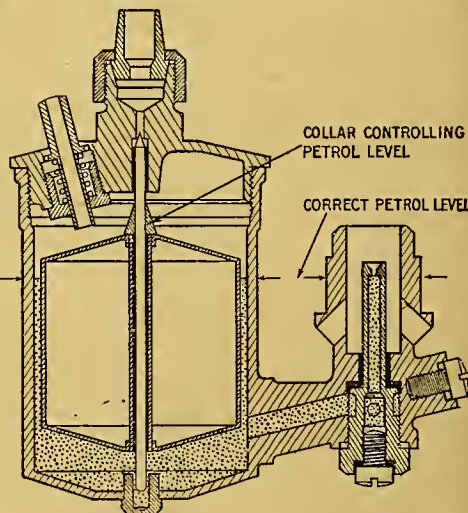


Bottom feed float chamber and jet. The level can be varied by moving the collar up to lower the level and down to raise it.

better results are obtained than on petrol once the engine has been started and the cylinders warmed up. Even when a 50% mixture of fuel and petrol is used there may be a certain difficulty in obtaining the initial explosions. If undiluted white oil or paraffin is to be the petrol substitute, some provision must be made to effect a start, and the simplest method is to run on petrol until the engine has gained enough heat to enable it to vaporise the paraffin sufficiently. There are several ways of ensuring a supply of petrol for starting. The simplest is to carry a large oilcan. An ordinary liberal injection of petrol given through the compression taps will, in fairly warm weather, render starting quite normal. A more elaborate method is to have a small auxiliary tank for pure petrol and a two-way tap and twin feed pipe to the carburettor. Thus petrol is fed for starting, and when warm this can be turned off and the paraffin or heavy fuel turned on.

The chief objection to this method is that unless the heavy fuel tap has been turned off previous to stopping, so that the contents of the carburettor float chamber are thus exhausted, difficulty will arise when the next start is required, owing

to the presence of heavy fuel. This can, of course, be overcome by fitting a tap in the lowest point of the heavy fuel supply pipe, so that any fuel remaining may be drained away. This is a somewhat wasteful method. There is, moreover, a slight liability of an air lock being formed. A method recently adopted by the writer and found most satisfactory is to lead a small bore pipe from the auxiliary petrol tank to a tap fitted into the induction pipe. When a start from cold is desired the paraffin or heavy fuel is turned on in the ordinary way, the carburettor throttle shut, the compression tap in the induction pipe opened, and the tap from the auxiliary tank turned on, so that a very small supply of petrol is dripped into the induction pipe. By experiment it will be found which is the correct amount to be turned on to give satisfactory starting and running until the engine is warm enough to allow the throttle to be opened



To adjust the petrol level in a top feed carburettor all that is necessary is to move the small shoulder on the needle, up to raise the level and down to lower it. The correct position for the petrol is about  $\frac{1}{16}$  in. from the top of the jet.

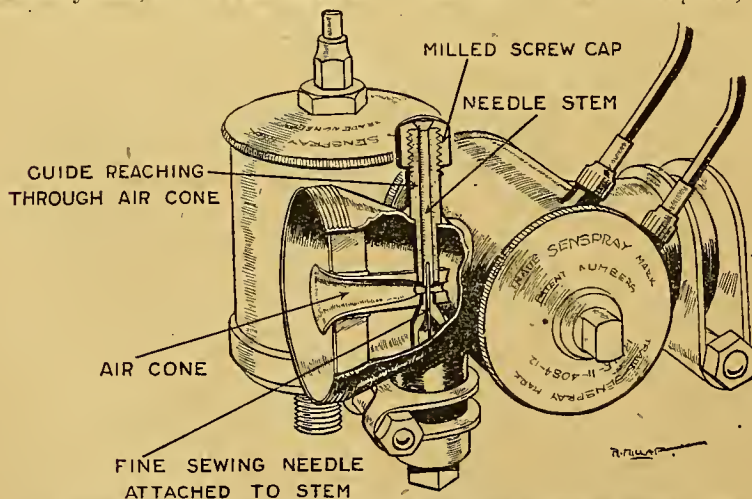
and the running continued on the heavy fuel.

When using heavy fuels, particularly paraffin, we repeat the advice given in the leading article in our last

Autovac petrol economiser. It is fitted over the jet, and is so made to create a partial vacuum at the top of the nozzle. Below the vacuum cone a fine gauze net retains and vaporises any surplus petrol, and checks wastage caused by "blow back."



issue, to drain the crank case more frequently, say every 150 to 200 miles. This is a precautionary measure to prevent paraffin which may not have been vaporised from leaking past the piston and so diluting the oil in the base



A simple variable jet constructed from an ordinary domestic sewing needle. The control is by means of a milled screw cap. Undoubtedly such an arrangement as this would ensure economy, at the same time enabling full power when necessary.



**How to Economise.—**

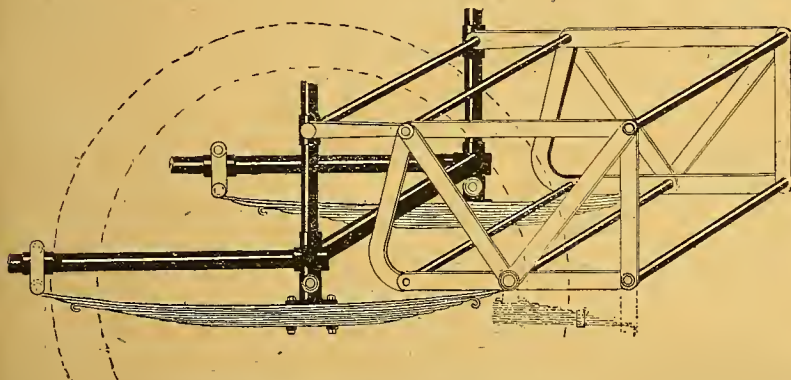
chamber, to the detriment of the bearings. Another tip was to use slightly thicker oil than that normally employed.

One occasionally hears a motor cyclist asserting that his machine is most wasteful of petrol, and quoting some ridiculous figure such as thirty miles to the gallon. One thing is certain, that the engine is not consuming petrol at this rate. The abnormal consumption is due mainly to wastage. Waste of petrol can occur unknown to the rider at many different points. For instance, the petrol tap under the tank is a frequent source of leakage, especially on old types of machines. Likewise the union under the float chamber. The needle valve, too,

after continual use, fails to cut off the supply of petrol when the action of the buoyant float brings the weights into operation, with the result that the float chamber overflows and the spirit runs down the sides of the float chamber, as well as dripping from the base of the spray chamber, and is lost.

It will be gathered that these troubles will occur when the machine is standing as well as when it is running if the rider fails to turn off the petrol supply tap. To check whether the needle valve point is a good fit in its cone seating, remove the top of the float chamber, put the needle in position, and turn on the petrol tap. If the needle is a sufficiently good fit to prevent more petrol

entering the float chamber, all is well. To test the level in the jet, remove the top portion of the spray chamber exposing the jet, and turn on the petrol tap. If the petrol rushes over the top of the jet, the level is too high, and the test has proved that this is occurring practically all the time the machine is running. In testing the level of the petrol, it is better to fit a dummy jet, i.e., one with an open top, so that the level to which the petrol rises may easily be ascertained. Before coming to a standstill, turn the petrol tap off, and so drain the float chamber and pipe. This economical method has the added advantage of ensuring a supply of fresh spirit when a restart has to be effected.

**AN IMPROVEMENT IN SIDECAR LUGGAGE CARRIERS.**

A spring luggage carrier for sidecars.

**T**HE luggage carrier which is attached to the back of a sidecar is generally attached to the chassis, and is consequently unsprung. This, of course, subjects the contents to much vibration, and those sidecarists who have to carry any luggage of a delicate nature will welcome any attempt to improve this state of things. We illustrate herewith an excellent sprung carrier, the invention of Sir Arthur Trevor Dawson, George Thomas Buckham (both of Vickers, Ltd.), and Frank Smith (of the Clyno Engineering Co.), No. 10,683/1915.

In this construction the carrier is

supported on two cantilever springs which are attached to the back of the chassis. To prevent the carrier from rolling, it is fastened by two movable arms to a rocker bar. The rocking arms and the rear arms of the cantilever springs are proportional in length to give a slight rocking movement to the carrier; that is to say, the carrier does not have a parallel motion in side elevation, though prevented from rolling. The dotted parts show part of a spring, etc., placed in an alternative position, the front end, which would then be attached to the sidecar frame.

**PETROL PERMITS NOT TRANSFERABLE.**

**A**N interesting point in connection with the new petrol licences has been raised by a correspondent, who is borrowing a sidecar outfit from a friend for the purpose of taking a week's tour. He is anxious to know if, in addition to borrowing the machine, he can also borrow his friend's petrol card in order that he may obtain *en route* petrol to the quantity stated on the card.

We have approached the Petrol Committee on this point so as to obtain a definite ruling, and they inform us that the petrol licences are not transferable. Therefore it is not possible for anyone possessing a petrol card to allow another person to purchase the fuel.

On first thoughts there would seem to be no objection to such a procedure, as the petrol card is only available for a certain quantity of spirit, and no one will be able to purchase more than the stated quantity within the specified period, and

therefore this would not lead to a greater usage of the fuel. As the shortage of petrol in the country is the alleged reason for the necessity of curtailing motoring to as great an extent as possible, the Petrol Committee evidently think that if the owner of a petrol licence does not desire to use the amount of spirit to which he is entitled, this quantity should not be utilised by anyone else, but should be held in reserve for subsequent allotment. According to the figures published in our last issue the Petrol Committee have issued licences for more petrol than is available, and therefore, it would seem the Committee do not want all owners of petrol cards to purchase the whole amount to which they are entitled. Naturally, if everyone were to do so there would be no petrol to be purchased towards the end of the time limit for the petrol cards at present in use, unless the available quantity should increase.

### Average Prices OF Second-hand Machines.

**W**E give below the average prices of second-hand motor cycles offered for sale in *The Motor Cycle* dated August 10th, 1916. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average that appeared is given, if within a period of four weeks.

Make.	Year.	H.P.	Average for last week.	Latest average obtainable.
A.J.S.	1914 6	3-sp. sidecar	£65	—
"	1916 2½	3-speed	£52	—
"	1915 6	3-sp. sidecar	£90	—
Alton	1915 2½	2-sp., 2-stroke	£32	—
Bat.	1914 5-6	3-speed	£45	—
Bradbury	1913 4	3-speed	£28	—
"	1914 4	sidecar	£37	—
B.S.A.	1916 4	3-sp. sidecar	£68	—
"	1916 4	3-speed	£54	—
"	1914 4	3-speed	£41	—
Calthorpe	1915 2½	2-speed	£30	—
Campion	1915 6	2-sp. sidecar	£63	—
Chater Lea	1914 6	sidecar	£44	—
Clyno	1914 6	3-sp. sidecar	£50	—
Douglas	1915 2½	3-speed	£49	—
"	1915 2½	2-speed	£44	—
"	1914 2½	2-speed	£35	—
Enfield	1914 6	2-sp. sidecar	£57	—
"	1915 6	2-sp. sidecar	£70	—
"	1915 2½	2-sp. 2 stroke	£30	—
"	1914 3	2-speed	£34	—
H. Davidson	1915 7-9	3-sp. sidecar	£66	—
Humber	1913 3½	3-sp. sidecar	£35	—
Indian	1915 5	3-speed	£47	—
"	1915 5	3-sp. sidecar	£61	—
"	1916	Powerplus sidecar	£79	—
"	1914 7	3-sp. sidecar	£60	—
"	1913 7	2-sp. sidecar	£38	—
James	1914 4½	3-sp. sidecar	£48	—
"	1914 4½	3-speed	£40	—
Levis	1915	Popular	£26	—
"	1914	2-speed	£27	—
Matchless	1915 8	3-sp. sidecar	£78	—
"	1914 8	3-sp. sidecar	£50	—
New Hudson	1915 2½	2-speed	£20	—
"	1915 4	3-sp. sidecar	£59	—
New Imperial	1915 2½	2-speed	£26	—
P. & M.	1914 3½	2-sp. sidecar	£54	—
"	1913 3½	2-sp. sidecar	£35	—
Premier	1914 3½	3-sp. sidecar	£45	—
Radco	1915	2-stroke	£20	—
Rex	1914 6	2-sp. sidecar	£51	—
Rover	1914 3½	T.T.	£35	—
"	1914 3½	3-sp. sidecar	£39	—
Rudge	1915	Multi sidecar	£50	—
"	1913 3½	clutch	£28	—
Scott	1914 3½	2-speed	£38	—
Sunbeam	1914 6	3-sp. sidecar	£69	—
"	1916 3½	3-sp.	£70	—
"	1915 3½	3-sp. sidecar	£72	—
Triumph	1915 2½	2-sp. 2-stroke	£31	—
"	1914 4	3-sp. sidecar	£48	—
Williamson	1914 8	2-sp. sidecar	£52	—
Zenith	1913 6	Gradua sidecar	£37	—
"	1914 6	Gradua sidecar	£60	—
"	1913 3½	Gradua	£36	—



# "THE MOTOR CYCLE" RECRUITING SECTION.

Twenty-six M.M.G.S. Recruits Last Week.

THERE are still vacancies in the Motor Machine Gun Service for experienced motor cyclists and car drivers able to execute ordinary running repairs.

Inspections of recruits were held at the Coventry Recruiting Office on Tuesday, and at the offices of *The Motor Cycle*, 20, Tudor Street, London, E.C., on Saturday last. The names of those motor cyclists and car drivers accepted are given below.

Attfield, F., Aldershot.  
Beaumont, T. W., Dawbury.  
Belton, P. J., Aldershot.  
Brown, G. L., Birmingham.  
Chambers, H. H., Derby.  
Darlington, H. W., London.  
Eyles, T. O. N., Wimbledon.  
Fallaise, P., London.  
Gipson, F., Chatteris.  
Hollis, A. W., Oxford.  
Hore, G. W., London.  
Huggett, T. W., Horley.  
Isaac, J. C., Liskeard.  
Jobson, C. W., Beverley.  
Low, F., Harborne, Birmingham.  
Mattocks, B., Aldershot.  
Norgrove, G., Smethwick.  
Reuleaux, G., London.  
Robinson, W. H., Whitechurch (Salop).  
Root, O. W., London.  
Smith P., West Meon, Hants.  
Stevens, P. E., London.  
Williams, A. C., Penarth.  
Windsor, H. B., Reading.  
Woodhead, F., West Hartlepool.  
Woodward, F. W., Market Harborough.

## Central Office for Motor Machine Gun Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

Arrangements had also been made for a further group of candidates to attend at the Coventry Recruiting Office on Tuesday of this week. The two next dates arranged are:

MANCHESTER.—Messrs. Iliffe and Sons Ltd., Century Buildings, Deansgate, WEDNESDAY, August 23rd, 2.15 p.m.

COVENTRY.—The Recruiting Office, Little Park Street, TUESDAY, August 29th, 2.30 p.m.

Full particulars of enlistment and a form for filling in purposes may be obtained on application, whilst the conditions of enlistment are mentioned on this page. Prospective recruits conforming to requirements, and who are ready to join up at once, may attend any of the inspections announced on this page.

A free railway warrant will be issued to prospective recruits living at a distance, if the applicant will previously get examined before the Medical Board for his district.

The amended conditions of enlistment in the Motor Machine Gun Service are given hereunder:

EXPERIENCE.—At least one year's motor cycle or car driving experience.

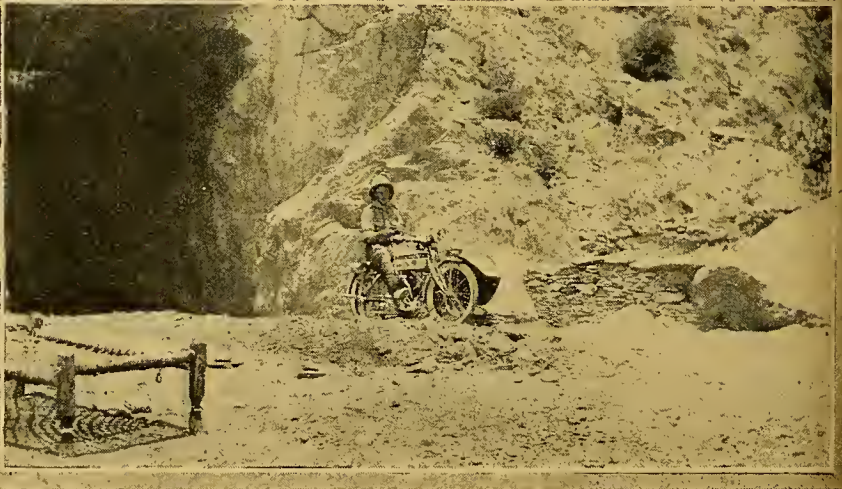
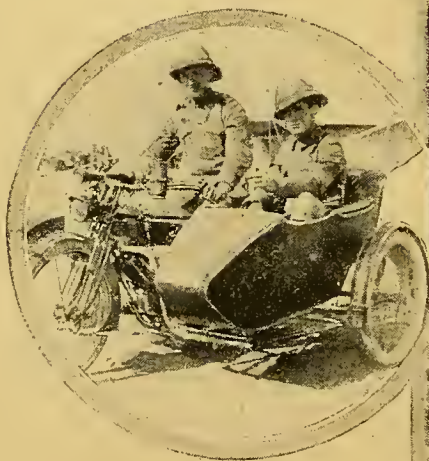
AGE.—18 to 40.

ENLISTMENT.—For duration of the war.

MEDICALLY FIT.—For general service, or for garrison duty abroad.

PAY.—1s. 2½d. per day, all found; the usual separation or dependant's allowance.

In London on Saturday one of the applicants was M. Gaston Reuleaux, a French-Belgian, who has served eight months as a civilian chauffeur attached to the Belgian Army. He is at present chauffeur to the Regent of Persia, H.H. Nassereul Moalk. M. Reuleaux is anxious to be attached as a motor driver to the Royal Flying Corps or the Motor Machine Gun Service; he speaks French, English, a little Flemish, Dutch, and German.



R.F.C. MOTOR CYCLISTS IN THE PUNJAB.

(Left) Cpl. Neal, driving, leaving Risalpur for Nowshera.

(Right) A tunnel through the hills on the way to Malakand.

## MILITARY MOTOR CYCLES IN INDIA.

IN *The Motor Cycle* of January 20th last we gave the impressions of motor cycling in India gained by a corporal with a mechanical transport unit. A few days ago we had a letter from an A.S.C., M.T., officer with the same section that throws some light on the difficulties military motor cyclists have to contend with in parts of India. Though mainly concerned with cars, our correspondent, Lt. E. C. Abbott-Young, has seven motor cycles to look after, i.e., four Triumphs, two New Hudsons, and one Abingdon King Dick. By far the greater part of

the work appears to fall on the Triumphs, which stand up remarkably well.

Dust appears to be the great trouble in the North-west Frontier Province. It is really terrible at times, and the chief casualties among the two-wheelers are due to dry skids in the dust. Our correspondent recently rode along a road which was nine inches deep in dust, and says, "Over and above the noise of the exhaust I could hear the dust falling in solid sheets, and it sounded like going through a watersplash."

W. H. Elce, of Messrs. W. H. Elce and Co., has joined the R.E. despatch riders as an artificer. He was examined

by the Editor of this journal. The firm will continue to do business from their premises in Bishopsgate Avenue, E.C.

L.-Cpl. L. C. Tizzard, Somerset L.I., who has been awarded the Military Medal, is a Douglas employee. Already three other old Douglas men have been similarly honoured.

Capt. T. Henderson-Begg, Gordon Highlanders (T.F.), who, we regret to state, was killed on July 23rd, was a keen motor cyclist and well-known in Scottish motor cycling circles as a Rudge exponent. He was only recently married.



# The Design of Motor Cycle Steering Heads.

## SOUND SCHEMES SUGGESTED BY EXPERIENCE.

The subject of steering head design was touched upon in our pages some weeks ago by a writer from the Front. On August 10th we published an article dealing with the question, and, in view of its importance, give some further very practical remarks below. These are from the pen of a M.M.G.S. sergeant whose wide experience gives him the right to speak authoritatively.

**P**ROBABLY most men who have had to keep motor cycles in order have noticed how often the steering heads need adjusting. This necessity for frequent adjustment is very noticeable with most heavy sidecar machines, and in the case of the very heavy gun machines used in the M.M.G.S. the adjustment of the steering head or the renewal of the races is so frequent a necessity that if a dozen machines were picked out haphazard on the road, probably not more than one or two would be found to be in a satisfactory condition in this respect.

This very undesirable state of affairs leads one to suspect something faulty in the design, but it should not have been necessary to wait until unsatisfactory performance forced this point on our attention. To anyone possessing mechanical insight, the conventional arrangement of the bearings in steering heads appears obviously wrong almost at the first glance.

In the following article the forces acting on the steering head of a motor cycle are analysed, the type of ball bearing commonly used is shown to be unsuitable for carrying these forces, and two designs with bearings suited to the forces acting on them are illustrated.

Fig. 1 is a diagrammatic drawing of a common type of steering head, fitted with two thrust bearings, one at the top and one at the bottom in the usual manner. Suppose  $R$  is the upward reaction of the ground on the front tyre. For all practical purposes this will act vertically upwards through the centre of the wheel. Imagine this reaction divided into two components, one along the axis of the steering column and one at right angles to it. This can be done by the parallelogram of forces shown inset.

From this it will be seen that, if the steering head inclines  $30^\circ$  from the vertical, the reaction  $R$  is equivalent to a thrust of  $.86 R$  acting along the steering column and a force of  $\frac{1}{2} R$  acting at the point  $O$  at right angles to the column. The thrust  $.86 R$  is carried quite simply by the lower thrust ring, but in the design shown there is absolutely no provision made for carrying the force of  $\frac{1}{2} R$  at right angles to the column.

This force produces two reactions  $P$  and  $Q$  at right angles to the steering column. The magnitude of  $P$  may be calculated from:

$$P \times 5\frac{1}{2} = \frac{1}{2} R \times 25 \text{ (on the see-saw principle).}$$

$$\text{Therefore } P = 2.27 R.$$

The force  $Q$  is equal to the sum of  $\frac{1}{2} R$  and  $P$ , therefore  $Q = 2.77 R$ . It will thus be seen that the force  $Q$  acting sideways on the lower thrust bearing is more than *three times* the thrust of  $.86 R$ , yet the bearing is designed to carry a thrust and not a sideways force.

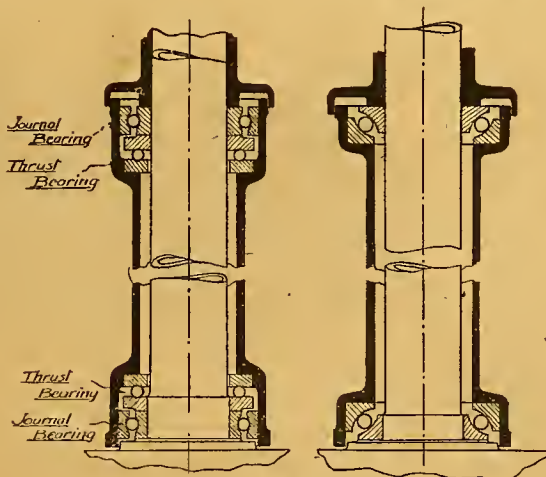
Due to the reaction  $R$  there is no thrust on the upper bearing, the whole force being the sideways force  $P$ . It might be noted here that the existence of these sideways forces is very apparent (though not more real) in the case of the Triumph and the Clyno M.M.G.S. machines, where heavy springs are fitted to carry the very considerable forces at right angles to the steering column.

### Two Suggested Designs.

What, then, are the possibilities of designing a steering head in which the relatively large forces at right angles to the column are provided for as well as the thrust?

Two designs are shown in figs. 2 and 3. In fig. 2 a journal bearing is first placed on the steering pillar, then a thrust bearing on top. In the upper end of the steering head is placed first a thrust bearing and then a journal bearing. In this design the lower thrust bearing carries the thrust  $.86 R$  and *nothing else*. The upper and lower journal bearings carry respectively the forces  $P$  and  $Q$  and *no thrust*. The possibility of thrust on the journal bearings is eliminated by leaving the outer races free to slide in the steering head.

Fig. 3 shows a design in which bearings capable of carrying both thrust and sideways force are used. This design, the writer believes, is actually in use in a few machines, but there is no harm in drawing attention to it and noting its great superiority over the type, as shown in fig. 1. The writer rode a pedal cycle many years ago in which the steering head was designed in this way.—J. H. SINCLAIR, Sgt., M.M.G.S.



Figs. 2 and 3.





### TIMES TO LIGHT LAMPS. "SUMMER" TIME.

Aug. 17th	...	8.49 p.m.
" 19th	...	8.45 "
" 21st	...	8.41 "
" 23rd	...	8.37 "

### S.O.S.

A correspondent writes: "Will you kindly inform me if it is possible for a two-cylinder engine to be a four-stroke?"

### The National Relief Funds.

At the week-end the principal war funds stood as follow:

The Prince of Wales's National Relief Fund (£3,443,250 distributed)	...	£5,942,159	0	0
British Red Cross Fund	...	4,174,842	0	0
Tobacco Fund	...	111,892	17	0

### An Australian Club's Record.

The Victorian Motor Cycle Club's eleventh annual report was issued at the end of May. The present membership is 215, and sixty-eight members are in one or other of the Services. As a result of the 200 miles road race, reported in *The Motor Cycle* of June 22nd, the Red Cross Society benefited by over £100.

### No Changing of Petrol Permits.

Last week a motor cyclist, who had not received his petrol licence and had an important journey to make, borrowed a friend's permit on the promise to return the compliment at a later date. A query on the same subject having reached us, we sought an official ruling, and the Petrol Control Committee of the Board of Trade denounces the practice!

### Nursing the Overseas Trade.

We understand that the Durban, Natal, Rudge agents have been able to get a shipment of 1916 Rudges, War Office permission having been obtained by the manufacturers. Messrs. Buttery and Hatton, the firm in question, received the machines last month, and they are the first for a period of twenty months! We understand that there is a scramble for them in Natal.

### Mail Delivery by Motor Cycle.

An important law has recently been passed by the U.S.A. Congress permitting the use of motor bicycles by rural mail carriers. Previously only side-carriers were allowed by the Postmaster-General for this class of work, but the new law allows of the use of any type of motor vehicle, provided the work is carried out satisfactorily. The passage of this law means for U.S.A. motor cycle firms, it is stated, a market for from 5,000 to 10,000 additional motor cycles during the next twelve months.

### Utility of Motor Cycles recognised by New Zealanders.

According to Mr. J. B. Clarkson, the well-known motor trader of Wellington, N.Z., three out of every five motor cycles sold in New Zealand are used for business purposes. They are not necessarily attached to sidecarriers, but the owners, being people who find it necessary to cover considerable ground in performing their duties, use their machines in the course of their work. This was the important point made by Mr. Clarkson in an interview with a representative of our New York contemporary, *Motor Cycle Illustrated*.

### Arbuthnot Trophy Fund over £100.

The following donations have been received up to the time of going to press for the above fund, which was organised in order to perpetuate the memory of Rear Admiral Sir R. K. Arbuthnot, who, it will be remembered, was killed on H.M.S. *Defence*, in the great Jutland naval battle. The trophy is to take the form of a statuette of the Admiral, and is to be competed for in an annual motor cycle competition, open only to naval officers. Donations should be sent to the A.C.U., 83, Pall Mall, S.W.

Auto-Cycle Union	...	£5	5	0
Royal Automobile Club	...	5	5	0
S. Bettmann, Esq.	...	5	5	0
S. G. Frost, Esq., R.F.C.	...	5	5	0
The Hendee Manufacturing Co.	...	5	5	0
The Gloria Company	...	5	5	0
The Motor Cycle	...	5	5	0
Temple Press, Ltd.	...	5	5	0
Messrs. Phelon and Moore, Ltd.	...	5	5	0
The Triumph Cycle Co., Ltd.	...	5	5	0
M. J. Schulte, Esq.	...	5	5	0
B.S.A., Ltd.	...	5	5	0
Humber, Ltd.	...	5	5	0
Messrs. Godfreys, Ltd.	...	2	2	0
Messrs. Joseph Lucas, Ltd.	...	2	2	0
J. R. Nisbet, Esq.	...	2	2	0
G.W.K., Ltd.	...	2	2	0
W. Hughes Butterfield	...	2	2	0
Rev. E. P. Greenhill	...	1	1	0
H. P. E. Harding, Esq.	...	1	1	0
R. T. Lang, Esq.	...	1	1	0
J. W. Orde, Esq.	...	1	1	0
J. Simmonds, Esq.	...	1	1	0
Otto Thomas, Esq.	...	1	1	0
A. W. Torkington, Esq.	...	1	1	0
W. H. Wells, Esq.	...	1	1	0
North Wales Motor Exchange (per The Motor Cycle)	...	1	1	0
L. Francis Jones, R.F.C.	...	1	1	0
Dr. Trenchard Rossiter, R.N. (per The Motor Cycle)	...	1	1	0
E. M. P. Boileau, Esq.	...	10	6	
M. C. Breeze, Esq., R.F.C.	...	10	6	
Geoffrey Smith, Esq.	...	10	6	
County Cycle and Eng. Co., Ltd. (per The Motor Cycle)	...	10	0	
H. Johnson, Esq.	...	5	0	
C. Furlong, R.F.C.	...	5	0	

Total to date £100 7 0

### Australian Auto Cops.

The Sydney police force is to be augmented by a motor cycle corps for "scouting duty the suburbs."

### Price of Petrol in Western Australia.

Users of petrol in Western Australia are now paying 3s. 3d. per gallon, so that it is as expensive as here, though, so far as we are aware, there is no real shortage in that part of the world.

### A Mysterious Noise?

*The Motor Cycle and Cycle Trader* tell a story of a novice who took his machine back to the agent, riding it very slowly and carefully, because a "mysterious and rather alarming noise" had suddenly commenced. This noise was caused by the stand, which had become unfixed, bumping along the road.

### Postponed Petrol Permits.

The Petrol Committee is at present dealing with the cases of munition firms and others whose work is of national importance. They may receive an additional allotment when circumstances warrant such a concession. This news will bring relief to "Scottish Road Surveyor" (see Summary of Correspondence and others. No less than 24,000 motorists were late in making their returns; the applications were put on one side for a time, but are now being considered.

### Petrol Substitutes.

One of the most popular substitutes at present is White Oil, which is obtainable in many garages throughout the country. Mr. H. Taylor, whose firm sells it at 2s. per gallon, tells us that tests prove it to give very satisfactory results with a 25% mixture of petrol. No injection of petrol is necessary.

### Bodinnick Ferry.

The ferry from Fowey to Bodinnick has recently been made suitable for motor traffic. Previously the ferry consisted of a small boat and the approaches were very bad. The descent is still deep, being about 1 in 7 on the Bodinnick side and 1 in 7 on the Fowey side, but the surface now consists of granite sets. The new ferry boat is capable of carrying two cars at a time. Fowey may now be approached from the east, as well as via Loswithiel and Par, and the roads to Looe, Polperro, and Liskeard are much shortened. This ferry is one of the two which cross the river, or rather estuary, at Fowey, the second being nearer the sea at Polruan, but until recently neither was suitable for motor traffic.



CANADIAN MOTOR

Douglas mounted motor cyclists attached to a Div. Sig. Coy. of a Canadian Division. King, Perkins, Thomson, McKay (Art.), Jacobs, Harrison, Norris, Van Antwerp, Fanes, of a sergeant; formerly a lieutenant was in charge.



ended at Mons.

Among the British prisoners of war sent to Germany to Switzerland last week-end Lieut. C. E. Wallis, 1st L. North Lincs., at the outbreak of war was advertising for our sister journal *The Light Car*. He was taken prisoner quite early in the war, and he was wounded.

3-valve Indian on the Market.

The 1916 catalogue of Williams, Hunt, and South African agents for the Hendee Manufacturing Co., includes the eight-valve machine as being imported to special order only. The price is £102 10s. This is interesting, as, though this model has been used in many parts of America and Europe, it is the first time it has been placed on the market. The South African prices for Indians appear to be more than those for the same machines in England. Thus the three-speed Powerplus is £12 10s. in South Africa and £90 in England; the lightweight £55 in South Africa and £49 10s. in England.

Motor Fuels.

Another petrol substitute has been put on the market, and we give herewith details concerning it. It is made in three qualities. No. 1 has a specific gravity of 75-750, with a flash point of 75, and is at the price of 2s. 6d. per gallon; No. 2 has a specific gravity of 770, and a flash point of 80, the price being 2s. 3d. per gallon; No. 3 has a specific gravity of 785 and a flash point of 83, the price being 1s. 9d. per gallon. Known as the Triple fuel it is sold by the British-American Oil Syndicate, 1, Marlborough Street, W.

Still another new fuel is called the Magic, marketed by Symons Motor Works, Blackheath, near Bromsgrove. It is said to give excellent results as to power, and though it takes rather more deposit than petrol, this is easily and easily removed. The price is 3s. per gallon, and it can be supplied in drums.

Coventry Premier Light Car.

Many motor cyclists will be interested in a description of a Coventry Premier light car published in yesterday's issue of our journal, *The Light Car*. With the exception of a small two-cylinder four-cylinder, the name Coventry Premier has hitherto been associated with bicycles and motor bicycles. The new car is quite a light machine.

No Petrol Permits.

Complaints continue to reach us from readers who have made their application for an allowance of petrol, but so far have received none. The only advice that we can give is that they should possess their souls in patience, and write again to the Petrol Committee, 19, Berkeley Street, London.

Petrol for Special Constables.

A fortnight ago we announced that motor cyclists are wanted for the H.Q.C.D. It should be understood that though petrol for the work, which consists in being on duty during night raids, is provided, it has to be paid for; in fact, members of this A.A. Section of the Headquarters Central Detachment find everything themselves. Those willing to help should write Mr. Bartleet, A.A. and M.U., Fanum House, Whitcomb Street, London, W., who will willingly supply full particulars.

Motor Sections and the Training Reserve.

It is not yet known officially how recruiting for the different motor sections will be affected by the organisation of the Training Reserve, the formation of which was authorised in Army Order 259 issued last week. Briefly, the Training Reserve will serve as a general pool from which drafts can be found for any regiment which cannot obtain all the men it requires from its own regimental reserves. In the past, when a regiment required reserves, it was necessary to transfer men from another regiment which had a surplus. This method was not popular.

If the new Army Council instructions on the organisation of the Training Reserve are applied to the motor sections, it would mean that men able to drive motor cycles or motor cars would be put into a general pool on their reporting for active service, and the different motor sections requiring recruits would draw upon them as necessity arose. At the present time there are dozens of examining officers scattered about the country examining recruits for the different motor sections, A.S.C., R.E., and R.F.C., but the number of recruits of late, in consequence of the last groups having been called up, has naturally fallen considerably.



SPECIAL FEATURES.

HOW TO ECONOMISE (illus.).  
STEERING HEAD DESIGN (illus.).  
A DOT DEVELOPMENT (illus.).

Proposal to Boycott German Goods.

In a letter in the current issue "Britisher" suggests the formation of a league of motor cyclists pledged to refuse to accept German goods of any kind both now and after the war.



AWARDED THE ALBERT MEDAL FOR GALLANTRY.

Lieut. S. A. Rowlandson, who a few months ago led a party of men into a burning building where there lay an unexploded German shell; they carried the shell out and extinguished the fire. The many motor cyclists, both trade and amateur, to whom he is known will join us in offering our heartiest congratulations.

Economy in a Nutshell.

Those motor cyclists who are anxious to economise, or who may be using one of the dozen or so substitutes for petrol will find the article in the present issue entitled "How to Economise" of considerable assistance. The hints and tips incorporated in the article are the result of prolonged riding experience. The wise rider will keep the article by him for reference purposes.

Motor Cyclist Airmen.

We have frequently referred to the number of motor cyclists in the Royal Flying Corps, and the excellent training school for such a section that the motor cycle has proved. Some motor cyclists have enjoyed rapid promotion, such as A. Mackenzie Cott, the owner of Big Ben, now a captain and equipment officer; also H. Lister Cooper, the Triumph rider, J. W. Woodhouse, the Precision engine expert, of Birmingham, and A. M. C. Scott, formerly with Premiers, who have all gained their captaincy. There are, of course, many other motor cyclist officers in the flying section, and many, too, anxious to gain admittance.



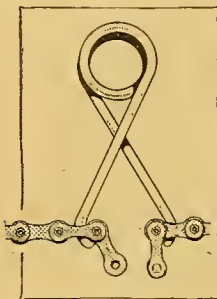
DESPATCH RIDERS.

To right: Lt. Steele, Sgt. Taylor, Cpls. Tarrigan, Dickson, MacDonald, Hooper, Score. It may be mentioned that sections of British despatch riders are now placed in charge



### A NOVEL CHAIN GRIP.

THE motor cyclist making chain adjustments often wishes that he possessed a third hand; some small tool for temporarily holding the ends of the chain in position is almost a necessity. There are several devices for this purpose now on the market, and another very simple tool comes from an American source. It consists of a piece of steel wire formed with a coil in the centre, the ends being made to fit between the rollers. All that is necessary to use it is to cross the ends and insert them in the chain ends. Both hands are then free to work.

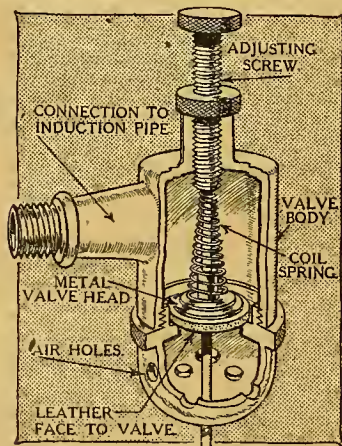


A novel chain grip.

### THE EMPIRE PETROL ECONOMISER.

TO motor cyclists who feel that their engines would stand more air the Empire automatic petrol economiser should prove a particularly useful fitment. It consists of an air valve which opens as the suction of the engine increases, and so weakens the mixture, thus producing greater economy. It is also useful on descending a hill, as the throttle may be closed, and if the economiser is placed between the throttle and the engine the vacuum in the induction pipe will cause the valve to open and permit cold air to be drawn in, thus cooling the engine. And since it destroys the vacuum in the combustion chamber, it will prevent oil being drawn up past the piston rings above the piston, which is a common cause of excessive carbonisation.

The device consists of a gun-metal body, a threaded spindle, a spring, a mushroom headed sleeve, which carries a leather washer, which is free to slide on the long extension of the spindle, and a cap, which is drilled



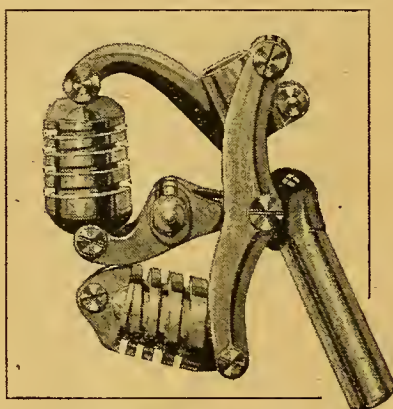
Part sectional view of the Empire petrol economiser.

with holes. The elbow, which forms part of the body, is screwed into the induction pipe, care being taken to make an air-tight joint. The partial vacuum in the induction pipe, caused by the downward movement of the piston on the induction stroke, causes the washer to rise from its seating and admit cool air into the induction pipe, thus reducing the richness of the mixture coming from the carburetter. By means of the adjusting screw the pressure on the spring can be increased or decreased at will. The device is well finished, and certainly should tend towards economy, which is so necessary at the present time.

### A NOVELTY FROM AUSTRALIA.

EVIDENTLY our motor cycle cousins "down under" suffer considerable discomfort on their very bad road surfaces. Our own English roads are bad enough, but they are smooth compared to the average road in Australia.

With the idea of minimising, if not entirely eliminating, handle-bar shocks,



The MacLean handle-bar spring.

Mr. Percy MacLean, of Hamilton, New South Wales, has invented a curious looking device, which is to act as an insulator between the handle-bars and the frame.

From the illustration it will be seen to consist of two powerful graduated springs, a series of arms, and no fewer than seven pivots. The thinner parts of the springs take the small vibrations, the thicker parts coming into action to absorb the larger shocks.

Our contemporary, *The Motor of Australia*, speaks very highly, not to say amusingly, of this invention, describing it as "an appliance that makes the holding of the handle-bars of a motor cycle as easy as stroking the hand of one's best girl." Neither article being at hand we have no means of verifying this statement. A terrible picture is drawn of the woes of motor cyclists in the Commonwealth due to bad roads—health is sadly impaired, heart strain and digestive troubles being the direct outcome of "clinging for dear life to the handles to prevent them being shaken from one's grasp."

Making due allowance for journalistic eulogies, it is certain that the invention is reasonable and effective, and should

go far to eliminate discomfort. It has been patented throughout the world, and is now being manufactured by the Twentieth Century Engineering Co., of Sydney, N.S.W.

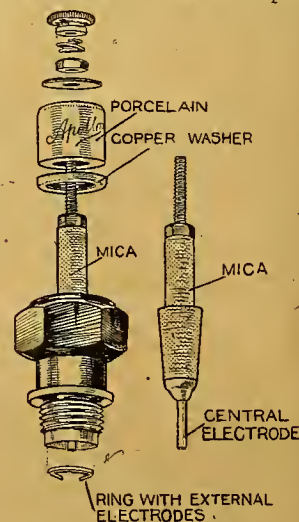
### TWO NEW APOLLO PLUGS.

WE have received two sample Apollo plugs from Messrs. Brown Bros., Ltd., 15, Newman Street, W. The plugs are made of mica on a novel principle. Brand A1 is an all-mica plug, the central electrode of which is first of all wrapped up with a sufficient number of layers of mica to withstand an electric pressure of 80,000 volts. After this has been securely fixed mica washers are compressed on the whole length of the wrapping, and these are then turned in the lathe to the necessary dimensions. The next process is to compress the outside mica washers over the cone. The whole is then secured by mechanical means that entirely obviate any possibility of the washers coming loose. They are afterwards rendered waterproof by impregnation with a special compound. In the Apollo plug, the makers claim that all the difficulties with reference to the manufacture of a satisfactory mica plug have been overcome.

The other model is Brand S, which we illustrate. This consists of a porcelain



The Apollo mica and porcelain plug.



Parts of the Apollo mica and porcelain plug.

cap surrounding the mica wrapping on the centre electrode. A copper washer is inserted between the body of the plug and the porcelain. The external electrodes are substantial, and the plugs look as if they will be highly suitable for motor cycle work.

A new branch of the Firestone Tyre and Rubber Co., Ltd., has been opened at 2a, Atkinson Street, Deansgate, Manchester.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Magneto Contact Breaker.

**?** Why does the rocking lever of a magneto work in a fibre-bushed hole? It is not to insulate it, because the other platinum is carried by an insulated block which is connected to the condenser by the central screw, and the current must flow across the points to earth, the path being provided by the spring.—J.I.H.

Fibre is not used in this case as an insulating medium, but simply because it is the most suitable substance for this bearing, as it does not require lubrication.

### Pre-ignition.

**?** My mount is a single-cylinder 2½ h.p. machine, not out of the shops above a month. On one particular road, an incline 1 in 45 for one and a half miles (preceded by a steep hill of half a mile), I find that towards the end of the gradient my machine stops dead, and it means a rest for a minute or two before I can start again. I use top gear, with the throttle sufficiently open not to choke, air control threequarters open, E.I.C. ignition fully advanced. Can you explain the trouble and tell me how to remedy it? I have been travelling as fast as 30 m.p.h. when the engine has suddenly stopped.—H.J.C.

We should say the trouble is caused by pre-ignition, due to your using a plug the points of which project too far into the cylinder. Use a good single point plug, and we think the trouble will cease. The piston rings being gummed up with carbon deposit might also cause the trouble. If possible use a smaller jet; this may cause the engine to run rather cooler.

### Fitting a Single-lever Carburetter.

**?** (1.) Would there be any objection to fitting a single lever to a 6 h.p. twin? Do single lever carburetters give the same power, flexibility, and slow running as the two-lever type? How does their petrol consumption compare with this type? (2.) Is a 6 h.p. too large for solo riding? (3.) Does it make any difference if each cylinder of a twin is fitted with a different kind of sparking plug? (4.) Which is to be preferred, hand or foot control for the clutch?—G.E.A.

(1.) There would be no objection whatever to your having a single lever carburetter fitted to your 6 h.p. machine. Provided you buy a carburetter of good make it will be quite satisfactory. It should not affect the running as regards flexibility, slow running and power, but

it might be a very little more extravagant. (2.) A 6 h.p. machine is a little heavy for solo riding, but many people do not mind weight. There are numerous riders of 7 h.p. solo machines. (3.) It does not matter at all, provided both plugs are good. (4.) This is largely a matter of taste. For solo riding a hand clutch is best, while probably for sidecar work a foot clutch is to be preferred. Dual control is fitted to some machines. This, of course, is best of all.

### Lack of Power on One Cylinder.

**?** I should be much obliged if you could suggest what is wrong with my 1913 7 h.p. Indian. It seems as if the back cylinder is running fully retarded, as the sound of the exhaust is just a slow dull flop. When running on the stand, if I short the front cylinder the back one just turns over, but if I short the back cylinder the front one races away as usual. I have cleaned the points, also the carbon brushes and holder, and checked the valve timing (which is quite correct); the lift is the same on both cylinders, and the ignition is timed to break dead on top when half retarded. There is a good spark at both plug points.—PUZZLED.

It is very difficult to diagnose your trouble from the particulars you give. It is evident, however, that the ignition is not the cause of the trouble. See that the compression on the rear cylinder is as good as on the front. If not, remove the valves, and see that they are in good condition, and grind them in if necessary. Make sure your inlet dome is screwed down tightly, and that there are no air leaks in the induction pipe. If the spark is right, timing right, and compression good, there is no reason why you should experience any trouble. Also make sure all the valve tappets are adjusted correctly. When the engine is cold there should be only just clearance between the inlet tappet rods and rockers, while there should be about ½ mm. between the exhaust tappets.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILLIFFE & SONS LTD.

### Overheating.

**?** I am in great trouble with an N.S.U., which overheats after it has run a mile and stops. I have tried a new silencer. The ignition is all right. I have a B. and B. carburetter, and have tried smaller jets. I use the best oil, and give it plenty. I hope you can give me some information regarding the trouble I am having.—E.M.

We should recommend you to make sure that the engine is free from carbon deposit. Also see that the valves are working properly, that the exhaust valve has its full lift, namely about ½ in., and that the valve springs have not lost their temper. The trouble may also be caused by a faulty plug causing pre-ignition. Try one of good make with substantial electrodes.

### Knocking on a Two-stroke.

**?** I should be much obliged if you could advise me as to the probable cause of a recent development of persistent knocking in my three-speed 1914 two-stroke motor bicycle. I bought the machine second-hand in March last, when it seemed to be in good tune, and I was assured the main bearings had recently been rebushed. Since then, owing to unsatisfactory running and a tendency to overheat, I have had the engine taken down and thoroughly overhauled and decarbonised by a local man. The main bearing was reported all right, but the big end bearing was loose and so was rebushed. Since then, except for a temporary trouble caused by getting water in the tank, the machine has gone well on the few occasions I have been able to use it. But quite lately (it has hardly done 120 miles since the overhaul) I found a strong tendency to knock—in fact, with the air lever anything like fully open it would be knocking nearly all the time, even on the level, and, of course, more so up hills. The machine would run best with the air nearly closed. Advancing or retarding the spark seemed to make little or no difference. The agent says he thinks the fault is in the bearings.—H.L.L.

We think the trouble is probably due to a partially choked jet, which causes a weak mixture, and, consequently, knocking. Make sure the exhaust gases are not muffled or choked in any way. Two-strokes, if they have been run at all hard, are sometimes inclined to get the piston rings gummed up, which might also cause bad running and knocking. This is one of those troubles which is exceedingly hard to diagnose without actually seeing the machine.



## Overheating.

**?** My 1912 6 h.p. sidecar combination has started to overheat in an alarming manner. This is what happens. It starts up fairly easily after an injection with the spark fully advanced, half gas and half air, and then races like mad, and gets almost red hot in three minutes. I have tried to get it to run slowly, but cannot; it either races or stops; it does not at any time develop full power, and the consumption is only 45 m.p.g. The back cylinder gets hotter than the front, though the engine is well lubricated, and the pistons are if anything a bit loose in the cylinders, and the exhaust is not baffled in any way. Can it be that the magneto timing is not correct?—H.G.S.

What we should recommend you to do is to give the machine a thorough overhaul. Take off the cylinder, remove the carbon deposit, clean the rings, see to the valves, also that their springs are strong enough, and in reassembling be especially careful to see that there are no air leaks at the carburetter or induction pipe unions. The engine refusing to run slowly is most likely due to one of the faults mentioned. Make sure that the jet is not too large; you should not be able to start with air lever half open. When fully closed and throttle only just open slow running should be possible.

## Heated Crank Case.

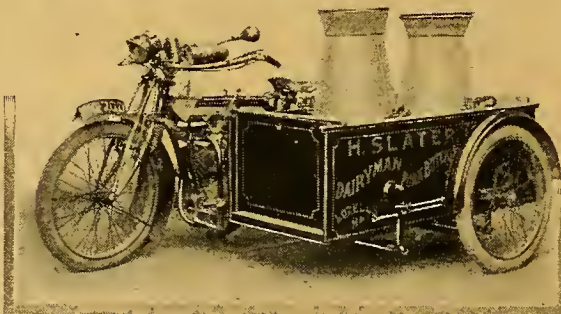
**?** (1.) I have a 1913 Triumph, carefully used; big and little ends good. Recently I had trouble with loss of power and overheating in crank case. I took the engine down, but the trouble continued, with, at times, misfiring. Eventually the engine was taken down by the agent, who, thinking gases got past, replaced the top piston ring with one 1000 in. wider. I was then told it would be all right. Now a trial run of twelve miles proves that the crank case and the case, including chain, between timing gear and magneto, are just as hot. The compression is good. I use Mobiloil BB. What do you advise? (2.) What is the cause of the Starmey-Archer three-speed hub screeching when starting away by clutch on low gear?—C.G.J.

(1.) The crank case of practically any air-cooled engine gets fairly hot, so, unless extremely bad, this trouble need not worry you. If the compression is good, it is not likely that the heat of the crank case is due to the exploded gases leaking past the piston rings, but simply to conducted heat from the cylinder. The loss of power may be due to incorrect carburetter setting, or pitted or stretched valves, or even a faulty plug. Use one of the single-point variety of good make. (2.) The screeching when letting in the clutch is probably due to the clutch requiring lubrication. Lubricate the hub freely with thin engine oil.

## Refusal to Fire after Overhaul.

**?** I have a 2½ h.p. twin motor cycle—1911 Enfield—which I took down, and had a new hush fitted to the pulley side. Before I took it down it ran well, now I cannot get it to run. It will fire now and again, but will not pick up. It is only the back cylinder that fires. I have tried different valve and magneto timings, but without success. After trying it and taking out the plugs I find the front one is wet with petrol and the back one dry. I have had the magneto to pieces, and it gives a good spark when off the machine, but when on the front cylinder does not appear to be such a good spark as the back. The carburetter has no jet, the float is enclosed in a brass cup in two parts. (1.) Should the top part of the cup holding the float be loose when the bottom is screwed up tightly? (2.) How does the carburetter work, and how is it adjusted? (3.) Could you give me the correct valve timing? (4.) The correct magneto timing? (5.) The magneto couplings are a little slack, would this make any difference?—C.J.P.

It is possible that you have not refitted the carburetter correctly and an air leak now exists. Make sure all connections between the carburetter and the engine are airtight; also see that both the electrical cables are sound and not shorting anywhere. (1.) The top part of the carburetter should not be loose. (2.) There are two small cuts at the joint of the flood chamber. These act as jets, and one supplies each cylinder. It is, therefore, important that they should be identical in size, and free from obstruction. It is quite possible that the source of your trouble lies here. (3.) The exhaust valve should close on the top of the exhaust stroke, and the inlet commence to open immediately after the exhaust closes. (4.) The contact points should commence to separate when the piston is on the dead centre of the compression and firing strokes, the magneto being then fully retarded. The advance and retard of the ignition on this machine does not take place on the magneto itself as is usual in most cases but on the magneto transmission. (5.) The magneto couplings being slack should not interfere with the spark, but this might affect the timing.



## AN ECONOMICAL METHOD OF MILK DELIVERY.

Sidecarrier supplied by A. Pilkington, Aston Road, Birmingham, to a Midland dairyman. The owner uses it for conveying milk from his farm, five miles from Birmingham, and delivering direct to customers. The two churns when full contain 36 gallons and weigh nearly 4 cwt.

## RECOMMENDED ROUTES.

## COVENTRY TO SWINDON.—L.T.K.

Coventry, Warwick, Wellesbourne, Hastings, Halford, Moreton-in-the-Marsh, Stow-on-the-Wold, Burford, Lechlade, Swindon.

## GLASGOW TO DARLINGTON.—C.McC.

Glasgow, Hamilton, Lesmahagow, Douglas Mill, Abington, Crawford, Beattock, Lockerbie, Ecclefechan, Longtown, Bampton, Alston, Middleton-in-Teesdale, Barnard Castle, Darlington.

## GRANTHAM TO PLYMOUTH.—A.G.P.M.

Grantham, Melton Mowbray, Leicester, Wolvey, Coventry, Warwick, Stratford-on-Avon, Evesham, Cheltenham, Painswick, Stroud, Nailsworth, Dunkirk, Bath, Chewton Mendip, Wells, Glastonbury, Durston, Taunton, Wellington, Callompton, Exeter, Chudleigh, Ashburton, Ivybridge, Plymouth.

## LONDON TO EDINBURGH.—R.W.H.

London, Finchley, Barnet, Hatfield, Welwyn, Stevenage, Baldock, Biggleswade, Eaton Socon, Buckden, Stilton, Stamford, Grantham, Newark, Tuxford, Retford, Bawtry, Doncaster, Ferrybridge, Aberford, Wetherby, Boroughbridge, Leeming, Scotch Corner, Barnard Castle, Middleton-in-Teesdale, Alston, Bampton, Longtown, Langholm, Hawick, Galashiels, Stow, Edinburgh.

## NORWICH TO LONDON.—R.E.C.

Norwich, Wymondham, Attleborough, Thetford, Newmarket, Six Mile Bottom, continuing straight on past the cross roads to Linton till you come to the turning to Royston; follow this until you come to a solitary public house on the right known as "The Coach and Horses"; opposite this you will see a turning to the left, and proceed *via* Barkway, Ware, Hertford, Essenden, Potter's Bar, Barnet, to London.

MAIDSTONE TO SHREWSBURY *via* LONDON, AND BACK AVOIDING LONDON.—W.H.

Maidstone, Wrotham Heath, Wrotham, Farningham, Sidcup, Lewisham, London, which you reach by way of the Old Kent Road, continue down New Kent Road, past the Elephant and Castle, straight on over Westminster Bridge, make your way through St. James's Park, out by Hyde Park Corner, turn to the right and go up Park Lane, where turn right and then left for Orchard Street, straight away to Regent's Park, continue due north down Marlborough Road to East Finchley, then through Finchley, Barnet, St. Albans, Fenny Stratford, Stony Stratford, Towcester, Daventry, along Watling Street, through Kilsby, Smockington, Atherstone, Fazeley, Muckley Corner, Bridge-town, Gailey, Crackleybank, Wellington, Shrewsbury. For the return journey proceed in the following manner: Shrewsbury, Cressage, Much Wenlock, Kidderminster, Bromsgrove, Alcester, Stratford-on-Avon, Shipston-on-Stour, Enstone, Woodstock, Oxford, Dorchester, Benson, Nettlebed, Henley, Maidenhead, Windsor, Staines, Chertsey, Weybridge, Cobham, Leatherhead, Dorking, Reigate, Redhill, Westerham, Riverhead, Ightham, Wrotham Heath, Maidstone.



Fit

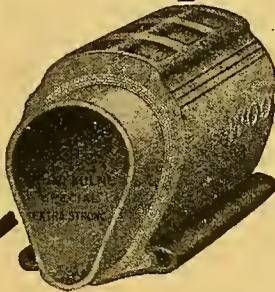
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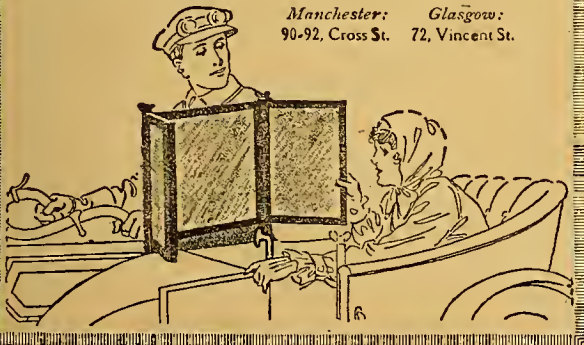
*In Polished Walnut with Nickel Fittings:*

Price complete with Side Wings	...	...	...	£3 0 0
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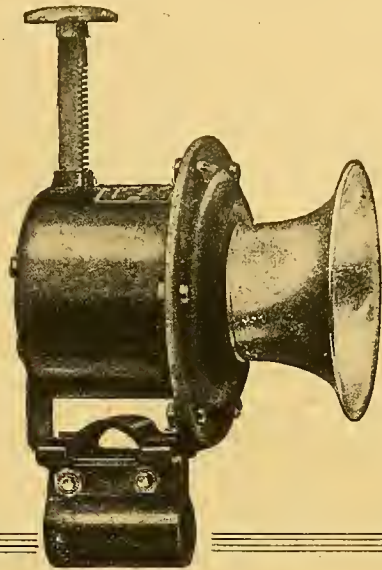
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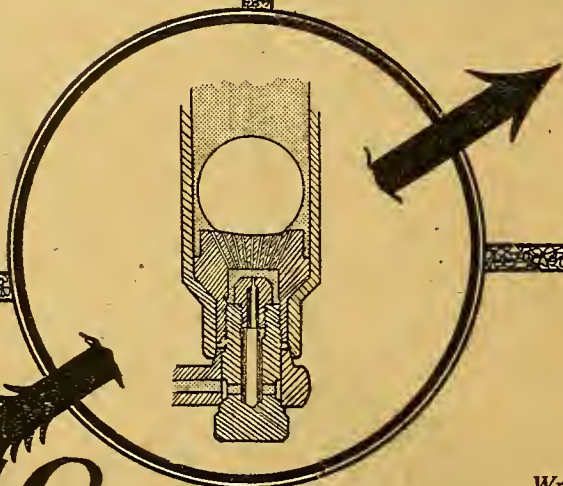
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Aston Cross, Birmingham.

**THE BELT FOR RUDGE, ZENITH, PHILIPSON,  
GRADO, BRAMPTON, or ANY GRADUAL GEAR.**



**SPECIAL OFFER.**

$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	
28/-	30/-	34/-	36/-	USUAL PRICE for 8ft.
22/-	24/-	26/-	28/-	SPECIAL PRICE for any length up to 8ft. Plus 8d. Postage.

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"I cannot give even an approximation of the mileage belt has done, as I ride, more or less, every day, winter and summer. Since I have had the belt I have twice toured the Lake District (it having taken me over Honister and Kirkstone), once through Derbyshire and North Wales, and once through South Wales and Somersetshire; also to the South and West of Scotland. A lot of my riding is done over the Yorkshire Moor and Coast roads."

"Having tested your belt and given it a good trial I think it only right to let you know the result. Since I took up motor cycling, eight years ago, I have had nothing but trouble with belts—slipping, stretching, and short life: since using the 'ZILLA' I have been quite free from all belt trouble. Anyone using a Rudge-Multi or other variable geared machine should not hesitate but use a 'ZILLA' and say good-bye to other makes."

Take the advice of experienced riders and order at once.

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**FREE ENGINE.**

Starts your machine like a car.  
Ensures safety over greasiest roads!  
Just half a turn of the handle on top tube  
changes from top gear to free engine.

Price up to 4 h.p. . . . £3 3 0

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10" extra to suit Engines with crank  
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Lightweight Model . . . £2 10 0

Pulleys with new ball thrust bearings; Lightweight,  
£3 5s. up to 4 h.p., £4, up to 6 h.p., £4 10s.

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# Letters To the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

## Paraffin Vaporiser.

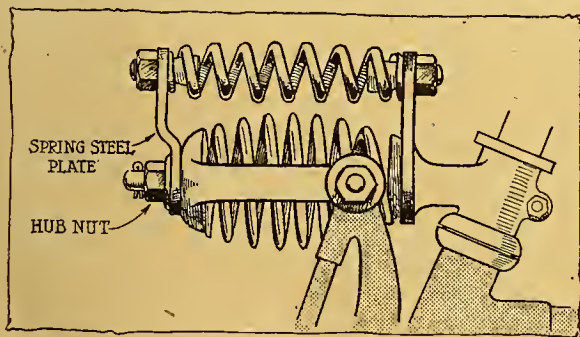
Sir,—Allow me a small space in your valuable paper to contradict Mr. T. Silver's claim to being the inventor of the paraffin vaporiser as illustrated on page 99 in your issue of August 3rd.

Over two years ago I invented a vaporiser by which the cheapest paraffin could be used. We fitted dozens of different makes of machines with this device, and nearly every machine in this neighbourhood (West Dulwich, S.E.) is so fitted, and my present Morgan is running quite gaily with the jacket, and I only use petrol for starting. All I do is to unscrew the float chamber top and fill it with petrol.

A. DURANT, Oakleigh Motor Co.

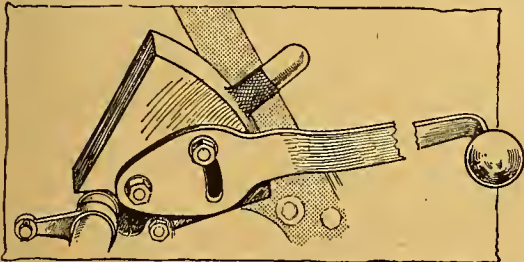
## Two Tips from France.

Sir,—Enclosed are two rough sketches of little improvements I have made to my 1916 Triumph. I have had a great deal of trouble with broken front fork springs, which is a very common complaint out here, so I have fitted a 4 h.p. Douglas spring, as shown in the first sketch, using two pieces of good spring steel for the purpose. The nut in front is a



Supplementary spring added to a military Triumph. (See letter from "F. C. H., Corporal R.E.")

rear hub nut, the collar on which compensates the loss of thread, due to the thickness of the spring steel plate B. I have had this on for some months, and have not broken a spring since it has been fitted.



Metal cover on the quadrant of Sturmev-Archer countershaft gear, the object of which is to ward off dirt and keep petrol from washing away the lubricant.

The second sketch relates to the change gear quadrant. I find that on flooding the carburetter all lubricant on the quadrant is immediately washed off and the lever jams. To overcome this I have made a box of thin sheet iron, with the valve cap of a car tyre for the plunger guide. This box is

bolted on with the lever bolts and moves with the lever, and has been very satisfactory indeed, the lever never having jammed since it was fitted.

B.E.F.

F.C.H., Corporal R.E.

## Spring Frames and Freak Hills.

Sir,—In reply to Mr. Bethwaite, I should be delighted to try any Lakeland hill on my spring frame Indian, and when I wrote my first letter fully expected a challenge, but unfortunately its publication was held back fourteen days, and I am now in the M.T., A.S.C., at London, S.W., so cannot fix up any date.

A. ROBINSON.

## A Memory of the Ill-fated International Six Days Trial.

Sir,—It is now just two years since we beat our hasty retreat from Grenoble. It was such a beautiful spot. I should have been quite content to stay, *mais non, c'est la guerre*, and what a time we had nevertheless! I thoroughly enjoyed it. I could not allow the date to pass without writing to you in commemoration of our trip, etc. I cannot tell you how welcome we have found *The Motor Cycle*, both when I was at the Front and in Rouen.

(Pte.) MAURICE GREENWOOD, A.S.C., M.T.

## The Boycott of German Goods.

Sir,—In the early part of 1915 you kindly inserted a letter in which I urged the boycott of German-made goods.

I did not, of course, refer to goods already in this country, but to new goods which it might be assumed Germany would seek to import after the war. I suggested that joint action on the part of the Auto Cycle Union and the Manufacturers' Union, on what may be called the official side, and a league of motor cyclists pledged not to use new goods of German origin on the "users' side of the movement, would easily bring about the desired result.

The proprietors of *The Motor Cycle* have now set an example to the publishers of the kingdom in announcing that they will not permit the advertisements of new goods manufactured in enemy countries to appear in any of their publications, either during or after the war. This encourages me again to make an appeal to motor cyclists, especially as I am no longer "a voice crying in the wilderness" in this matter. To-day most thinking men agree that our victory over Germany in actual warfare will be only half a victory if we leave her free to pursue her economic fight against us after active hostilities have ceased. By her pre-war methods, and because of our slackness, Germany succeeded in acquiring control of many of our prime necessities in manufactures; and her insidious, penetrating, pernicious influence entered into, and often undermined, our commercial activities in every field. No doubt we got many goods cheaper in consequence, but we helped Germany to build up the war machine designed to crush us, and now have to pay an appalling price in human life and treasure in order to smash that machine. Without entering into party politics, one may say that surely a policy of so-called "cheapness" which does not count the ultimate cost must be smashed also!

For our own protection, for the building up of British industries, for the general prosperity of the Empire, we must shut out German competition, at least for a term of years. But there is another, and, as I think, a greater, reason still, namely, the necessity for punishing a nation which, by its conduct during the war, has literally put itself outside the pale of civilisation.



Think of the evidence of Lord Bryce's Committee relating to the first invasion of Belgium and France; of the treatment of the British prisoners in Ruhleben and elsewhere; of the sinking of the *Lusitania*; of the murder of Nurse Cavell and of Captain Fryatt; and of the treatment of the natives in German East Africa, the evidence of which has only recently come to hand. Are not these things sufficient to justify one saying that Germany must not only be beaten in the field, but also punished for a term of years after active hostilities have ceased?

It may be said that any form of punishment would not be in accordance with the British spirit of sportsmanship, and might, indeed, be called vindictive. The answer is that Germany is not a clean fighter, and the just punishment of crime is not vindictiveness. The "German Kultur" spirit is abnormal in its extreme egotism, its cruelty, and its bestial attributes. For the sake of the German people themselves, in the name of humanity and freedom, and all that is best in us, that spirit of "German Kultur" must be crushed, and we must do our share in our own small way in the effort which will be needed to crush it.

It may be urged that for such an attempt a league of motor cyclists is superfluous, as the Government can be trusted not to permit the importation of German goods after the war. No one, however, who reflects upon the happenings of the past two years will trust this or any future Government to take the necessary action, unless the force of public opinion compels such action to be taken.

The existence of a strong league of motor cyclists might well prove to be a determining factor in the case. At all events, it can do our cause no harm to form such a league, and, on the other hand, it may prove the nucleus of a really powerful national body, able to make its influence felt whenever any question arises which affects the interests of motor cyclists in future.

A simple illustration of the value of combined effort is shown in the recent successful resistance of the Government's scheme for the taxation of motor cycles.

I do not lose sight of the fact that the A.C.U. is a league of motor cyclists in a sense, and I know that the A.C.U. was responsible for the successful resistance referred to. I would personally prefer the A.C.U. so to enlarge its constitution as to include all motor cyclists wishing to combine for this particular purpose on payment of a nominal fee of, say, 1s. a year. Perhaps this may be the result of my letter, but in order to test the possibility of the formation of such a league, may I ask each one of your readers in sympathy to be good enough to send me his, or her, name and address, stating if willing to join such a league, either running as a separate body, or, preferably, linked up to the A.C.U. Should the response be adequate, further steps would be taken in the matter without delay.

BRITISHER.

[Letters may be addressed to "Britisher," c/o *The Motor Cycle*.—Ed.]

#### Paraffin as a Fuel.

Sir,—The official Petrol Committee has undoubtedly been most indiscriminating in its "rushed job"; but, rather than whine about half a gallon a week—even which amount I doubt if many motor cyclists will actually get, as it will all probably be wanted for more important vehicles, such as aircraft—we ought to be grateful to receive a licence for this small amount, which can ill be spared.

I am a keen motor cyclist myself, and run a heavy twin, which I have by no means laid up. I find I can start up on three or four injections of methylated spirit, and if the engine is kept revving well it will then continue to run quite excellently on Royal Daylight, or better still on Benzolite. This from cold.

The great objection to the general use of paraffin is that the price will jump up, which will be hard on the poorer classes who use this as the cheapest means of illumination—bar daylight—and then doubtless the Government will step in once more to the accompaniment of more whimpering, no doubt.

C. CASH.

Sir,—I think the following perhaps may be of interest to your readers, especially to riders of the B.S.A. machines.

I emptied the tank of my B.S.A. (model H and coachbuilt sidecar, with combined weight of passenger and driver, twenty stone), and put in 50% of petrol and paraffin, and

ran the combination over a fairly hilly course at a speed of from twenty to twenty-five miles per hour. The engine, after running fifty-eight and a half miles to the half gallon, stopped firing. The engine started from cold after the second or third kick with no petrol injection; when warm the engine would start at the first kick. On my next run I tried common paraffin, only sixpence for half a gallon. I emptied the tank and put in the half gallon of paraffin, injected a little petrol in the cylinder, and the engine started at the first kick from cold, and fired right away without any trouble. The engine stopped firing after a run of fifty-four miles on sixpennyworth of common paraffin; there was not the slightest sign of overheating on the mixture or the paraffin. On the 50% mixture the engine seemed to pull better than on petrol only. On the paraffin it was not quite so powerful. I ran the above fuels without any alterations to the carburette or engine.

W. E. MANNING.

Sir,—I have been using paraffin for some time in my 2½ h.p. Levis two-stroke motor cycle with very good results. Perhaps my idea would be useful to other two-stroke riders, should you consider it worth publishing.

I have reversed the induction pipe on the cylinder. This brings the carburetter (Amac) in front of the cylinder instead of behind; it is then close to the exhaust pipe, from which I take hot air through a funnel fitted from the main intake of the carburetter round the exhaust pipe. (The bend of an old motor cycle horn suits admirably.)

I have also fitted a jacket to the vaporising chamber of the carburetter made from a 2in. length of steel cycle tubing by splitting and bending out into U shape. A large hole is bored in the back through which the union pipe of the carburetter can pass, after the union nut is removed. Two ends are then brazed on, scribed, and filed out, and the whole made to butt up nicely to the vaporising chamber of the carburetter.

The depth of this jacket is about ¼in., just sufficient to be held in position by the union nut when tightened on the induction pipe. Into this "jacket," through a hole near the top, I brought a ¼in. bore copper pipe, the other end of which was tapped into the exhaust pipe near the cylinder. A few ⅛in. holes at the opposite side of the "jacket" near the bottom allowed the exhaust gases to escape.

The carburetter gets so hot after a minute's running that the hand could not be held on it. It gives very good vaporisation of the paraffin.

Again I set the float chamber as far forward as possible. I find this gives the carburetter an automatic action, the fuel level adjusting itself to road gradients, and doing away with the necessity of using the air lever so much when taking hills.

I start by filling the float chamber with petrol. Should I have forgotten to run the carburetter dry before stopping it is easily emptied with a squirt as used for injecting petrol into compression taps.

J. J. MEEHAN.

#### PETROL PERMITS.

"We ask people their requirements and then we distribute the petrol pro rata between the classes according to the urgency and utility of their services."

—First Commissioner of Works,  
House of Commons, August 1st.

Many letters continue to reach us on this subject, but space does not admit of the publication of these in full.

"J.S.B." uses a machine for business purposes, and asked for twenty-eight gallons per month. He gets two gallons, while a friend, who has a car for occasional hire, is allotted no less than seventy gallons per month.

"R.E." states that he and a friend both use their machines for identical purposes—partly military and partly private. The friend asked for twelve gallons and got it. "R.E." asked for eighteen gallons and gets six.

"W.M.S." and "S.E." filled up forms on the first day, and have twice written since that time to the Petrol Committee, but so far have had no allotment at all.

"Scottish Road Surveyor," who for nearly ten years has used his motor cycle solely on his rounds, on receiving the usual allowance of two gallons per month, wrote to the Petrol Committee asking for a larger supply, and was told that this was impossible.



# TYRE BARGAINS

## SPECIAL CLEARANCE LINES.



## COVERS

COVERS.		Our	List
CONTINENTAL.		Price.	Price.
26×2½ Standard .....		15/-	23/6
26×2½ " " wired-on		10/-	25/-
26×2½ " " T.T., basket pattern		17/8	25/6
26×2½×2½ " " " "		21/6	28/9
650×65 Ex. Heavy Fluted		22/-	36/-
(as illustration)			

## CLINCHER

24×2	De Luxe, ex. heavy cover, with Tube Complete .....	17/6	32/-
26×2½	De Luxe .....	21/-	32/-
26×2½	„ „ „ wired-on .....	21/-	34/-
26×2½	×2½ Dreadnought .....	32/6	40/-
28×3	De Luxe .....	35/-	48/6
26×2½	A Won, rub. stud. .....	19/6	32/-
26×2½	„ „ „ .....	22/6	32/-
26×2½	„ „ „ ribbed .....	14/6	27/6
26×2½	B quality, rub. stud .....	13/6	26/-

## COVERS.

<b>COVERS.</b>		<b>Our Price.</b>	<b>List Price.</b>
26 x 23	Heavy anti-skid ..	23/6	37/6
28 x 23	" racing cover	30/-	50/-

WOOD-MILNE.

26 x 2 <sup>3</sup> / <sub>4</sub>	Grip-ribbed, heavy	17/6	30/6
26 x 2 <sup>1</sup> / <sub>2</sub>	" "	22/6	32/7
(for 2 <sup>1</sup> / <sub>2</sub> rims)	" "		
26 x 2 <sup>3</sup> / <sub>4</sub>	" "	20/-	31/6
(for 2 <sup>3</sup> / <sub>4</sub> rims)	" ex. heavy	25/-	39/-
26 x 3	" heavy	21/-	36/6
28 x 3	" . . .	27/6	42/-

**PEDLEY.**

26 × 2½ Heavyweight	40/-
26 × 2½	41/6
26 × 2½	41/6
26 × 2½ × 2½	41/6
25 × 3 (for 2½ ribs)	44/9
28 × 3	50/6

Off these prices we allow 10% for old covers.

## COVERS.

<b>COVERS.</b>		<b>Our Price.</b>	<b>List Price.</b>
<b>HUTCHINSON.</b>			
26 × 2½	Passenger, ribbed. .	<b>28/6</b>	42/-
28 × 2½	Passenger . . . . .	<b>29/6</b>	45/-

**TUBES.**

CONTINENTAL, WOOD-MILNE, etc.			
24 × 2	Endless only	4/-	6/-
26 × 2		4/6	6/9
26 × 2½		5/6	7/9
26 × 2½		5/8	8/3
26 × 2½	× 2½ Endless only	5/9	8/9
26 × 2½	Endless only	5/6	8/9
26 × 3		7/6	9/6
26 × 2½		7/6	9/3
28 × 3		9/6	11/9

Butted. 1/6 extra.

## BELTS

	Qu.	List
	Price.	Price.
<b>CONTINENTAL.</b>		
rin. section . . . . .	1/3	2/2
2 in. " " " " " "	1/-	1/11

гін.  
**PEOLEY**

3 in. section	....	1 1/5 per ft.
3 in. "	....	1/8 "
1 in. "	....	1/11 "
1 1/2 in. "	....	2/4 "
15% allowance off these prices for old belts.		

## RETREADING

Special Heavy .....	15/-
Heavy .....	12/6
Medium .....	10/-
Studded or Ribbed Retreads.	
Sections on application.	

**ELITE RUBBER CO., LTD.,**

266, Vauxhall Bridge Road,  
VICTORIA, S.W.

'Phone—Victoria 6553.

# AUTO-CYCLE UNION

**PROTECTION, ADVICE, INSURANCE, CONVENIENCE, ECONOMY.**

*Illustrated Booklet post free on application to—*

Secretary, Auto-Cycle Union, Royal Automobile Club Buildings, Pall Mall, London, S.W.

# Velocette

REAL MOTORCYCLE IN MINIATURE

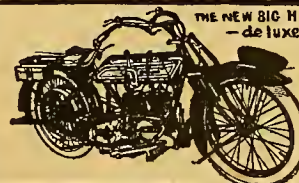
## DUTCH RESULTS.

JUNE 1st	...	RELIABILITY TRIAL	...	1st PRIZE
JULY 9th	...	RACE AT AMERSFOORT	...	1st PRIZE.
		Beating all Competitors.		

**VELOCE, LTD., Fleet St., BIRMINGHAM.**

# Hazlewoods

—being engaged in munitions of war, ask the indulgence of their Agents and the Motor Cycle Public, while matters in Europe are being put right. Have your name entered for earliest delivery.





# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C. 1915 T.T. Clutch Model, in fine order; £52/10. —Crow, Bros., Guildford. [9611]

### Abingdon.

1915 Abingdon Twin, 6-7h.p. King Dick, automatic lubrication, 3-speed, countershaft, rubber studded Dunlops and belt, Stewart, Lucas and horn, coachbuilt sidecar; £70, or offer.—75, Mare St., Hackney. [9510]

### A.J.S.

A.J.S. 1916 New 4-h.p. Combination for immediate delivery.—Moss, Wem. [X5865]

A.J.S., 1913, 6h.p., sidecar, excellent order; £45.—Watt, Crooksbury Sanatorium, Farnham. [5625]

1916 2½h.p. A.J.S., 3-speed, very little used, as new; 50 gns.—Julians, Broad St., Reading. Phone: 1024. [X4761]

A.J.S., 1913, 2½h.p., 2 speeds, hand controlled clutch, grand condition, like new, new tyres, 110 m.p.g.; £26.—47, Rupert St., Bolton. [X5746]

6h.p. 1915 A.J.S., Canoelet 2-seater sidecar, mileage about 1,000; £85 cash; good reasons for selling.—C/o West End Garage, Hereford. [X5841]

6h.p. 3-speed A.J.S., new March, 1916 (£93), Watford speedometer (1,660), horn, best Lucas set, etc., perfectly like new; highest offer.—Lord, Mountfield, Prestwich. [X5716]

## ALL TYPES of ALL BEST MAKES.



Single-speed, 2 or 3-speeds, 2-strokes and Sidecar Outfits of every kind will be found in the

**CLEARANCE OFFERS**

**AT WAUCHOPE'S**

at really surprising prices to suit all purses, cash or easy terms, and every machine, new or second-hand, fully guaranteed.

GET TO-DAY'S LIST. IT INCLUDES THESE:

No.	n.p.		
10597.	2½	1915 2-sp. 2-str. CALTHORPE	£25 0
10570.	4-5	1915 2-sp. BAT	£47 10
10573.	2½	1915 2-sp. CALTHORPE	£31 10
10574.	2½	1915 2-sp. JAMES	£37 10
10575.	4½	1915 JAMES and Sidecar	£55 0
10581.	3½	1908 single-speed TRIUMPH	£24 0
10582.	3½	1915 3-sp. ROVER and Sidecar	£60 0
10583.	4-5	1915 3-sp. HAZLEWOOD	£37 10
10584.	3½	1912 PREMIER and Sidecar	£20 0
10585.	3½	1912 3-sp. INDIAN & Se.	£55 0
10586.	3½	1915 3-sp. HARLEY-DAVIDSON	£65 0
10587.	7-9	15 3-sp. JAMES and Sidecar	£50 0
10540.	4½	1914 3-sp. HUMBER	£25 0
10542.	3½	1913 3-sp. TRIUMPH	£45 0
10546.	4	1914 3-sp. ZENITH, countershaft	£45 0
10529.	3½	1914 3-sp. TRIUMPH and Sidecar	£22 10
10533.	3½	J.E.5.	£10 10
10553.	6	1916 ENFIELD Combination.	£90 0
10565.	3½	twin N.U.T.	£35 0
10517.	3½	single-speed 1912 TRIUMPH	£25 0
10519.	3½	1914 2-sp. PREMIER	£35 0
10523.	2½	1913 2-sp. DOUGLAS	£44 0
10527.	5-6	1912 2-sp. F.N.	£30 0
10537.	4½	3-sp. 1912 QUADRANT	£27 10
10534.	4½	3-sp. single-speed LEVIS	£17 10
10536.	3½	1914 ROVER, single-speed, T.T.	£35 0
10466.	3½	1915 RUDGE Multi	£45 0
10477.	2½	1912 2-sp. SINGER	£20 0
10478.	2½	1911 single-speed DOUGLAS	£17 10
10485.	4	single-speed BRADBURY	£23 10
10495.	5	INDIAN and Sidecar	£65 0
10506.	4½	1913 2-sp. B.S.A. and Sidecar	£45 0
10439.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10435.	6	1912 REX-J.A.P. and Sidecar	£27 10
10448.	4½	1914 3-sp. B.S.A.	£57 10
10453.	3½	1915 SUNBEAM and Sidecar	£73 10
10458.	2½	1914 2-sp. 2-stroke CLYNO	£25 10
10462.	5-6	1913 2-sp. N.S.U.	40 gns.
10465.	3½	1915 T.T. I.O.M. Multi RUDGE	£47 10
10427.	3½	1912 3-sp. ROVER and Sidecar	£32 10
10384.	2½	1914 2-sp. 2-stroke ALLON	£32 10
10390.	2½	1915 2-sp. WOLF-J.A.P.	£30 0
10393.	1½	1916 AUTO-WHEEL	£11 10
10396.	3½	2-sp. FAFNIR	£12 10
10402.	4½	1915 GRANDUX	£37 10
10373.	7-9	1913 2-sp. INDIAN and Sidecar	£50 0
10342.	1½	1914 AUTO-WHEEL	£10 10
10354.	4	1914 2-sp. BRADBURY	£30 0
10323.	2½	1911 2-sp. DOUGLAS	£25 0
10325.	3½	single-speed CENTAUR	£12 10
10295.	3½	2-sp. N.S.U.	£20 0
10142.	3½	1913 3-sp. SINGER	£32 10
10109.	3½	1909 F.L. TRIUMPH	£25 0
10070.	6	1914 2-sp. ENFIELD Combin'n	£65 0
10068.	3½	1912 QUADRANT, var'ble gear	£20 0
10021.	3½	1912 SWIFT	£20 0
9867.	2½	1911 2-sp. ENFIELD	£22 10
9847.	4½	1915 3-sp. QUADRANT	£42 10
9839.	3½	1907 TRIUMPH and Sidecar	£22 10
9772.	3½	1914 w-cooled 3-sp. HUMBER	£35 0

**WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON**

Phone: 5777 Holborn. Wires: "Opifcer, London."

## DEFENCE OF THE REALM ACT.

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

1916 2½h.p. A.J.S., 2-speed countershaft, enclosed chain drive, h.b.c. clutch, etc., lamps, mechanical horn, trip speedometer, mileage 1,200, perfect condition; £48.—23, R.F.C. Villas, South Farnborough. [9547]

### Alldays.

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

1916 Allon, 2-stroke, 2-speed, little used, practically equal to new; £27/10.—E. Crisswell, Newmarket. [X5877]

1916 2½h.p. Allon, 2-speed, 2-stroke, little used, £35.—Apply, Manager, Victoria Park Hotel, Barrow-in-Furness. [X5695]

ALLDAYS Allon, 2-speed, new; special bargain, £58/17 cash; gradual payments 2%—Reference Cycle Co., 332, High Holborn. [0763]

1916 2½h.p. Alldays Allon, 2-speed, and clutch, not done 20 miles; cost £45, bargain, £38.—Wilkin and Co., Hunters Bar, Sheffield. [X5811]

ALLDAYS Matchless, 2½h.p., 1914, 2-stroke, Amac carburettor, in excellent condition, nearly new tyres; first cheque for £14/10 secures.—Ideal Cycle Co., Thundersley, Essex. [9560]

ALLDAYS Matchless 1915 3½h.p. Combination, coach-built, 3-speed, clutch, chain drive, 2 new spare chains, accessories; £50, or near offer; perfect condition.—16, The Avenue, Highams Park, Chingford. [9581]

### Ariel.

ARIEL, 1916, 3½h.p., 3-speed countershaft gear and clutch, run about 200 miles, condition perfect; £60.—158, High St., Hull. [X5840]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

### Auto-Wheels

AUTO-WHEEL, 1914 Model de Luxe, splendid condition; £7/10 to clear before stock-taking.—Wallbro Motor Works, Ely, Cambs. [X5860]

THREE Auto-Wheels, late models, single lever control, little used, splendid condition and running order; £7, £8, £9 each.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X5748]

### Bat.

BATS in stock, latest 4-5h.p., 2-speed, 60 gns.; also 1914 4-5h.p. sporting 2-speed twin, £35.—P. J. Evans, John Bright St., Birmingham. [X5800]

BAT, 1913, 6h.p., 3-speed, and new coachbuilt sidecar, new Dunlops, and accessories, splendid condition; £35.—Murley, 7, Gracechurch St., E.C. [9638]

### Bradbury.

BRADBURY, 2½h.p., mag., re-bushed, new tyres; £8/10.—16, Carlyle Rd., Manor Park. [9584]

1912 Bradbury and Sidecar, complete, lamps, etc.; £24.—Cross, Effingham Sq., Rotherham. [X5743]

1914 3½h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—E. E. Jones (Garage), Ltd., Swansea. [0822]

BRADBURY Combination, nearly new, every accessory, spare belt, tube, insurance included; £45.—Newman, 85, Chalton St., King's Cross. [X5723]



## MOTOR CYCLES FOR SALE.

## Bradbury.

1911 Bradbury, 3½ h.p., N.S.U. gear, in splendid condition, same front tyre as when new, £23; sidecar, £22/10.—Claypham, Laughton, Gainsborough. [X5722]

BEST Bargain Ever Offered.—Nov., 1913, 4 h.p. Bradbury and sidecar, tyres, engine, and 3-speed gear as new, climb anything with 3 up, host of spares, etc., etc.; any trial here with pleasure; £30 secures, no offers.—H. Millard, Chesterfield. [X5872]

BRADBURY, 1915, 4 h.p., countershaft 3-speed, h.b.c. clutch, all chain drive, with conchbuilt sidecar, lamps, horn, speedometer, an exceptionally fine combination, had most careful use, 75 m.p.g., runs well on substitute, worth £60 easily, accept £52/10.—Laytons' Garage, Bicester, Oxon. [X5856]

## Brown.

BROWN, 1914, 3½ h.p., grand condition, bargain; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X604]

## B.S.A.

B.S.A. New 1916 Models H and K actually in stock, no waiting.—Moss, Wem. [X5862]

B.S.A., new 1916 model K, actually in stock.—Grassby, Barton-on-Humber. [X5789]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [X7098]

1915 B.S.A., model K, perfect order throughout; best cash offer.—Laybourn, Walsingham, Co. Durham. [X5771]

B.S.A., 1915 model, 4 h.p., 3-speed countershaft, good condition, overhauled; £46.—Laytons' Garage, Bicester, Oxon. [X5857]

B.S.A. 1916 Models H and K in stock, immediate delivery; prices £64 and £62.—Wallace, Fountain Buildings, Bath. [X9020]

B.S.A., 1915, 4½ h.p., practically new, splendid condition, with sidecar; £60.—Barnes, 22, Wrokin Rd., Wellington, Salop. [X5767]

B.S.A., 1913, 2-speed, with handsome coachbuilt sidecar, tyres as new, perfect tune and condition; trial here; £33.—Rector, Lampert, Northampton. [X523]

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B.S.A. Models H and K actually in stock; also 1915 4½ h.p., belt-cum-chain model, and sidecar, splendid fittings, £65; and 1914 2-speed and sidecar, all accessories, £45; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X5661]

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CALTHORPE, 2 h.p., 2-speed, footboards, horn, in very good order; £15 cash.—Brook, Burnham, Som. [X9494]

CALTHORPE-J.A.P., 1915, 2½ h.p., Enfield 2-speed gear; sacrifice, £26/10.—King, Chemist, Sutton, Surrey. [X9637]

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CALTHORPE 2-stroke 1916 Latest Model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9241]

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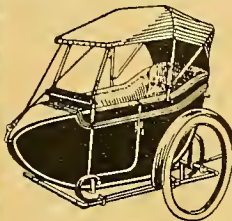
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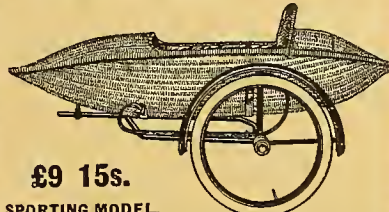


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1915 8 h.p. Chater-Lea Combination, hood, screen, luggage grid, tyre carrier, and all best accessories, only run 3,700 miles; cost £120, best offer over 50 gns. for quick sale.—185, Shernhall St., Walthamstow. [X5854]

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CONNAUGHT, 2-stroke, 2-speed, lamps, horn; any trial; £25.—Deane, Matlock Bath, Derbyshire. [X5758]

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DOUGLAS, 1911, no fault; bargain, £15.—14, Dedbrooke Rd., West Norwood. [X9678]

DOUGLAS, 2½ h.p., sale or exchange 3½ h.p. Triumph.—68, Stafford St., Wolverhampton. [X5621]

DOUGLAS 2½ h.p. Twin, fixed gear, to be sold cheap.—66, Greyhound Lane, London, S.W. [X9582]

1915 Douglas, 2½ h.p., 3-speed model, complete, Lucas lamps, etc.; £45.—Cross, Jeweller, Rotherham. [X5742]

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DOUGLAS, late 1912, 2-speed, T.T., new cylinders and pistons, thoroughly overhauled; £28/10.—E. Crisswell, Newmarket. [X5879]

T.T. Douglas, November, 1914, used 15 weeks, just overhauled, new tyre and belt; £37.—Despatch Sergeant, West Lawn, Sandgate. [X5717]

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ENFIELD 1915 Combination, little used; £68.—11, Luna Rd., Thornton Heath. Exchange. [9643]

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ENFIELD 6 h.p. Combination, late 1914 model, splendid order, Lucas equipped; £63.—Moss, Wem. [X5866]

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ENFIELD 1916 6 h.p. Combination, fitted Lucas electric lighting set; 105 gns.; in stock.—Stour Cycle Depot, Stourbridge. [X5836]

ENFIELD 1916 6 h.p. Combination, latest model, just arrived from works; 90 gns.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9238]

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TRIUMPH, 1912, 3½ h.p., clutch model	£33
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F.N., 4-cyl., good running order; £15.—Steele's Garage Co., Haverstock Hill, N.W. [9525]

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BRAND New Harley-Davidsons.—See below.

MODEL F, 7-9 h.p., 3-speed; £68.—The Premier Motor Co.

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THE Above are guaranteed brand new; standard specification and standard equipment.—The Premier Motor Co., Birmingham.

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7-9 h.p. Harley-Davidson, electrical model, not used many weeks, condition guaranteed almost as new; would consider lower power model in part payment, of 55 gns. cash.—Jones, 8, Selkirk Parade, Cheltenham. [X5786]

HARLEY-DAVIDSON, 1916 model, fully guaranteed, and Hercules 4-point suspension sidecar, quite new, but shop-soiled; usual retail price £97/10, best offer secured, as room is wanted.—Smith, 42, Eresham St., Redditch. [X5787]

HARLEY-DAVIDSON Combinations actually in stock, £101/15 and £110, or sales £80/15 and £89; deferred payments if desired; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9558]

1915 Model 11B 4½ h.p. Harley-Davidson, single-cyl., chain drive, clutch, kick start, 28x3in. Goodyear tyres, an ideal, fast, solo machine, had little use, and guaranteed as new; £38.—The Premier Motor Co., Aston Rd., Birmingham. [9685]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, with Montgomery coachbuilt sidecar, horn, lamps, 2 spare covers and tube, large kit of tools and spares, in perfect condition, not ridden since overhauled by makers, engine specially tuned; £70.—Horne, Colley Manor, Reigate, Surrey. [9499]

HARLEY-DAVIDSON 7-9 h.p. Late 1915 Combination, electric lighting set and booter, mileage 1,050, Stewart speedometer, saddle rest, heavy studded tyre on back wheel, spare nearly new cover and tube, adjustable wind screen, large ear style hood, carrier, motor suits, caps, goggles, pumps, plenty of costly spares, excellent condition; £78, and petrol, a real bargain.—Featherstone, Estate Agent, Sheerness. Phone: 100. [9529]

## Hazelwood.

HAZLEWOOD Coachbuilt Combination, 5 h.p. twin, 3-speed, countershaft, kick start, speedometer, mechanical horn, Bosch, P. and H., F.R.S. head lamp, footboards, wind screen, 2 new tyres (one 3in.), sidecar and enamel uns scratched, machine in grand condition, 85 m.p.g.; £60, or offers.—55, Bnlstrode Rd., Hounslow, Middlesex. [9540]

## Henderson.

HENDERSON Motor Cycle, 4-cyl., 2 speeds, 7-8 h.p., speedometer, electric lamp, horn, Gondola sidecar, hood, wind screen, splendidly equipped.—Radcliffe Villa, Athenaeum Rd., Whetstone, N. [9537]

## Hobart.

HOBART 3-speed 4 h.p. Twin, and 9 gn. Gloria sidecar, all accessories; any trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [0832]

HOBART (late), fine combination, 7 h.p. twin, mag., 2 speeds, beauty; 28 gns. cash; easy terms quarter down.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X5773]



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## NEW MODELS.

MORGAN de luxe, M.A.G. engine, hood, etc.	£127 0
WILLIAMSON Cy-cl-ca, w.c. Douglas engine	£126 0
RITZ 4-cylinder Light Car	£145 0
OVERLAND 4-seater, 12 h.p. (tax £4 4s.)	£225 0
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed	£39 10
ROYAL RUBY, 6 h.p., 3-speed, shop-soiled	£62 10
U.S.A. EXCELSIOR, 3-speed countershaft	£75 0
REX, 6 h.p., kick-start, and Rex Sidecar	£71 0

## 1916 (U.S.A.) EXCELSIOR,

7 h.p., 3-speed model, 84×89 countershaft gear, chain drive, mechanical and hand lubrication, high-tension magneto, multiple-disc clutch with dual control, kick starter, 2 gallons petrol capacity; £75. Or with electrical equipment; £85.

A few late 1915 new 7 h.p. 3-speed twin Excelsiors, with electrical equipment, at pre-tax price; £71 10s.

Exchanges quoted. Easy Payments arranged.

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to suit D.S.A., SUNBEAM, and other machines, Dunlop tyre, body finished black and gold; £12.

## SOLO MACHINES.

1914 2-speed CALTHORPE - PRECISION Lightweight	£16 10
1914 2½ h.p. 2-speed DOUGLAS	£37 10
1914 2½ h.p. single-speed DOUGLAS	£22 10
1913 2½ h.p. 2-speed DOUGLAS	£34 10
1912 4 h.p. 2-speed INDIAN	£27 10
1912 3½ h.p. ZENITH-GRADUA	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£26 10
1912 3½ h.p. 2-speed ALLDAYS MATCHLESS	£25 10
1912 3½ h.p. T.T. BRADBURY	£19 10
1912 2½ h.p. PREMIER Lightweight, wants repairs	£11 15
1912 HUMBER Magneto Lightweight	£15 10
1911 3½ h.p. TORPEDO-PRECISION	£17 10
EXCELSIOR, 3½ h.p., 3-speed, Druid forks	£16 16
5½ h.p. magneto REX, spring forks	£12 10
N.S.U., 3½ h.p., 2-speed, free engine	£18 10
F.N., 2-speed, magneto, lightweight	£17 10
TRIUMPH, magneto, new tyres	£18 10
S.P.K., 3½ h.p., 3-speed countershaft	£24 10
REX, 3½ h.p., magneto, spring forks	£11 15
DOUGLAS, 2½ h.p. Twin Lightweight	£15 10
TRIUMPH, 3½ h.p., clutch model	£21 10

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1914 6 h.p. REX Sidette, almost as new	£53 10
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1913 7-9 h.p. QUADRANT and Sidecar	£42 10
1913 3-speed countershaft Twin HAZLEWOOD	£42 0
1911 3½ h.p. 3-speed TRIUMPH and Sidecar	£27 10
1913 7-9 h.p. INDIAN Combination	£45 0
1913 6 h.p. ARIEL, chain drive, and Sidecar	£42 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
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RITZ 4-cyl. 2-seater Light Car, shop-soiled	£130 0
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PREMIER 7-9 h.p. 2-seater Light Car	£67 10
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New Mechanical Horns	17/6
New Acetylene Tail Lamp, post free	1/4
At Mudscreen, cost 21/-, take	10/6
P. & H. Separate Generator Lamp	17/6
Miller's late type Lamp Set	£1 4
REX, 6 h.p., twin engine, magneto and carb.	£7 10
M.M.C. 8 h.p. W.C. Engine, fine condition	£4 0
5½ h.p. W.C. Engine, 2-speed, clutch	£5 0
Brooks B150 large size Pan Seat	18/6
Bosch Twin Magneto	£2 10
New Wicker Sidecar Bodies	16/6
New Wicker Sidecar Bodies, large cane	37/6

Cash Offers Solicited.

WANTED.—Second-hand MORGAN RUNABOUT, and 1916 8 h.p. SUNBEAM Combination.

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### Hobart.

HOBART-VILLIERS, 1915, 2½ h.p.; we have an extra fine sample, exceptionally fine engine, good appearance, well tyred; £21; approval anywhere.—Layton's Garage, Bicester, Oxon. [X5860]

### Humber.

1913 3½ h.p. Humber Combination, fully equipped; £25.—Dono, 6, Windmill Hill Lane, Derby. [X5679]

HUMBER, 1913, 3½ h.p., 2-speed, underslung C.B. combination; 1915 engine; £25.—27, Ormeley Rd., Balham. [X5829]

HUMBER, 3½ h.p., 1912, 2-speed, free, handle start, £18; with sidecar, £20.—14, Dodbrooke Rd., West Norwood. [9676]

1913 Humber and Sidecar, 2-speed, handle start; £25, or good treadle lathe.—L. Richards, 80, Corrance Rd., Brixton. [9562]

1911 Humber, 2-speed, sidecar, spares, 3½ h.p., good condition; what offers?—Nobles, Saddleford, Bramber Rd., N. Finchley. [9548]

HUMBER 2½ h.p. Twin, 1913, T.T. bars, free engine, new Dunlop tyres, fast little bike, perfect; £21/10.—Walbro Motor Works, Ely, Cambs. [X5658]

HUMBER, 3½ h.p., 2 speeds, free engine, lamp, generator, sidecar, tyres good, ready to ride away; £13/10.—74, Upper Tooting Rd., S.W. [9656]

HUMBER Lightweight, 1913 model, 3-speed, clutch, tyres in excellent condition, engine just thoroughly overhauled.—Write or call, R. 162, Gt. Portland St., W. [9554]

HUMBER, 1912, 3½ h.p., 2-speed, free engine, and Millford sidecar, thoroughly overhauled, after 7 p.m.: bargain, £27/10; trial.—13, Birkbeck Av., Acton, W. [9603]

### Indian.

INDIAN, 1915 model, 7.9 h.p. T.T., in exceptional nice condition; £46.—6, Warren St., London. [9591]

INDIAN, 1916, new 5hp. model in stock, T.T. handlebar; exchange entertained.—Moss, Wem. [X5867]

INDIAN, 1915, 3½ h.p. twin, 3 speeds, very little used; £46.—Jones, Hurst Nook, St. Annes-on-Sea. [X5741]

INDIAN, 1915, 5 h.p., 3-speed, nearly new; £43.—11, Luna Rd., Thornton Heath. Exchange combination. [9642]

INDIAN, 1915, 5 h.p., and sidecar, 3 speeds, clutch and kick starter, new condition; £65.—P. J. Evans, John Bright St., Birmingham. [X5807]

1914 Indian and Sidecar, 7.9 h.p., spring frame, 2-speed, electric lights, electric hooter; £50, no offers.—Deimel, Rutland Lodge, Shortlands, Kent. [X5720]

INDIAN Powerplus, 7 h.p., 3-speed, T.T. rigid frame model, Dunlop tyres; £75; in stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X5803]

INDIAN Powerplus, 7 h.p., 3-speed, and spring frame, dynamo lighting set, 2 lamps, horn, and speedometer; £90.—P. J. Evans, John Bright St., Birmingham. [X5806]

1915 5 h.p. Indian Combination, 3-speed, kick starter, lamp set, speedometer, Klaxon and spares; £59, or exchange for 1914 Ford touring car.—762, Forest Rd., Walthamstow. [9670]

INDIANS.—Birmingham agent, P. J. Evans, 87-91, John Bright St. Immediate delivery ex-stock 5 h.p. 3-speed standard and sporting models, with and without sidecar; price £70; sidecars from 11 gns. [X5801]

1916 5 h.p. T.T. Model Indian, countershaft 3-speed, clutch, kick starter, 28×3¼. Dunlop tyres, as new, Stewart speedometer, and mechanical horn, hardly used, and guaranteed perfect; £60.—The Premier Motor Co., Aston Rd., Birmingham. [9686]

7 h.p. Indian, late 1914, ridden less than 3,000, first-class condition throughout; any trial or examination; electric lamps, horn, Xial, speedometer, tools, spares, etc., complete; £50; runs well on paraffin.—Philips, Marchburn, Riding Mill. [X5480]

INDIANS in Stock.—Latest models, Powerplus combinations, Sporting Powerplus 3 speeds models, Standard 7 h.p. overhead inlet combinations, with lighting set, The famous 5 h.p. 3-speed double-purpose mount.—P. J. Evans, John Bright St., Birmingham. [X5797]

INDIAN, 5 h.p. model B, 3-speed, kick starter, hand and foot operated clutch, latest model Millford coachbuilt sidecar, Lucas head, tail, and sidecar lamps, Lucas guinea horn, Corbio-Brown rear driven speedometer, outfit like new, not run 1,000 miles; £80.—2nd Lieut. Taylor, Horsesham Fort, Portsmouth. [9619]

### Ivy.

Ivy, 2½ h.p., 1916, 2-stroke, 2 speeds, complete with lamps, horn, numbers, run only 300 miles; £32/10.—Treby, 36, Clarence St., Kingston. [9659]

### James.

JAMES No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

COLMORE Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

JAMES, 1914, 4½ h.p., T.T., nearly new Dunlop heavy tyres, in excellent order, fast and reliable machines; £35.—Ideal Cycle Co., Thundersley, Essex. [9661]

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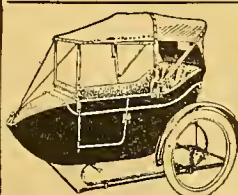
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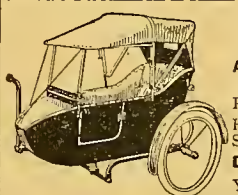
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Hood ..... £2 4

Screen ..... £1 0



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1916 Grand Prix MORGAN, all on	£130 8
1916 6 h.p. ENFIELD Combination, c/built	90 gns.
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1916 6 h.p. J.H. Combination, M.A.G. eng.	90 gns.
1916 3 h.p. ENFIELD, 2-speed, kick starter	55 gns.
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- Single, 3-speed	68 gns.
c/built gear	38 gns.
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**JAMES** 3½ h.p. Twin, 1914, 3-speed, countershaft, h.b.c., kick starter, complete accessories; £40, offer, perfect condition.—Mitchell, 200, Malpas Rd., Brockley, S.E. [9612]

## J.A.P.

**J.A.P.**, 1913, 4 h.p., B. and B., 2-speed, free engine, and Montgomery sporting sidecar, nearly new, Lucas lamp, horn, etc., front and back stand, tyres in splendid condition; £26, quick sale.—64, Mill Lane, Brixton Hill. [X5795]

## Lark.

**LARK-J.A.P.** 4 h.p. T.T., 1915, nice condition, tyres as new, very fast, well sprung; a real bargain, £25, lowest.—Cpl., 4, Springfield Terrace, Chatham. [9501]

## Lea-Francis.

**1914** 3½ h.p., 2-speed and Clutch Lea-Francis, lamps, and horn, in lovely order; £38.—Wilkin and Co., Hunters Bar, Sheffield. [X5815]

**32** h.p. 2-speed Lea-Francis Combination, Lucas head lamps and horn, Stewart speedometer, tool kit, and spares, disc sidecar wheel, and petrol carrier, first-class condition; £65.—West, Garthside, Rugby Rd., Leamington. [X5745]

## Levis.

**1916** Levis Popular, new, only done 60 miles; £29.—Motor, Park Lodge, Roehampton, S.W. [X5750]

**1916** Popular and Model E Levis actually in stock.—Wilkin and Co., Hunters Bar, Sheffield. [X5812]

**1916** Levis Popular, excellent condition, 100 m.p.g., 75% paraffin; £26.—Levis, C. Mess, Belton, Grant-ham. [X5753]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**2½** h.p. Levis, splendid condition; owner joining up; £18/10, a bargain.—Bugden, 9, Cecil Rd., Rochester, Kent. [9500]

**LEVIS** Popular, new; special bargain; cannot repeat: £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

**LEVIS** 1916 Popular Model, 2½ h.p., slightly shop-soiled; special bargain, £29.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9243]

**LEVIS**, 1916, absolutely as new, Lucas lamp set, rear light, large horn, tyres and everything perfect; £27/10.—Walbro Motor Works, Ely, Camba. [X5656]

**LEVIS** 2-stroke Motor Cycles, latest 1916 models.—Sole London and district agents. Cars and Motor Sundries Ltd., 175-177, Shaftesbury Av., London, W.C. [0711]

**LEVIS**, new model E, 2½ h.p., all chain drive, Enfield 2-speed and clutch; list price £47/10, our price £42, exceptional bargain; cannot repeat.—Hitchings, Ltd., 74, Bold St., Liverpool. [X5713]

**LEVIS**—Three Populars, £32, and two model F's with Enfield gears, £47/10, actually in stock; deferred terms by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9557]

## Lincoln-Elk.

**LINCOLN-ELK**, 1912, 3½ h.p., mag., splendid condition; must sell; £12/15.—68, Elmsleigh Rd., Wandsworth. [X5820]

**32** h.p. Lincoln-Elk, complete, minus mag., B. and B., good tyres, etc.; £4, cash; also 1 pair 28x2½ wheels with tyres and new tubes; 30/.—C. Marks, Shrawley, Worcester. [9520]

## Lugton.

**4** h.p. Lugton-Precision Coachbuilt Combination, new April, 1915, Sturmer-Archer 3-speed, screen, hood, speedometer, lamps, etc.; £35.—7, Wilton News, Belgrave Sq., London. [9613]

## Matchless.

**MATCHLESS**, 5-6 h.p., and sidecar, 3 speeds; £45.—3, Burgess Buildings, Fallowfield. [X5517]

**MATCHLESS**, 1914, 8 h.p., speed, free engine, all accessories, any trial; £32.—Green, 7, Cranford Rd., Wandsworth. [9518]

**1915** Matchless Combination, 3-speed, M.A.G. engine, complete with lamps, horn, speedometer, valves, tools, and spare parts; £65.—Wilkin and Co., Hunters Bar, Sheffield. [X5814]

**MATCHLESS**, 1913, 6 h.p., twin belt, Lucas head lamp, Dunlop extra heavy tyre, 2-speed gear and hand clutch, kick starter, and sidecar; 45 gas.—Julians, Broad St., Reading. [Phone 1024. X4129]

**MATCHLESS**, 7 h.p., 3-speed countershaft, kick-start, Empress sidecar, 1914-15, accessories; £65; consider 3½ h.p. combination part exchange.—Bramble, Charlton Rd., Shepperton-on-Thames. [9572]

**MATCHLESS** 1915 8 h.p. 3-speed Combination, fine order, accessories; 70 gas.; deferred terms if desired; also a 1913 8 h.p. and Canelet sidecar, 45 gas.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9559]

**32** h.p. Twin Matchless Motor Cycles, 3 speeds, free 2 engine clutch, kick starter, countershaft, new tyres, lamps, and horn, in excellent condition, very fast and flexible; price £38.—John O. Beadle, Ltd., Motor Engineers, Dartford. [0827]

"The time has come," the sad man said,  
"To talk of many things—  
Of motor bikes and permits for  
A pilot of gasoline;  
And whether it is wise to try  
Running on paraffin."

# EASY

"Quite easy," said the optimist.

"To have a pleasant run—

On paraffin and petrol mixed

The Indian goes like fun."

The sad man cheered up much at that,

And promptly ordered one.

So much depends on the machine. Purchase a good one, properly tuned up by experts, and whether new or second-hand you will get satisfactory running on a mixed spirit. Buy a dud machine and the best petrol will be wasted on it.

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thoroughly overhauled and ready for the road.  
Selected from an Ever Changing List.

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- £22. 1915 2½ h.p. RADCO, standard, with access.
- £30. 1915 2½ h.p. VELOCETTE, 2-stroke, 2-speed, chain drive.
- £34. 1913 3½ h.p. TRIUMPH, 3-sp., semi-T.T. bars.
- £46. 1914 7 h.p. INDIAN Road Racer, with access.
- £42. 1916 3 h.p. twin ENFIELD, 2-speed gear and kick starter.
- £43. 1915 2½ h.p. DOUGLAS, 3-speed, with lamp, generator, and horn.
- £48. 1915 3½ h.p. HUMBER, 3-speed, kick starter. Or with Sidecar £57.
- £49. 1915 7 h.p. INDIAN Road Racer.
- £49 10. 1915 7 h.p. INDIAN Road Racer, lamp, generator, and horn.
- £50. 1915 7 h.p. INDIAN Road Racer.
- £53. 1915 5 h.p. INDIAN, 3-speed, kick starter, lamps, generator, and horn.
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- £60. 1915 7 h.p. HARLEY-DAVIDSON, Model F, 3-speed, and kick starter.
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- £72. 1916 7 h.p. Model G INDIAN, 3-speed, kick starter, with accessories.
- £78. \*1915 7 h.p. INDIAN, 3-speed, kick starter, electrically equipped, with coach-built Sidecar, hood and screen.
- £85. \*1915 7 h.p. MATCHLESS, M.A.G. eng., 3-sp. gear, kick starter, and Matchless coach-built Sidecar, with accessories.
- £99. \*1916 Model F 7 h.p. twin INDIAN, spring frame, 3-speed gear, and de luxe coach-built Sidecar, and accessories.
- £99. \*1916 7 h.p. INDIAN, 3-speed, with coach-built Sidecar, hood and screen.

\*Sidecar combinations.

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'Phone—7091 Mayfair (2 lines).

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## Matchless.

**MATCHLESS** Combination, 1914-15, model 8B; this combination has been fitted regardless of expense, costing over £12, and is offered at the low figure of 65 gns., solely because the owner is called up for service. 3½ h.p. or 5-6 h.p. Zenith considered part.—Full particulars can be obtained from Longman Bros., 1, King St., Acton. [9682]

## New Hudson.

**NEW** Hudson, 3½ h.p., 1914, 3 speeds, handle starter, coachbuilt sidecar; £56.—6, Warren St., London. [0594]

**1915** 6 h.p. New Hudson Combination, in excellent order, very little used; £65.—Turpin, 22-23 Preston Rd., Brighton. [0716]

**NEW** Hudson, 1913, 3-speed, 3½ h.p., 22 gns.; sidecar to suit.—Rider Troward, 78, High St., Hampstead. 'Phone: 5392. [9599]

**NEW** Hudson, 1915, 2½ h.p., 2-stroke, done 1,500, lamps, 2 generators, horn, tools, etc.; £22, or nearest.—Gardner, 9, Elm Place South Kensington. [9507]

**NEW** Hudson Combination, 4 h.p., 1914, 3-speed, chain-cum-belt, wind screen, hood, speedometer, new spare belt, tyres good, in excellent condition throughout; trial run given; £50.—Williams, Milford, Derby. [X5690]

**1913** 3½ h.p. New Hudson Coachbuilt Combination, 3-speed, clutch, kick starter, speedometer, 3 lamps, horn, in first-class running condition; £35, or near offer.—Chalmers, The Cottage, Franklin Rd., Gillingham, Kent. [9673]

## New Imperial.

**NEW** Imperial-Jap, latest models, in stock, £38 and £44/8.—Crow Bros., Guildford. [8335]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**1916** 2½ h.p. New Imperial and Canelet Minor Combination, in stock; £48/7/6.—Crow Bros., Guildford. [9342]

**1915** New Imperial Lightweight, splendid condition throughout; best cash offer.—Laybourn, Wolsingham, Co. Durham. [X5771a]

**NEW** Imperial, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0765]

**NEW** Imperials, latest models in stock; 2-speed, also kick-starter, hand-controlled clutch models.—P. J. Evans, John Bright St., Birmingham. [X5796]

**BRAND** New 1916 New Imperial-Jap, 2½ h.p., mng., 2 speeds, countershaft; £35/15 cash; easy terms quarter down.—Wandsworth Motor Exchange, Elmer St., Wandsworth (Town Station). [X5774]

**NEW** Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## New Ryder.

**PETROL**—Six gallons given with 1915 New Ryder-Jap, 2-speed, 24 gns.—Rider Troward, 78, High St., Hampstead. 'Phone: 5392. [9600]

## Norton.

**BIG** Four Combination, under 700 miles; cost £90, sell £65; see Exchange column.—Plewman, Chemist, Middlesbrough. [X5737]

**1916** B.R.S. Norton, guaranteed 70 m.p.h., Lucas lamps, Stewart horn, all tools, in lovely condition; £48.—Wilkin and Co., Hunters Bar, Sheffield. [X5810]

## N.S.U.

**1½** h.p. N.S.U. Lightweight, new carburettor, Bosch 12 magnet, Triumph bars; £9/10; push cycle and little cash.—D. Murphy, Blackridge, West Lothian. [9516]

**3½** h.p. T.T. N.S.U. Matchless spring forks, B. and B., mechanical valves, modern low-built machine, less mag. and pulley; £6/10; photo, 1d. stamp.—57, Dinorwic Rd., Birkdale. [X5760]

## N.U.T.

**N.U.T.** 3½ h.p. Twin, 1914, 3-speed, bargain; £36.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9608]

## O.K.

**O.K.** 2-stroke, 1915½, used little, Brampton forks; first offer; cost £28.—Box 696, c/o The Motor Cycle. [X5763]

## P. and M.

**1914** 3½ h.p. P. and M., 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [0721]

**1915** P. and M. and coachbuilt sidecar, Lucas lamp and horn, spare valve, etc.; £62, or exchange for solo mount.—J. F. Armitage, Rothwell, near Leeds. [9491]

## Peugeot.

**5-6** h.p. Peugeot, good condition, twin, Bosch, B. and B., 2-speed, new Dunlop on back, lamps, horn, accessories; £22, or nearest offer.—No. 976, M.T., R.N.D., Blandford, Dorset. [X5696]

## Premier.

**1914** 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]



## MOTOR CYCLES FOR SALE.

## Premier.

**PREMIER**, 1913½, 3½h.p., 3-speed, clutch, Phoenix coach sidecar, accessories, perfect condition; trial—217, Well St., Hackney. [X5735]

**PREMIER** Motor Cycle, 3½h.p., free engine, splendid condition; trial; £20, bargain.—R. Crossley, 21, Wellhouse Rd., Barnoldswick. [9490]

**PREMIER**, 3½h.p., and Millford sidecar, new 1915, 3-speed countershaft, F.R.S., speedometer, every spare, faultless condition; nearest £50, real bargain.—10, Genoa Rd., Anerley. [9477]

## Precision.

**PRECISION**, 3½h.p., single-cyl., T.T. model, nearly new tyres, in good condition throughout; £17.—The Premier Motor Co., Aston Rd., Birmingham. [9687]

## Rex.

**REX**, 3½h.p., 1911, Bosch, variable gear; sacrifice £12/10.—28, Trammere Rd., Earlsfield. [X5734]

**1908 3½h.p. Rex**, complete, less unit; accept £3/10.—Whitley, Photographer, Crowle, Doncaster. [X5782]

**REX** 3½h.p., magneto, B.B., new belt, lately overhauled, plated, enamelled; bargain, £10.—Baynton, 43, Campbell Rd., Twickenham. [X5701]

**REX**, 1912, coach sidecar, 5.6h.p. twin, mag., 2 speeds; bargain, £26/10 cash; easy terms quarter down.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X5775]

**REX**, 5.6h.p., 2 speeds, clutch, semi-torpedo sidecar, practically unused, new tyres, belt, B. and B.; trial; first £25.—Murray, 30, Bardwell St., Corporation St., Caledonian Rd., N. [9668]

**REX** Combination, De Luxe model, late 1914, 6h.p., 2-speed, coachbuilt sidecar, tyres and belt as new, in splendid condition throughout, 3 lamps, spare tyre; seen by appointment; £50, or near offer.—T. G. Amphlett, Oakfield House, Ombersley, Droitwich. [X5712]

## Roc.

**ROC** 4h.p. Combination, in splendid condition, recently overhauled; trial given; £25.—147, Penryn Rd., Croydon. [X5809]

## Rover.

**ROVER**, 1911, free engine, just overhauled by makers; £24.—48a, Church St., Burnley. [X5824]

**ROVER** New 1916 Combination for immediate delivery, 3-speed countershaft model.—Moss, Wern. [X5863]

**ROVER**, 1916, 3-speed, kick start models, immediate delivery from stock.—Colmore Depot, Rover Agents 261, Deansgate, Manchester. [9545]

**ROVER**, 1916, 3½h.p., 3-speed countershaft, £66/10; combination, £85; in stock, immediate delivery.—Wallace, Fountain Buildings, Bath. [9021]

**ROVER** Motor Cycles, 3-speed countershaft models, in stock for immediate delivery; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [9041]

**ROVERS** in stock for immediate delivery: 3½h.p. countershaft, £66/10; T.T. 3½h.p., with Phillips pulley, £66.—P. J. Evans, John Bright St., Birmingham. [X5805]

**1912 Rover**, 3½h.p., free engine, B. and B. carburettor, Bosch mag., excellent condition, with good tyres and engine; £24.—Robinson's Garage, Green St., Cambridge. [9648]

## Rudge.

**1912 3½h.p. Rudge**, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

**RUDGE**, 1913, 3½h.p., variable pulley, fine solo mount; £22; exchange 1911 combination.—Clark, Tideswell. [X5785]

**RUDGE**, 3½h.p., 2-speed, and sidecar, disc wheels; £35.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9606]

**RUDGE**, 5.6h.p., coach sidecar, hood and screen; £48.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9607]

**RUDGE**, 1913, with Millford sidecar, lamp, horn, etc., Dunlops, all practically new; £25 the lot; must sell.—Walbro Motor Works, Ely, Cambs. [X5659]

**RUDGE** Multi, 3½h.p., kick start, h.b.c. clutch, new Dunlops, Canoelet coachbuilt sidecar, lamps, and horn, in good condition; £35.—The Premier Motor Co., Aston Rd., Birmingham. [9688]

## Scott.

**COLMORE** Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

**SCOTT**, 1913, in exceptional nice order; £30.—6, Warren St., London. [9592]

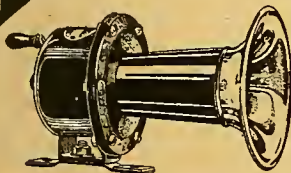
**1916 Scott**, only run 30 miles; owner buying car.—Willoughby, Beltwood, Rickmansworth. [9641]

**SCOTT**, 1913, appearance equal new, new fittings; full particulars; cheap.—Apply, Ryan, Lanesboro', Ireland. [X5482]

**SCOTT**, 3½h.p., with sidecar, excellent condition, been standing by considerable time; £35, genuine bargain.—17, Goldhawk Rd., Shepherd's Bush, London. [9569]

**SCOTT** 1914 Coach Combination, twin, water-cooled, mag., 2 speeds, countershaft, kick, nice order; great bargain, £42/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X5776]

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## Singer.

SINGER, late 1915, 4½ h.p., 2-speed countershaft, luxurious sidecar, splendid condition; £37.—Appleton, Budbrooke Barracks, Warwick. [X5842]

1914 Singer, 2½ h.p., 3-speed, clutch, Bosch, tyres almost new, thoroughly overhauled, perfect; £27.—Write, Sapper Berry, Harolds' Park Searchlight, Nazeing, Waltham Cross. [X5946]

MOTOR Cycle for Sale, owner at Front; Singer, 2½ h.p., 1915, good condition and appearance, running A, B, and C carburetter, lamp, tools, etc.; £20, or offer.—Lested Lodge, Chart Sutton, Maidstone. [X6222]

## Sparkbrook.

BARGAINS.—Two 2½ h.p. 2-speed Sparkbrook light-weights, new and unused; to clear £35 each.—Stamford Garage, Stamford, Lincs. [X5935]

## Spur.

1916 Spur Motor Cycle and Sidecar, 2-stroke, complete; £26.—12, The Broadway, Muswell Hill. Phone: 668 Hornsey. [X5772]

## Sun.

SUN-VILLIERS, 1916, riding 87 miles only, perfect; £22/10.—Walbro Motor Works, Ely. [X5657]

SUN, 2-strokes; all models from stock from 29/10.—Colmore Depot, 261, Deansgate, Manchester. [X0828]

COLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [X0807]

SUN-PRECISION, 3½ h.p., 3-speed, S.A., tyres good, lamps, horn, perfect; £25.—15, Leamington Place, Beach St., Birmingham. [X5781]

2-SPEED 2-stroke Sun Motor Bicycle, run under 50 miles, equal to new, fitted with Dunlop tyres, guaranteed in perfect condition; £30.—Robinson's Garage, Green St., Cambridge. [X6550]

## Sunbeam.

SUNBEAM, 2½ h.p., 2 speeds; £32.—3, Burgons Buildings, Fallowfield. [X5515]

SUNBEAM 1916 3½ h.p. Combination, with accessories; £80.—Stour Cycle Depot, Stourbridge. [X5835]

1914 6 h.p. Sunbeam, No. 5 Gloria car, hood and screen, and fittings; £75.—Sleightholme, Ironbridge, Wiltshire. [X5868]

SUNBEAM, 2½ h.p., 1914, 2 speeds, free engine, h.b.c. clutch, tyres good, lamp set, speedometer, horn; £50.—Consins, Coppice Rd., Theydon Bois, Essex. [X5442]

## T.D.C.

T.D.C. and Hercules, 1914½, 4 h.p., 3-speed, free, clutch, Bosch, Sensapar, Stewart, lamps, practically new condition; £30.—Advertiser, 132, Caulfield Rd., East Ham. [X5666]

## Torpedo.

TORPEDO, 2-stroke, practically new; £18.—R. H. S. Oliver, Sunnycroft, Bury St. Edmunds. [X5653]

TORPEDO, 1914, 2-stroke, good order; must clear; £15.—Ideal Cycle Co., Thundersley, Essex. [X6662]

## Triumph.

1913 T.T. Triumph; any trial here; £28.—D. Fox, Tamworth Rd., Lichfield. [X5765]

TRIUMPH, 3½ h.p., free engine, Oct. 1912, carefully used; £29.—Judge, Chemist, Derby. [X5818]

TRIUMPH, 1915, 3 speeds, 3½ h.p., in nice condition; £54.—6, Warren St., London. [X5987]

TRIUMPH, 1912, 3½ h.p., clutch, fine condition; £25.—T., 6, Manor Parade, Sutton, Surrey. [X6334]

1912 Triumph, 3½ h.p., free engine; £30.—Seen Stannall, Skin Market Place, Bankside, S.E. [X5932]

TRIUMPH, 1915 Baby, 2-stroke, like new, guaranteed perfect, suit lady or gent; £36.—Moss, Warr. [X5864]

TRIUMPH, 3½ h.p., 1912 model, free engine, spare tyre, tube, lamps, tools, etc.; £24.—242, Brownhill Rd., Catford. [X5963]

TRIUMPH, 1913, 3½ h.p., good condition, accessories, £31, or near.—Lieut. Sherrard, 3/5th Essex, Halton Camp, Bucks. [X5861]

TRIUMPH, 1911, clutch, re-enamelled, re-plated, new tyres and belt, like new, only wants seeing; £25.—Saunders, Brockwell, Chesham. [X5778]

1910 Triumph, Brompton gear, extra heavy Dunlops, especially good condition; £19/10; approval.—Goodey, Gishorne Rd., Wellingborough. [X5831]

3½ h.p. Triumph, free engine, clutch, lamps, etc., condition as new; a bargain, £22; 100 m.p.g.—Smith, 15, Branshott Av., Charlton, S.E. [X6200]

TRIUMPH, 1913½, excellent condition, engine just returned Triumph, lamp, horn, Palmers, Pedley belt; 26 gns.—Monck, Offenham, Evesham. [X5913]

TRIUMPH, 4 h.p., 1914, fitted 3 speeds, lamps, horn, tools, 18 gns. Gloria sidecar, in splendid order; £52/10.—Batchelor, Clarence St., Kingston. [X6588]

1914 Triumph, 4 h.p., 3-speed, with C.B. sidecar, in excellent condition; £45, or would exchange for higher power twin.—3, Portland Rd., Wyke, Weymouth. [X5949]



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TRIUMPH, 1911, 3½ h.p., free engine, pedal start, Grado pulley, and wicker sidecar; £26/10; before 1 o'clock.—A., 129, Warwick Rd., Earl's Court, London. [X5808]

1913 Triumph, 3 speeds, sidecar, splendid condition; £35, or exchange with cash for 8 h.p. combination.—Wood, 33, Craig St., Bletchley, Leamington, Scotland. [X5844]

1915 Free Engine Triumph, new piston and cylinder, 1915 Philpiston pulley, nearly new tyres, just overhauled; £30.—Gates, Post Office, Liviaghoe, near Tring. [X9674]

1912 Triumph, dropped handle-bars, footboards, Brompton variable gear, engine-re-bushed, new rings, etc., tyres perfect; £32.—Salter, Dry Sandford, Abingdon. [X9635]

TRIUMPH, 1912, 3½ h.p., free engine, exceedingly good machine, mechanical condition and appearance as new, accessories, spares; 25 gns.—Clark, North Witham, Graitham. [X9573]

1912½ Triumph, Sturmer 1915 3-speed, machine just returned from makers, re-bushed, new valves, also splendid coachbuilt sidecar; £35; exchange 4 h.p. Zenith, give cash adjustment.—11, Garnies St., Peckham. [X9567]

TRIUMPH, 3½ h.p., F.E. clutch, Cowey, Lucas front and rear lamps, Philpiston, new rear tyre, others nearly new, new belt, new piston, etc., cane sidecar, splendid condition; £28.—Ilughes, Tanlan, Bettws-y-Coed, North Wales. [X5694]

## Trump.

TRUMP-J.A.P., 5-h.p. twin, and Canoelet sidecar, 3-speed, handle start, new tyres; £35.—14, Dodbrooke Rd., West Norwood. [X9689]

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WAVERLEY-J.A.P., 8 h.p., semi T.T. combination, understing torpedo sidecar, Indian red, clutch, handle starting, new 11a. belt, sporty lot; a snip, 28 gns.; must sell.—Cpl., 4, Springfield Terrace, Chatham. [X9502]

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WILLIAMSON, 1914, 2 speeds and clutch, wicker sidecar, good condition; £52/10, or close offer.—12, Myddleton Rd., Bowes Park. [X9568]

## Win-Precision.

3½ h.p. Win-Precision, 2-speed countershaft gear, kick-starter, nearly new coachbuilt sidecar, accessories; nearest £38.—Apply, 342, Baker St., Enfield. [X9631]

## Wolf.

1916½ Wolf, 2-stroke, 2-speed, countershaft, cost £44 with accessories April, receipt shown, looks and is like new; sacrifice 30 gns.—15, Summerhill Rd., Dartford, Kent. [X9617]

## Zenith.

4 h.p. Zenith-Gradua C.B. Combination, red; absolute bargain, £35; spares, accessories.—13, Arklow Rd., New Cross, S.E. [X9615]

3½ h.p. Zenith-Gradua, with sidecar, complete, unready deemed pledge; £27/10.—Fish, Pawnbroker, 25, High St., East Ham. [X5725]

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ZENITH Motor, 3½ h.p., model 1913-14, with speedometer, good condition, new tyres; price £24.—Dehonsse, 55, Cresswell Rd., Twickenham. [X9684]

1914 Zenith-Gradua, J.A.P. 3½ h.p. twin, Bosch engine and mag. just overhauled and parts renewed (cost over £8) all accessories, many spares, P. and H. lamps, horn; owner going abroad; £37, or near offer.—Write, G.H., 800, c/o Deacon's, Leadenhall St., E.C. [X9533]

## Miscellaneous.

EAGLES.—Chater-Lea, 8 h.p., 1912-13, J.A.P. engine, 3-speed countershaft gear, chain drive, 650×65 tyres, with sidecar; £43/10.

EAGLES.—Imperial-Jap, 2½ h.p., 1915, 2 speeds, smart appearance; £25/10.

EAGLES.—N.S.U., 3½ h.p. Model de Luxe, spring frame, 2 speeds, coachbuilt sidecar; £29/10.

EAGLES.—Rudge, 3½ h.p. touring model, N.S.U. 2-speed gear, free engine, pedal starting, fine sidecar machine, accessories; £30.

EAGLES.—Wolf, 2½ h.p., 1916, 2-stroke, shop-soiled; £25.

EAGLES.—Triumph, 3½ h.p., standard 1909, overhauled, all accessories; £18/10.

EAGLES.—Calthorpe-Jap, 2½ h.p., brand new 1915, Enfield 2-speed gear, slightly soiled; £32.

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CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Ltd., Winnipeg.

INDIA—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.

PARIS—Smith's English Library, 248 Rue Rivoli.

## Noise.

**W**E wonder how many times we have written on this subject, but we make no excuse for dealing with it again, as noise is as bad on motor cycles at the present time as ever it was. It is not always the same noise which offends. Hitherto we have been concerned chiefly with the strident sound of the exhaust; legislation has somewhat minimised this defect, so there are not now quite the same grounds for complaint. What we are concerned with at present is valve clatter and transmission noises. These are worse on multi-cylinder engines, which owing to the number of valves and tappets set up a clatter which the makers could, we feel, readily eliminate if they would take the trouble. At high and medium speeds the chorus becomes merged into that more or less harmonious "continuity of sound which we call silence."

Silence can be largely attained without sacrificing much in efficiency, and first of all steps should be taken to quieten the tappets and valve gear. We do not expect complete silence, but we do expect an improvement in this direction. Chain noises are easier to cure, as this may be done by the simple operation of fitting a chain case, though unless this is well done it may make the noise worse. Gear box noises are quite unnecessary, and fortunately are not common, but we have come across quite a bad instance lately.

It is not only the four-stroke engine which is the offender, the two-stroke also is a sinner in respect of unnecessary noise. Not only is its exhaust more trying to the ear than that of a four-stroke, but it is prone to that curious "two-stroke rattle" about which there has been so much correspondence in our pages.

If manufacturers would perfect their productions by improving flexibility, reducing noise, and making machines more accessible and more easily started, the motor cyclist's lot would be far happier. A man rides a motor cycle to get health

and benefit therefrom, and attaches a sidecar so that he may share his enjoyment with another, but he does not want his companions to be irritated by a clatter which renders it necessary to shout so as to carry on a conversation.

## Signalling.

**T**HAT a considerable amount of misconception exists on the matter of signalling with the hand when turning corners is very evident. Not long ago a motor cyclist turning into a main road put out his right hand, meaning that he intended to turn to the right. The driver of an approaching car took it that the cyclist would remain on the right hand side of the road instead of crossing in front of him, and turned to his own right; the cyclist, however, crossed to his left and a collision resulted. Each driver blamed the other, but we are of opinion that the unnecessary signal was the cause of the accident.

Generally speaking, only one signal is necessary, and that should be made by extending the right hand when about to turn off the main road to the right, for when doing this the rider takes the road of following traffic which should overtake him on his right as well as the road of oncoming traffic. This signal should be made in ample time to allow the following traffic to change its course. It is not sufficient to extend the hand and immediately to turn across the road, as in this case it may be impossible for a vehicle coming up quickly from behind on the right to avoid a collision. Another signal, useful at times, is that of beckoning with the right hand as a sign that following vehicles should pass.

All motorists know that horse drivers are very remiss in the matter of signalling, and are constantly on the look-out for unexpected movements when overtaking vans and tradesmen's carts, but they do expect some signal from a fellow motorist before he leaves his own proper side of the road.



# MY FIRST WEEK AS A MOTOR CYCLIST

Being the Initial Experiences of an Australian Girl who learnt to Ride in England.



The writer of the article, a native of Melbourne, riding her two-stroke Allon in a Somerset lane.

I ALWAYS wanted to ride a motor bicycle. I did not even dare to suggest it to my people, because they are nervous, and considered that, for a girl to say that she wanted to ride a motor bicycle, was but another way of saying she wanted to commit suicide. At length I left my native land, and came to this lovely old England of yours, and went to live in Somerset.

The first week I was there, the girl with whose family I was enjoying a holiday wheeled out her father's two-stroke Triumph, and, mounting unconcernedly, flew off up the road and out of sight, as if such a proceeding was an everyday occurrence, as I learned later it was. I waited all the afternoon for the stretcher which I fully expected would bear home her remains, but I waited in vain. She rode home again some hours later, looking wind-blown certainly, but fresh as a daisy.

Meeting her at the gate, the following conversation ensued:

"How did you have the courage?" I asked.

"The courage for what?"

"Why to ride that!" I said, pointing at the Triumph.

"Courage! It didn't need courage!" she exclaimed.

"Anyone could ride this."

"Do you think I could do it?" I asked.

"Certainly you could," she said; "but I would not advise you to try and practise on father's machine. Can you ride at all?" she asked.

"A push-bicycle," I said, glad that I could ride something.

"That won't help you much!"

My gladness vanished.

Another week passed, and my friend took further excursions. I got restive. Finally I bought a two-stroke Allon, and a friend who rode a similar machine undertook to teach me to ride on a lonely stretch of road. After a few minutes' instruction in the use of the various control levers, I was allowed to mount, my friend running along by my side. I was very surprised at the ease with which I could manage it, and rode home, about a mile and a quarter, un-

aided. I had gained my long-wished-for goal! - After that first ride I felt somewhat exhausted, probably from the nervous strain, but after a second ride this feeling vanished, and I began to experience the joys of the rush through the fine summer air.

## Conclusions with a Hedge.

The third time I was out with my girl friend, I had rather an exciting experience. She was riding the Baby Triumph, and about a hundred yards ahead of me took a right-angled corner in fine style. When I was halfway round the corner, to my horror, I realised that the Allon "had the bit between its teeth," and was rushing at ninety miles an hour (or so it seemed to me) straight for the hedge on the off side of the turn. I just had presence of mind enough to use the foot brake, when the machine struck the hedge and reared right up on its hind legs, so to speak. It was a very thorny hedge. For a second the bicycle was undecided as to falling backwards on me or forwards. Fortunately, it did the latter, and I slid gracefully over the back mudguard, to the great interest of three men on a haystack, who were looking on with open-mouthed amazement. I managed to pull the machine out of the hedge, and mounted again quite unhurt. Whenever a difficult corner presents itself now I take great care to take it as close as is compatible with the laws of the road, so as to leave a good space to run out in case of emergency.

Another time I started off up the High Street in full view of the townsfolk, confident that I looked an experienced motor cyclist, but, after a run of about 200 yards, the Allon, with a resigned sigh, stopped dead. I knew less about machines than I cared to admit, and after a few minutes a man standing by, after a contemplative stare at the bicycle, remarked, "Wouldn't it be as well to turn on your petrol, Miss; her might go then?" "Miss" did so and departed. The end of my troubles was not yet, however. About three miles further on, as I was spinning along, very contented with myself for having negotiated a curve in great style, a herd of cows came into sight, and I started to wobble badly. I could not find the brake, and, in my flurry, opened the throttle full out. The bicycle, with a seening yell of delight, started to show what it could do, but after a short wild flight, and just



The girl who introduced the writer to the delights of motor cycling riding a Baby Triumph.



**My First Week as a Motor Cyclist.—**

as I was about to spring on to the foremost bovine bosom, I gathered my wits together, closed the throttle tightly, and lifted the exhaust. The result was a timely halt on the brink of disaster. To add to my discomfort, the herdsman said brightly, "Look out, Miss! The little 'un, she be fierce." Following behind was the tiniest calf I have ever beheld. I quite forgot to say that there were only four cows in the herd, including the "fierce 'un."

My next ride was all pleasure, and I began to feel that I was really mastering the machine. Together with my friend, riding as usual the Baby Triumph, we explored some of the charms of Somerset, and I am looking forward to an early tour.

I am a fairly experienced rider now, and the sport has never lost its charm for me, but rather the pleasure increases with each outing. I think it is "bonza." Australians will understand that.

M.F.

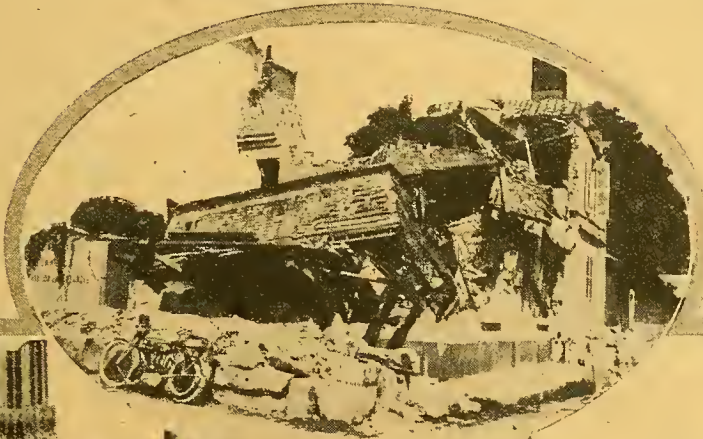
## Rheims as it is now—Thanks to the Germans.

With a Motor Cycle amidst the Ruins of a Famous French Cathedral City.

**A**N excellent impression of the havoc wrought in Rheims by the German guns will be gathered from these illustrations. For many months references have been made from time to time in the French

better from the back. The top view was taken at a street corner, and shows a large private house that has been almost totally demolished.

The photographs were sent us by a French military motor



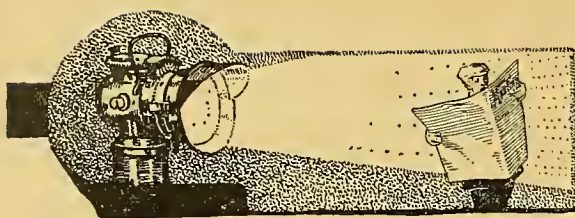
VIEWS OF RHEIMS  
AFTER BOMBARDMENT  
BY THE GERM-HUNS.

(Photographs passed by the French  
Press Bureau.)



cyclist, and his Triumph may be seen in the pictures. The excellent condition of the stone paving is in striking contrast to the general atmosphere of wreckage and desolation to which the town has been reduced.





## Occasional Comments

Sydney Jones

"By Ixion"

### American Twins.

It does not seem to have dawned upon our correspondents that, whereas practically every American maker lists a 7-9 h.p. twin as his regulation solo model, there is not one British firm of any great dimensions which takes a serious interest in the high-powered twin solo model. A few firms list them, because there is a certain demand from speed merchants in this country; but the majority of big British twins are constructed first and foremost with an eye to sidecar work, and our standard solo models are all of 4 h.p. or less. It would therefore not be surprising if America (specialising on the big twin) could surpass our best 7-9 h.p. types, just as it is only natural that we (specialising on the 2-4 h.p. types) lead the world in our own pet department. Nevertheless, I am not at all sure that our critics are on as sound ground as they imagine. My last three American leviathans, all high-priced machines of leading make, were very, very nice while they were new; but I was not at all sorry when the time came to dispose of them.

### The Speed Factor.

In the above connection it is extremely easy to exaggerate the value of speed records. Their function is to indicate the character of the brains possessed by a firm's designer, for in these days of keen competition most firms can command first class jockeys. But the kind of brain which can work out a record-breaking engine does not necessarily avail to design the ideal touring machine; and even if a factory possesses a brilliant technician, balanced by a practical rider who sees that the machine as a whole is suited to the needs of the common man, the chief essential still remains to be named, viz., honesty. We want, first and foremost, a good, sound, durable machine; we want, secondly, fair treatment from the maker after purchase; we want, thirdly, a machine devoid of irritating little defects, such as discomforts and inaccessibilities; we want fourthly, if we can get it, an engine slightly above the average in refinement and efficiency. Racing successes do no more than imply that we *may* get the latter half of my fourth desideratum. Anybody who lays too great a stress on speed records is, therefore, talking arrant nonsense.

### Sustained Speed.

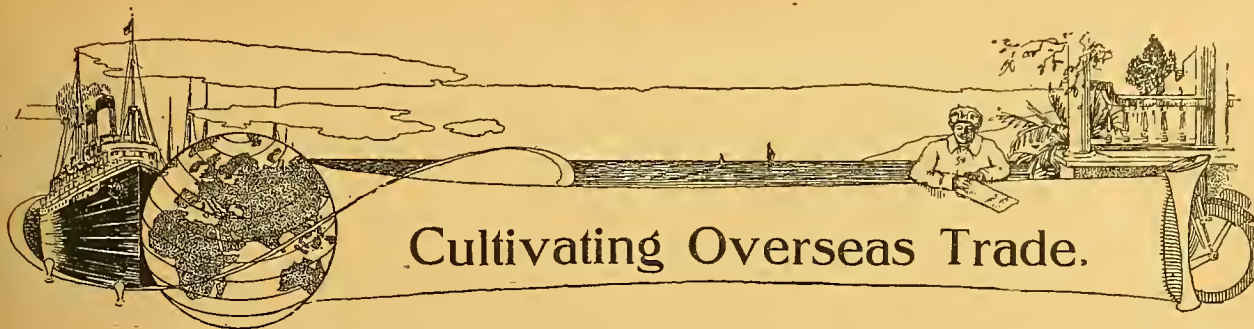
In all such matters it is, of course, necessary to differentiate between brief speed bursts and sustained speed. A Grand Prix, a Tourist Trophy, and a few other races constitute a searching test of motor manufacturers in many different ways. Victory is only earned by a combination of technical genius, metallurgical knowledge, perfect workmanship, and first-rate foresight and organisation. The more nearly the racing vehicles can be tied down to the semblance of standard models, the better chance there is that manufacturers will acquire knowledge which can be embodied in their next season's model. If the racing

machines are more or less standard in their vital parts, the race then takes the form of compressing testing strains equivalent to a year's ordinary work into a few crowded strenuous hours, and *if the maker is honest* his new models will profit by the race. British makers have a unique reputation for honesty, even if it is coupled with a reputation for a certain blundering stupidity, and such races have, therefore, always brought much fresh custom to British makers. But not a few foreign makers enjoy a widely different reputation. Their racing department is very largely divorced from their manufacturing department, and forms a sub-section of their advertising department. The advertising department performs sensational feats of one sort or another, and so creates a demand. Then the manufacturing department says, "We shall get a big demand this year; we can sell so many machines; how much can we make on them?" and proceeds to cheapen production, and sell machines which disappoint the riders who understand what the victory implied as being possible. There will be a struggle to skim the cream of the motor markets when the war is over, and it may as well be said here and now that we motor cyclists are not such fools as some people in the trade imagine. We may be tempted to sign one cheque by dint of lurid advertising, but we never take very long to learn which firms concentrate their best energies on their stock machines, and which firms treat us fairly after purchase; so that honesty will always be the best policy for the trade as a whole. "Getting your name up" as the first step to success, and "unloading a giant output" as the second step, will never make for continued predominance in the motor cycling world. The royal road is rather to sell us sound machines, and to treat us decently after purchase, and I think that, on the whole, the British maker is easily supreme on these lines, though he would be better than he is if he possessed more of the imagination which distinguishes some of his foreign rivals.

### 520 Miles on Four Gallons.

Do many riders of 3 h.p. Enfields average 130 m.p.g. over such a route as "Auriga" describes in our issue of August 10th? If such experiences are common, I shall have to hurry up and buy a little V twin? I have often tackled approximately the same run on machines of every conceivable horsepower from 2 h.p. to 8 h.p., but I always found my consumption enormous. I suppose I drive a little too fast for low consumptions. On this route there are lots of hills which tempt one to open out, and also plenty of places where a little speed on the flat is safe and pleasant. I suspect "Auriga" is a member of that small minority who retains some reverence for legal limit. I must confess that I have often made his run at 70 m.p.g. on a 2½ h.p. Douglas, and I suppose that my speed is the real culprit rather than my carburetter.





## THE OPINIONS OF A NEW ZEALAND DISTRIBUTER.

WE have recently had an opportunity of renewing our acquaintance with Mr. J. B. Clarkson, of Wellington, N.Z., and took occasion to discuss with him the prospects of business in the outlying parts of the Empire after the war.

Mr. Clarkson is, of course, aware that *The Motor Cycle* holds very strong views as to the enormous value of these markets, and the danger of their being entirely lost to British manufacturers unless immediate steps be taken to conserve them. He agreed, and stated that he has been pressing upon manufacturers the necessity for getting together at once in order to formulate a policy designed to ensure the retention of these markets, and he is of opinion that unless this be done without delay the markets cannot be held.

Regarding methods of manufacture, Mr. Clarkson's view is that each important British manufacturer must concentrate upon a single model, instead of, as at present, dissipating his energies and spending large sums of money in experimenting with machines of differing design or power. Concentration upon the single model, standardisation, an output in thousands and a consequent reduction in cost, and so an ultimate lower price to the buyer, express Mr. Clarkson's views briefly, and upon this phase of the question they are entirely in accordance with our own.

### The Supply of Spares.

Mr. Clarkson's opinion is that British manufacturers' "service" methods are far from satisfactory, particularly in the matter of spares. He emphasises the need for a well-organised spares department as an essential part of the selling side. In this connection, from personal inspection, we may say that Mr. Clarkson's "spares" department in Wellington is one of the finest we have ever seen at home or abroad. This he claims to be due to his own business methods rather than to the support of British manufacturers at home.

### The Price Question.

When we reached the question of selling prices Overseas as compared with those at home, we were specially gratified to have Mr. Clark-

son's view expressed that there is great need for improvement in this particular, and that, as we have always contended, the abnormally high prices charged unquestionably check sales and so restrict the growth of the movement. Mr. Clarkson's opinion is that reform is necessary at both ends of the business; that is to say, by increased output the manufacturers' selling price must be considerably reduced, and, on the other hand, it should be possible to reduce considerably the agent's selling expenses. He naturally contended that business as between British manufacturers and Overseas buyers necessitates wholesale distributing houses such as his own. He asserts that his organisation can sell more machines, and more economically, than a British firm would do by establishing its own distributing centre in New Zealand, or in Australia, as the case may be; but he entirely agrees that the difference in prices at home and Overseas is far too great, and admits that this is to a considerable extent due to want of control of selling agents' prices.

### Easy Payments.

We expressed the opinion that the machine passes through too many hands and carries too many intermediate profits. Mr. Clarkson was disposed to agree, though he thought that the easy payment system has a great deal to do with the differences in prices. He states that the vast majority of machines are sold in New Zealand on easy payment terms, and that it is usual for the agent to add 10% to his ordinary selling price

for the concession of extended payments.

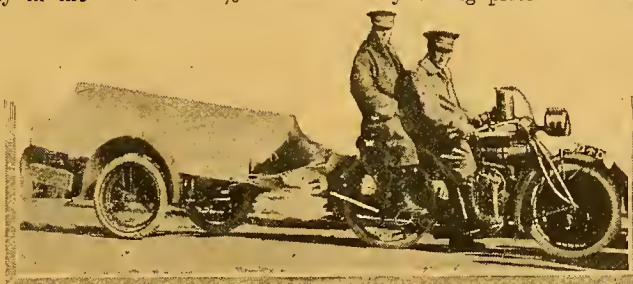
Incidentally, Mr. Clarkson complained of heavy freight charges, and is of opinion that State control of our shipping would probably reduce the cost of freight on motor bicycles by 30s. each.

### Immediate Action Necessary.

Mr. Clarkson's views confirm us in our frequently expressed opinion that manufacturers must lay their plans immediately, must thoroughly overhaul their methods, and must fix up agencies with maximum selling prices for their machines, according to the conditions obtaining in the particular colony or dominion.

We are convinced that direct agencies with enterprising and responsible firms can be arranged in practically every town or district of importance; but the "spares" problem has to be dealt with on broad and generous lines, and this seems to demand either a central distributing depot run by the manufacturing firm concerned, as, for example, one established in Melbourne to supply all agents in Australasia, or the recognition of a wholesale distributing house such as Mr. J. B. Clarkson's; but, in either case, there must be better control over ultimate selling prices, better service, and readier recognition of the needs of our Overseas buyers.

It is now in a very special sense a time of true Empire-building. May we once again urge upon the motor cycle industry the importance of getting together now to consider how best they can contribute their share to the cementing thereof by the improvement and extension of trade relations and the securing of the markets which lie open to them.



### THE TRAILER AMBULANCE.

Motor cycle ambulance trailer, forming part of a gift of Australian citizens for their Expeditionary Force. The bicycle is an Indian, and the trailer has accommodation for two wounded men. Though successful under favourable conditions, the practicability of a heavy solo bicycle towing a trailer under road conditions such as rule in the French war zone in winter is doubtful. The sidecar ambulance will, we consider, prove far preferable, and has, indeed, proved its worth already.

### INDIAN PRESIDENT RESIGNS.

It is stated that Mr. George M. Hendee has resigned his post as president of the Hendee Manufacturing Co. He is the biggest trade man in the United States, and his name is almost as well known in England. Mr. Hendee is 50 years of age next September, and established the present Hendee Manufacturing Co., the designer of the original Indian being Oscar Hedstrom.



# HORSE-POWER TESTS OF MOTOR CYCLES.

How the Available Power at the Rear Wheel may be Ascertained.

RECENT events have directed the attention of motor cyclists very forcibly and disagreeably to the topic of horse-power ratings, and in particular to that aspect of the question which deals with the calculation of power for taxation purposes, now happily at an end. In this article, however, a much less vexatious, and possibly a more interesting, branch of the subject will be discussed, and yet it is one of which the ordinary rider—or anyone else, for that matter—knows remarkably little: it is the measurement of the actual horse-power delivered to the back wheel of a motor cycle, that is, the net power available for propelling the machine. After all, that is the important figure from the rider's standpoint, because on it depend the speed that can be attained on the level and the limiting gradient that can be ascended.

Bench tests are useful in their way, and it is doubtless very impressive to be told that your  $3\frac{1}{2}$  h.p. engine has developed 8 h.p. or 10 h.p. under workshop conditions, but unfortunately such tests are of little value in our present quest. For, when the engine is assembled in the completed machine, how are we to know how much of the power then generated is dissipated in overcoming the resistance of belts, in losses due to faulty alignment, or in grinding the teeth of the gears? In fact, the ideal solution of the problem would be some sort of apparatus on to which any rider could wheel his motor cycle straight from the road, start the engine, and read off on a scale the h.p. delivered at the back wheel, with as little trouble as he reads off his own avoirdupois on a "Try-your-weight" machine on a station platform.

## The Sporting Method.

Contrast this tempting if fanciful proposal with the customary method actually employed for estimating the relative nett or effective horse-power of different machines, and of selecting the one in which, for a given cylinder capacity, the greatest power is transmitted to the rear wheel. The competing motor cycles, together with an army of riders, attendants, and spectators, are shipped across a (usually) tempestuous sea, and dumped on to a mountainous island, the inhabitants whereof are deprived of the use of their roads in order that the machines may career madly round and round a specified route for a stated number of times. After various calculations have been performed, one of the motor cycles is adjudged the winner, the details of its performance being vehemently thrust on the public notice by its gratified makers for many months afterwards.

Granted that this is a very one-sided picture of the T.T. race; that it is a test of the riders as much as of the machines; that the sporting element of the trial is a powerful attraction; and that it is contrived to test the reliability as well as the power of the machines; yet the solid fact remains that one of the chief objects of the contest is to select the motor cycle with the highest overall efficiency. The elaborate restrictions imposed by the promoters to ensure that all competing machines run as nearly as possible under identical conditions leave no room for doubt on this point. From this aspect, then, does there not seem

a certain waste of energy about the proceedings? "But it's the only way," you say. It may be the only way that has been tried, but surely it is not the only conceivable plan.

## An Alternative Suggestion.

Here is a suggestion for an alternative method. In your visits to the theatre or music hall you have probably witnessed exciting spectacles in which cavalry charges or motor car elopements are represented; the legs of the horses or the wheels of the cars, as the case may be, are indisputably in vigorous motion, and yet the animals or the vehicles to which they respectively belong make no progress whatever across the stage. Why? Simply because, instead of the road being stationary and the traffic in motion, the traffic is at rest relatively to the proscenium opening ("proscenium opening" is, I believe, the correct term), while the road moves, the road in this instance consisting of an endless band. Now suppose we anchor a motor cycle above this travelling band, and allow the back wheel to do the work of pushing the

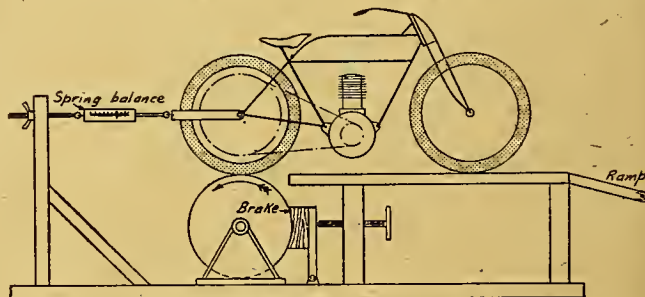


Fig. 1.—Diagrammatic sketch of dynamometer.

roadway behind it; then by observing the speed of the wheel, and the thrust exerted on the "road," the effective horse-power becomes immediately calculable.

Perhaps a few general remarks on the question of the measurement of power may here be usefully interpolated, for the average motor cyclist is very naturally more familiar with the connection between cylinder capacity and horse-power than with the fundamental principles of this branch of mechanics. Power is defined as the rate of doing work, hence to ascertain the power exerted by an engine or motor we must measure how much work it performs in a given time. Since work (in the technical sense) is the product of force and distance, it follows that the measurement of power involves observations of force, distance, and time, or, what comes to the same thing, of force and speed. The unit of power is the horse-power; one horse-power is said to be exerted when 33,000 foot-pounds of work are done per minute. To calculate the horse-power of any source of energy, therefore, we must divide the number of foot-pounds of work done per minute by 33,000. In the case of a motor cycle, there is no difficulty in measuring the speed; the trouble occurs when the other factor, force, has to be evaluated. The force whose value we require to know is the "tractive force," i.e., the thrust that the back wheel exerts on the road.



**Horse-power Tests of Motor Cycles.—**

Let us now see how the travelling band arrangement will assist us in this respect. Essentially all that is needed is a roller or drum, as shown in the diagram fig. 1—the band itself may be abandoned (Sorry! that really was quite unintentional). Mounted on the same shaft as the roller is a brake drum by which the power of the engine is absorbed, while a spring balance measures the actual value of the tractive force. Assuming the machine under test to be fitted with a rear-driven speedometer, and that this registers a speed of  $S$  miles per hour, while the balance reading is  $W$  lbs., then the requisite nett or effective horse-power will be given by the expression

$$\text{H.P.} = \frac{\text{Work done per minute}}{33,000}$$

$$= \frac{\text{Force (lb.)} \times \text{Speed (ft. per min.)}}{33,000} = \frac{W \times \frac{S \times 5,280}{60}}{33,000} = \frac{WS}{375}$$

Although such an apparatus scarcely fulfils the ideal we had before us, yet its convenience and utility certainly seem to render it worth more than a passing thought. Imagine some enterprising garage proprietor to have constructed a testing machine or "dynamometer" on the lines suggested (it ought not

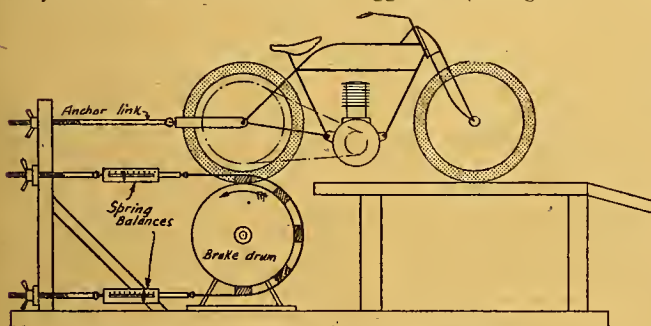


Fig. 2.—Alternative arrangement of dynamometer.

to be a very costly business), and some equally wide-awake rider to have taken his motor cycle to undergo a test. To fix the machine in position is the work of a few moments, and in quite a short time the engine can be running under any desired conditions—say, to represent a run at 25 m.p.h., with a specified throttle opening. The power being noted, the conditions may be slightly altered—a larger jet fitted, for instance—and another set of readings taken to observe the effect. In a similar fashion the influence of every possible kind of adjustment may be accurately determined; no matter whether it is the fuel, the timing, the carburetter, or the magneto that is altered, the corresponding increase or decrease in speed or power will at once be apparent.

**Useful for Tuning Purposes.**

It is hardly necessary to emphasise the ease and certainty with which an engine could be tuned by the use of a plant of this description. In tuning by ordinary methods it is often difficult to ensure that after each adjustment the trial runs are made under identical conditions. Thus, you find that with a certain brand of fuel you can traverse such and such a route with an expenditure of so many gallons, while with some other brand you require half a gallon more fuel.

But if the first run was made with dry roads and a following wind, while during the second you had to contend with rain and a head wind, who is to say which is the more economical fuel? All such doubtful factors are eliminated in the present proposal. This apparatus should also yield particularly valuable information on such questions as the relative power losses entailed in all chain, chain-cum-belt, and belt transmission, and in the various speeds of a gear box.

It is not my intention to enter into the constructional details of the apparatus, but one or two of the more salient practical objections may be dealt with. It is manifestly essential in the arrangement shown in fig. 1 that the centre of the motor cycle wheel should be vertically above that of the rotating drum, and owing to the unavoidable vibrations of the spring balance, this condition might be somewhat difficult to fulfil. Such a contingency could be guarded against by substituting a rigid link for the spring balance, the load being measured by a pair of balances acting on the brake drum. The apparatus would then take the form shown diagrammatically in fig. 2, but the principle is unaltered, as the tractive effort  $W$  is given by the difference of the balance readings (provided, of course, that the brake drum is the same diameter as the drum on which the motor cycle wheel rests). Some kind of fan for cooling the engine during long trials is obviously indispensable, as also might be a water-cooling device for the brake drum, but the provision of these ought not to tax unduly the ingenuity of any capable mechanic.

**A Second Arrangement.**

In any case, the brake drum is by no means an essential part of the equipment; the power generated by the motor cycle engine may be absorbed and measured in any other convenient manner. Thus, the roller or drum in fig. 1 may be coupled to a dynamo, and the power deducted from volt and ammeter readings. One final point: if the arrangement shown in fig. 2 be adopted, the revolving drum must be mounted on ball bearings, otherwise the journal friction will impair the accuracy of the tests. The small, almost negligible, friction offered by ball bearings will, to all intents and purposes, compensate for that with which we are crediting the motor cycle on account of the front wheel being stationary. In other words, since our object is to reproduce as completely as possible the conditions under which the machine normally runs, the front wheel as well as the back ought, strictly speaking, to be in motion; and the work performed by the engine under test in rotating the drum (*i.e.*, in overcoming the journal friction) is roughly equivalent to that which it would do on the road in turning the front wheel.

To meet the murmurs of those who resent the intrusion of mechanical methods into fields in which a happy-go-lucky sporting element has hitherto predominated, let me explain that it is not suggested for an instant that the proposed testing apparatus should or could do anything more than *supplement* existing processes. At the same time, it may be permissible to remark that if you are out for sport, then have as many and as sensational races as ever you like; but if your intention is to judge the merits of a motor cycle regarded as an engineering product, then test it in a scientific way.

"MOHANDIS."



# QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Failure to Run Slowly.

**?** I use a 5-6 h.p. single-cylinder 1914 model motor cycle fitted with Senspray carburetter, and although the machine is running perfectly I cannot get it to run slowly. The engine will not fire regularly until the throttle is opened a bit, and this trouble is tiresome when in traffic. I use a 46 jet, and the carburetter, etc., is quite clean, the plug points are set correctly, and the platinum points are also right. The carbon brush of the magneto has been cleaned, and still the engine will not run slowly. Would the petrol level in float chamber being too low cause the trouble?—E.R.A.

This trouble is nearly always due to air leaks at the carburetter or induction pipe unions, or to too small a jet. We should say that the petrol level might have some effect on the matter.

## Driving a Two-stroke.

**?** (1.) What is the correct method of descending a hill on my 1914 model 2½ h.p. two-stroke motor cycle? I usually leave the air lever fully open, and close the gas lever, letting the compression act as a brake. When this slows the engine down too much, I open the gas lever for a period of ten yards and close again, then open and so on. Is this correct? (2.) I rarely use the compression lever (except for starting), but when I do lift it, going down a hill, there is a distinct rattle. Is this a sign that the piston is a bad fit in the cylinder? (3.) How often should I drain the crank case? (4.) What is the best method of judging the correct size of jet to use, just for ordinary town and country riding? (5.) What packing should I use for the joint between the cylinder and the exhaust port? There is a slight gap on the underside of the joint.—J.W.H.

(1.) Your method is correct, except that the air lever might be drawn back to meet the throttle, and so provide a reduced charge. (2.) This rattle usually takes place in a two-stroke if it has been running for some time. It does not necessarily mean that the piston is a bad fit in the cylinder. It may be that one of the rings is gummed up. (3.) Once every five hundred miles. (4.) You can find the best method of judging the correct size of the jet by working down from a large size—say 32—until you get the correct size with which the machine runs best, when it will neither choke up nor miss at speed. (5.) We should say asbestos or Hallite packing.

## Correct Lubrication.

**?** I have a 2½ h.p. four-stroke, and I do not seem able to make the exhaust smoke unless I give about four or five pumpfuls of oil. I should be obliged if you could say if it is any the worse for this.—P.N.

It is no fault that you are unable to make your engine smoke, provided that you are sure the full pumpful of oil is actually being delivered to the crank case, and not being simply pumped back into the tank. If the piston is a good fit it is often possible to give several pumpfuls of oil without causing smoke to issue from the exhaust.

## IMPORTANT NOTICE.

### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD

## Testing for Overheating.

**?** I have a 1912 3½ h.p., which, after I had ridden it about forty miles, was very hot and refused to pull up hills. I took it to a garage and had it rebushed and new rings fitted, but still it gets extremely hot in about two hundred yards—too hot to bear the hand on the cylinder—and the crank case also gets very hot. The engine stops as soon as ever I give it more air than gas. I have tried three different jets from 28-30, and I believe the old one is a 32, and still I cannot get the engine to take extra air. I have had the cylinder off, and the engine seems quite clear in every way.—A.B.

Placing the hand on or near the cylinder is not the correct way to test for overheating. You can never bear the hand on the cylinder of any air-cooled engine. If the engine runs well, and does not either lose power or pre-ignite, you need not worry about bearing your hand on the cylinder. Refusal to take air is due either to too small a jet or an air leak between the carburetter and engine. Provided you are able to give a certain amount of extra air, it does not matter about the refusal to take more air than throttle opening.

## Petrol Permit not Transferable.

**?** I shall be greatly obliged if you can give me information on the following point. I imagine it may be of interest to others of your readers also: If the owner of a motor cycle lends his machine to a friend, can the friend use the owner's petrol permit?—N.L.M.

The point you raise is of very considerable interest to all motor cyclists, and we have approached the Petrol Committee for a definite ruling. We are informed by the committee that the petrol licences are strictly non-transferable, so that, in your case, it will be impossible for you to borrow your friend's licence as well as his machine.

## Lamp Regulations.

**?** I propose making my lamp fixed by soldering it well. Will this comply with the regulations? I have one coat of aluminium paint on the glass. Is this sufficient for Northants. area?—J.S.F.

You should really have your lamp secured by means of two stout rivets either instead of or in addition to the solder in order fully to comply with the rules. We think, in most instances, soldering, provided it was really well sweated up, would satisfy the police. In a police court recently a magistrate stated that soldering was not sufficient, although we understand that Messrs. Joseph Lucas were informed by the authorities that soft soldering was sufficient to comply with the regulations. One sheet of tissue paper over the glass is all that is needed in Northamptonshire. The paint is quite all right also.

## Preserving a Rubber Belt.

**?** While home on leave recently I bought a new Dunlop belt for my 2½ h.p. Premier, but, being stationed a considerable distance from home, it is very difficult to get leave long enough to allow of any motor cycling, and, consequently, the machine is standing idle. Can you tell me the best method of preserving the belt, as a dealer tells me that a belt will perish a great deal sooner if not used than if employed regularly every day? Also, do the tyres perish if constantly pumped up?—A.M.B.

The belt would be best preserved if removed from the pulleys and put away in a dark, cool, damp place. It should not be rolled up tightly. The tyres should be blown up hard, the machine jacked off the ground, and kept in a dark, cool place also. Rubber goods perish more rapidly when not in use.



# Indian

Motocycles

**DISTINGUISHED  
FAST  
and  
SILENT**

**HENDEE MANUFACTURING CO.,**

"INDIAN HOUSE,"

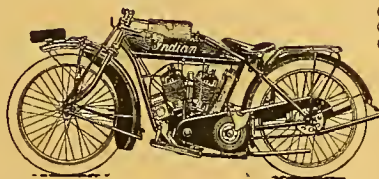
366-368, EUSTON RD., LONDON, N.W.

Telephone—Museum 1643. Telegrams—"Hendian, Eusroad, London."

IRISH BRANCH ... 10, Wicklow Street, Dublin.

AUSTRALIA ... 109-113, Russell Street, Melbourne.

CANADIAN WORKS ... 12-14, Mercer Street, Toronto.



**NOTE THE INDIANS ON THE ROAD.**

*In answering this advertisement it is desirable to mention "The Motor Cycle."*



# WARNING!

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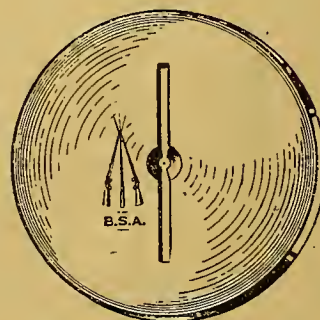


It has come to our notice that Valves stamped with the letters "B.S.A.," and stated to be suitable for B.S.A. Motor Bicycles, are being offered for sale.

The unwarranted use of the letters B.S.A. in any form is an infringement of our trade mark rights, and proceedings will be instituted against offenders.

Genuine B.S.A. Valves are stamped on the head with three Piled Rifles and letters B.S.A. (as illustrated).

THE BIRMINGHAM SMALL ARMS  
COMPANY, LIMITED, . . . . .  
13, SMALL HEATH, BIRMINGHAM.



*Latest Catalogue of B.S.A. Motor Bicycles free on request.*



**Does Motor Cycling cause Neuritis?**

**Q.** Having just spent seven weeks in bed owing to an attack of neuritis in the right leg, and as my medical adviser seems to lay the blame on motor cycling, I should esteem it a favour if you would let me have your valuable opinion as to whether it might be set up by that most enjoyable and, to my mind, health-giving sport.—R.L.

We do not think that neuritis is a complaint that can often be properly laid to the door of the motor cycle; but probably, in the event of excessive vibration being conveyed by any means to the joints of an individual who is constitutionally inclined to suffer from this complaint, an ill effect would be produced by continuous use of a motor cycle. We would suggest that you reduce your riding for the time being to a minimum, and observe whether or not the neuritis disappears.

**Clanking Noise.**

**Q.** I have a 3½ h.p. single-geared machine which heats very quickly. When cold the engine starts quite well, but if I start when hot it develops a clanking noise until I get up a good speed, then it disappears again. The same thing occurs when I raise the exhaust lever or close air and throttle levers to run slowly. I have examined the connecting rod to see if there is any play in the bushes, but it seems all right.—N.

Provided all the bearings are in good condition and are without up and down play, the most likely cause of the clanking noise is as follows: Ignition too far advanced; the spark should be timed so that it occurs when the piston is on dead centre with the ignition lever about half advanced. Pre-ignition, due to excessive carbon deposit or a plug which has unsuitable electrodes, might be the cause.

**Valve Breaking.**

**Q.** Can you tell me whether there is anything in the method of driving motor cycles which is conducive to the breaking of valves?—W.H.U.

Driving all-out at high engine speeds tends to the breaking of valves, while careful driving well within the power of the machine has the opposite effect.

**Using Engine as Brake.**

**Q.** I wish to fit a magneto cut-out switch to my 2½ h.p. New Imperial-Jap motor cycle, because I believe the braking power of the compression is considerable. Is there anything against its use? Kindly mention method of wiring. Does a decompressor really fulfil all the functions that it is said to do?—E.C.

The compression does not really act as a brake at all; it has simply a cushioning effect. It requires a certain amount of resistance to overcome, but when overcome the spring back is equal to the previous resistance. As regards a cut-out switch. You may fit one of these by all means. All you have to do is to order from the makers of your magneto a contact breaker cover with a switch terminal fitted—that is to say, if there is not a switch terminal already fitted. The wiring is the simplest thing in the world. You simply take a low-tension wire from the switch to the terminal on the magneto. A decompressor is a device for reducing the compression in the cylinder. It certainly accomplishes this function, and assists starting with single-cylinder engines in particular.

In our issue of August 3rd, a reader, in paying testimony to I.P.C. belt grip, mentioned the old address of the firm. The correct address is the Increased Power Co., Ltd., 7, Southwark Street, London Bridge, S.E.

**RECOMMENDED ROUTES.****OXFORD TO NEWPORT.—B.C.**

Oxford, Eynsham, Witney, Northleach, Gloucester, Newnham, Lydney, Chepstow, Newport. Approximately 88 miles.

**HATFIELD TO BOGNOR.—H.**

Hatfield, St. Albans, Watford, Rickmansworth, Denham, Uxbridge, Colnbrook (just avoid), Staines, Chertsey, Ottershaw, Guildford, Godalming, Petworth, Bognor. Approximately 90 miles.

**PENZANCE TO BARNSTAPLE.—H.R.H.**

Penzance, Redruth, Mitchell, St. Columb, Wadebridge, Camelford, Stratton, Deptford, Bideford, Barnstaple.

**CARDIFF TO BIDEFORD.—H.V.M.**

Cardiff, Severn Tunnel Junction, by train to Pilning, Westbury, Clifton, Flax Bourton, Congresbury, Churchill, Cross, Highbridge, Bridgwater, Taunton, Milverton, Wiveliscombe, Bampton, South Molton, Barnstaple, Bideford. Approximately 130 miles.

**BOURNEMOUTH TO LONDON (avoiding Winchester).—J.R.**

Bournemouth, Christchurch, Lyndhurst, Totton, Southampton, Botley, Bishop's Waltham, Corhampton, Hedge Corner, Chawton, Alton, Farnham, Hog's Back, Guildford, Ripley, Esher, Kingston, London.

**BIRMINGHAM TO PWLLHELI.—A.C.N.**

Birmingham, Halesowen, Stourbridge, Bridgnorth, Morville, Much Wenlock, Cressage, Shrewsbury, West Felton, Whitechurch, Llangollen, Corwen, Pentre Voelas, Festiniog, Portmadoc, Criccieth, Pwllheli.

**BIRKENHEAD TO TORQUAY.—W.S.H.**

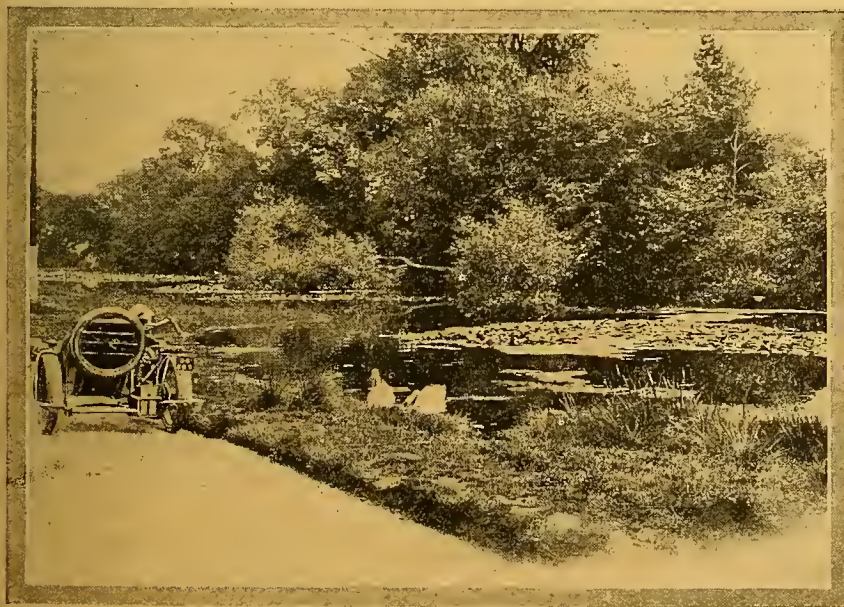
Birkenhead, Chester, Whitechurch, Hodnet, Wellington, Bridgnorth, Kidderminster, Worcester, Tewkesbury, Gloucester, Stroud, Bath, Beckington, Frome, Bruton, Ilchester, Ilminster, Honiton, Exeter, Chudleigh, Newton Abbot, Torquay.

**HARROGATE TO ILFRACOMBE.—T.H.**

Harrogate, Wetherby, Aberford, Ferrybridge, Doncaster, Worksop, Newark, follow Fossway through Leicester to Sharnford, Wolvey, Coventry, Warwick, Stratford-on-Avon, Broadway, Winchcombe, Cheltenham, Stroud, Nailsworth, Bath, Marksbury, Chewton Mendip, Wells, Glastonbury, Othry, Durston, Taunton, Milverton, Bampton, South Molton, Barnstaple, Ilfracombe.

**PICKERING TO KINGUSSIE.—J.S.R.**

Pickering, Helmsley, Thirsk, Northalerton, Darlington, Durham, Newcastle, Morpeth, Wooler, Coldstream, Greenlaw, Carfraemill Inn, Pathhead, Dalkeith, Edinburgh, Granton, by ferry to Burntisland, Cowdenbeath, Kinross, Perth, Dunkeld, Pitlochry, Blair Atholl, Dalwhinnie, Kingussie. Approximately 300 miles.



A peaceful scene by the pond on the Totteridge road between Wletstone and the Hale, Edgware.  
The trees seen in the background were levelled in the great blizzard of March last.





## A Motor Cyclist with General Smuts.

Some Experiences with a Light Armoured Motor Battery in German East Africa.

THE Editor has received a very interesting letter from one of the drivers in a Light Armoured Motor Battery, the men of which he enlisted, and which is now operating in German East Africa. His communication is appended, after being passed by the British Press Censor:

"I do not suppose that you can call me to memory among the thousands of your recruits, but as a guide I may say that I did some articles for you in 'civvy' life, 'Some Notes for Fast Tourists,' about a year ago, and used to belong to the M.M.V.C.

"At Bisley I used to drive the old box body Napier from September until January last, and then came out here driving one of the ammunition lorries for this armoured car battery. In turn I have driven Fords, was a scout on a Douglas, and then, as the other men went sick, eventually became driver on No. 3 armoured car, which I took up to Kondoa Irangi.

"I expect you are more interested in bicycles than cars, and so will try and keep off the hopelessness of the low built English cars as compared with the generous clearances of the Yanks and suchlike copy for your sister journal, *The Autocar*.

### Stripped Motor Cycles.

"Our battery tried to move up with the foot and horse in the rainy season, and naturally found the thick black mud its master. The front mudguards of the Douglases clogged up very quickly, and so were cut away at the bottom stays. Our scouts were practically allowed to do anything they liked to the machines, and so very soon they were stripped down à la Brooklands, because the fellows did not relish hauling unnecessary weight through the swamps. When the Napier ammunition lorry was abandoned on the side of the road the machine I took over had no front mudguard, the spares box and carrier were missing, back mudguard cut away at the saddle, all accessories except pump gone, as were front shield and stand, and the only tools and spares were in the pannier strapped to the lamp bracket.

"The drifts, often two feet deep and quite rapid, gave the scouts a lot of trouble. Those budding speed fiends who had removed the ends of their silencers were very often rather surprised to find that their less noisy companions rode through the shallower streams without

trouble, whereas their own engines dried up through choked exhaust gases.

### Where Colonial Experience Scores.

"It is interesting to note that two Australians who had come over to join the M.M.G.S. very quickly showed up when any rough riding or bad mud holes were met. Although generally sighing for big twin machines, they soon showed that very different tactics are necessary Overseas from those followed at home. We quickly found that the only way to get across a bad patch of thick mud is to rush it all out, and let the impetus carry the machine as far as it will. Then pick the bicycle up and walk with it (if possible) on to dry ground!

### "THE MOTOR CYCLE" AND THE SERVICES.

Mainly, no doubt, on account of the fact that "THE MOTOR CYCLE" has interested itself in motor cyclists joining one or other of the Services, we are regular recipients of communications from all the different war zones. We appreciate these accounts, written to us quite spontaneously, and know from experience that they are of absorbing interest to fellow riders in the Services or those engaged upon war work at home.

During the last few months experiences of motor cyclists in Mesopotamia, the Cameroons, Macedonia, India, Egypt, and German East Africa, not to speak of the fighting fronts nearer home, have appeared in these pages. Among the writers are airmen, lorry drivers, despatch riders, and men in one or other of the combatant sections.

We intend continuing to publish extracts from accounts of experiences received, in our Military pages, to maintain for "THE MOTOR CYCLE" its position as the Journal of the Services.

"When the roads dried they were just like a frozen ploughed field, and why the frames did not break I do not know. We had a lot of trouble with the footrests breaking. The fellows simply could not sit on the saddles over the dried up swamps, and had to use their bent legs as shock absorbers. You can judge what the roads were like when my car broke up three twin wire wheels in eighty miles!

### Motor Cycle Infantrymen.

"All the same, the 'Dugs' are wonderful little machines, and if the South African infantrymen stick to their word

Douglas Bros. should have a huge sale in South Africa when the war is over and normal times return.

"As I daresay you know, there are motor cyclists mounted on B.S.A.'s out here. They did a splendid run up across country in the dry weather to Kondoa. The men carry absolutely everything—arms, tent, bedding, and cooking outfits on the machines, and the way those B.S.A.'s are standing up to the rotten roads and the huge loads is a revelation to all. The only trouble is in the low magneto position and rather small ground clearance. The R.F.C. P. and M.'s are also plugging away very staunchly.

### Suggested Overseas Design.

"If I were designing a machine for Overseas I think I should have a 5-6 h.p. low compression twin, with magneto and silencer placed as on the countershaft Zeniths; a loop frame of very heavy gauge tubing, 28 x 3in. wheels, three-speed countershaft gear box, with belt-cum-chain drive, and plenty of clearance, both ground and mudguard. The latter could very well be flat or slightly domed shields 2 1/2in. from the tyre, and the clutch must be H.B.C.

"The South Africans are an awfully sporting set of men, and if only the English manufacturers had given them decent, polite attention, and studied their wants, there would be more money in Coventry and less in the U.S.A. Practically all of the younger men are hoping to buy motor cycles after the war, and, as I said before, the performances of the English machines out here have certainly impressed them very favourably. A good British spring frame machine would sell like hot cakes.

"Well, this is getting lengthy, but when in hospital, away from the boys and excitement, time hangs somewhat. I have had four attacks of malaria, and am convalescent up back at the base, Nairobi. I would give pounds for a few copies of your paper.

"W. MILES WEBSTER-THOMAS."

### A RECORD BREAKER IN FRANCE.

SYDNEY GEORGE, the well-known exponent of an Indian and holder of the record for the fastest speed on a motor bicycle on a British track, is now a despatch rider in the R.F.C. He is now mounted on a P. and M., and is now in France, where he has been for some time. The faithful machine he rides has carried him 30,000 miles, and he informs us he has never had the cylinder off. This, we should imagine, is another record to his credit, and to that of the machine he rides.

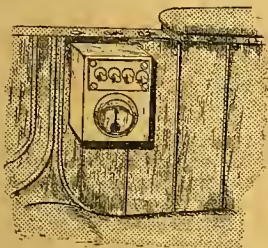


# Dynamo Lighting for Motor Cycles.

## C.A.V. DEVELOPMENTS.

AN after the war development of the motor cycle that is as certain as day following night will be the great popularity of electric lighting. We refer in particular to dynamo outfits, though it is admitted that there will always be a field for the storage battery equipment.

At the outbreak of war 75% of new cars were fitted with dynamo sets as



Location of switches inside sidecar (bicycle side) of C.A.V. dynamo lighting set.

standard, but as regards motor cycles the same stage had not been reached, and only a small percentage of the machines on the road were so equipped. However, one or two firms had standardised excellent sets for sidecar outfits, and since the war commenced other electrical firms have been experimenting likewise.

### Small Car Dynamo.

For instance, C. A. Vandervell and Co., Ltd., whose name is a household word in connection with electric equipment, have already made preparations for marketing a motor cycle dynamo set after the war. As a matter of fact, the firm are in a position to supply and fit at their Stanhope Street Works, Birmingham, a

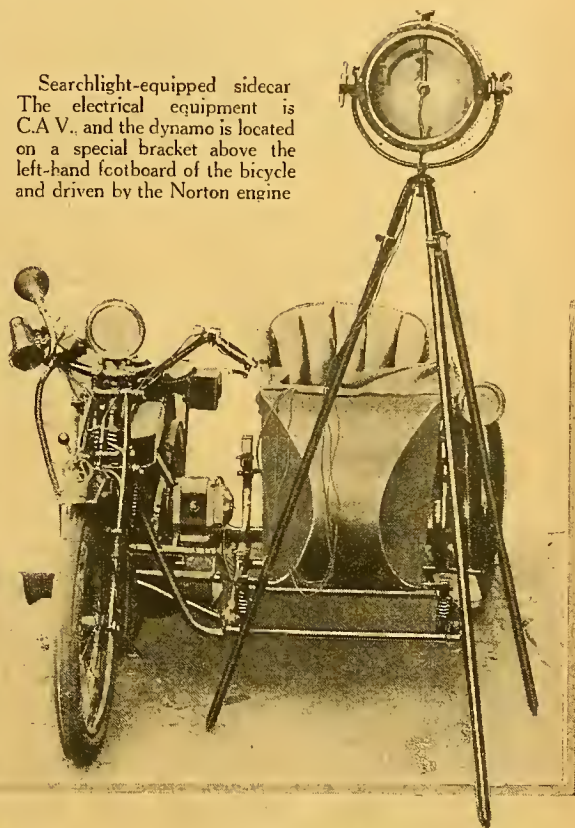
limited number of sets in which a C.A.V. model "D6" small car dynamo is used. It is adjusted to give a reduced output, and the set is a very satisfactory substitute.

Mr. D. Elyard Brown, of the C.A.V. Co., has his Norton sidecar equipped with one of these dynamos, and so far he has covered about 4,000 miles. With this particular outfit there is a bracket for the head lamp allowing of several different positions for the lamp. The latter is so fixed that the front is slightly behind the bars. The dynamo is fitted to a special bracket on the left of the bicycle, that is to say, between the bicycle and sidecar, and driven from the engine-shaft by a Whittle belt. A feature of the equipment is a small speedometer light, which has a shutter enabling the light to be directed exactly where it is wanted. The usual sidecar and tail lamps complete the equipment, not forgetting the batteries that are located in the sidecar.

### A New Searchlight.

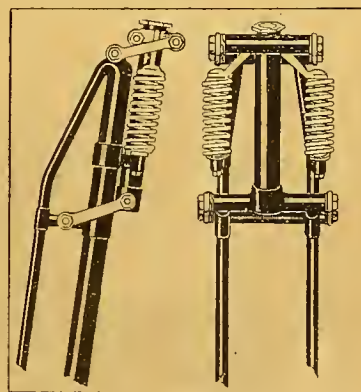
We also illustrate a C.A.V. searchlight. It is run from a dynamo, interchangeable, and identical in appearance with that shown fitted to the Norton, but specially wound to give the necessary output for starting and working the tungsten arc with which the searchlight is fitted, or alternatively charging a battery for a wireless installation, or working a heater circuit.

Searchlight-equipped sidecar. The electrical equipment is C.A.V., and the dynamo is located on a special bracket above the left-hand footboard of the bicycle and driven by the Norton engine



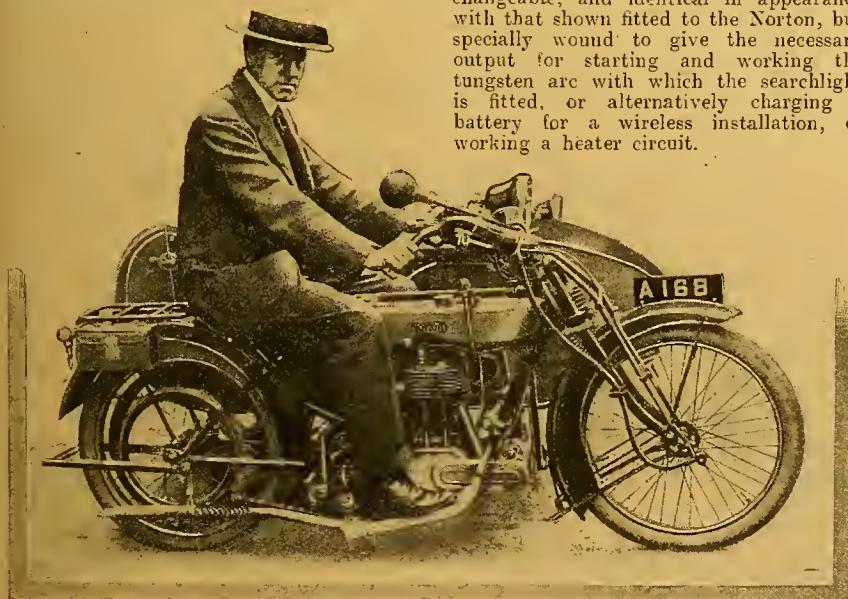
### EXPERIMENTAL DRUID FORKS.

THE Druid forks which we illustrate herewith differ from the more usual type only in the position of the springs. The attachment to the fork blades is the same as before, but the tops of the springs are fixed to a special



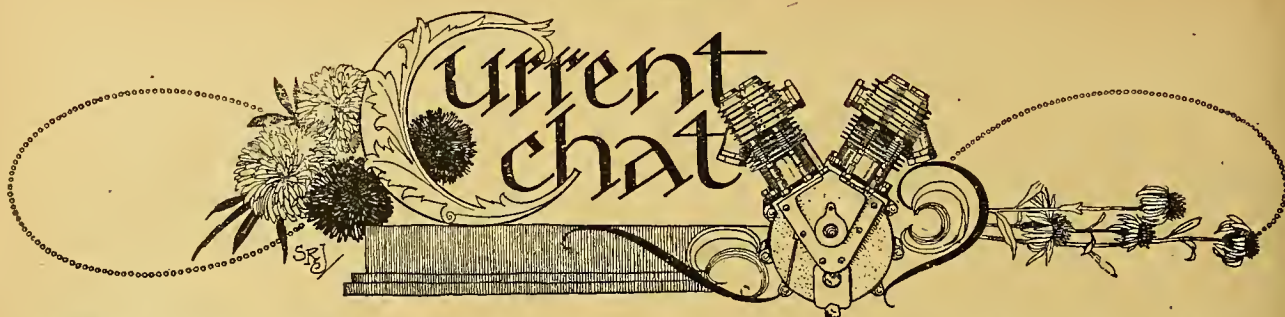
Latest pattern Druid fork, which is located above the links instead of below, as in previous models.

bracket which forms the top part of the steering head. A patent for this adaptation has been granted to the legal representatives of Arthur Drew (deceased), No. 11,006/1915.



Mr. D. Elyard Brown, a director of C. A. Vandervell and Co., Ltd., and his dynamo lighted Norton sidecar. Mr. Brown is one of the oldest members of the M.C.C.





## TIMES TO LIGHT LAMPS.

	"SUMMER" TIME.	
Aug. 24th .. ..	8.34 p.m.	
" 26th .. ..	8.30 "	
" 28th .. ..	8.26 "	
" 30th .. ..	8.22 "	

## Following the Panama Canal.

The Panama Isthmus has been crossed for the first time by two motor cyclists on a Harley-Davidson sidecar. Twenty-five miles of the trip had to be covered on the railway sleepers.

## Across Canada by Motor Cycle.

Runs by motor cyclists and car drivers across the United States from Atlantic to Pacific, and *vice versa*, are not at all uncommon. So far, however, a similar run across Canada has not been made, though it has been attempted by a motorist, who was finally compelled to use the railway. Now President F. A. O. Johnston, of the Canada Motor Cyclists' Association, suggests that a keen motor cyclist could make a name for himself by a run from ocean to ocean through the wide plains, roadless forests, and mountain ranges of the Dominion. The distance, roughly, is 4,000 miles

## Thermo-cooling.

A reader, who signs himself "Theorist," but points out that he is neither engineer nor mechanic, suggests that the cylinder of a motor cycle could be cooled by means of a vacuum jacket surrounding it on the principle of the Thermos flask. This is the first time that we have heard that a cylinder can be cooled by retaining the heat in it.

## No Petrol for Joy Chars-a-bancs.

In criticising the allocation of petrol to motor cyclists, we and our readers have drawn attention to the large numbers of chars-a-bancs throughout the country that are used for joy rides pure and simple, though the vehicles are classed as commercial vehicles. Consequently, we were not altogether sorry to see that official steps have been taken to forbid from September 1st the use of motor spirit in chars-a-bancs used for pleasure purposes. Chars-a-bancs used in connection with ambulance or hospital work, naval, military, and munition service, conveyance of munition workers to and from work, and services certified as being desirable in the interests of the travelling public will not be affected by the new regulations.

## SPECIAL FEATURES.

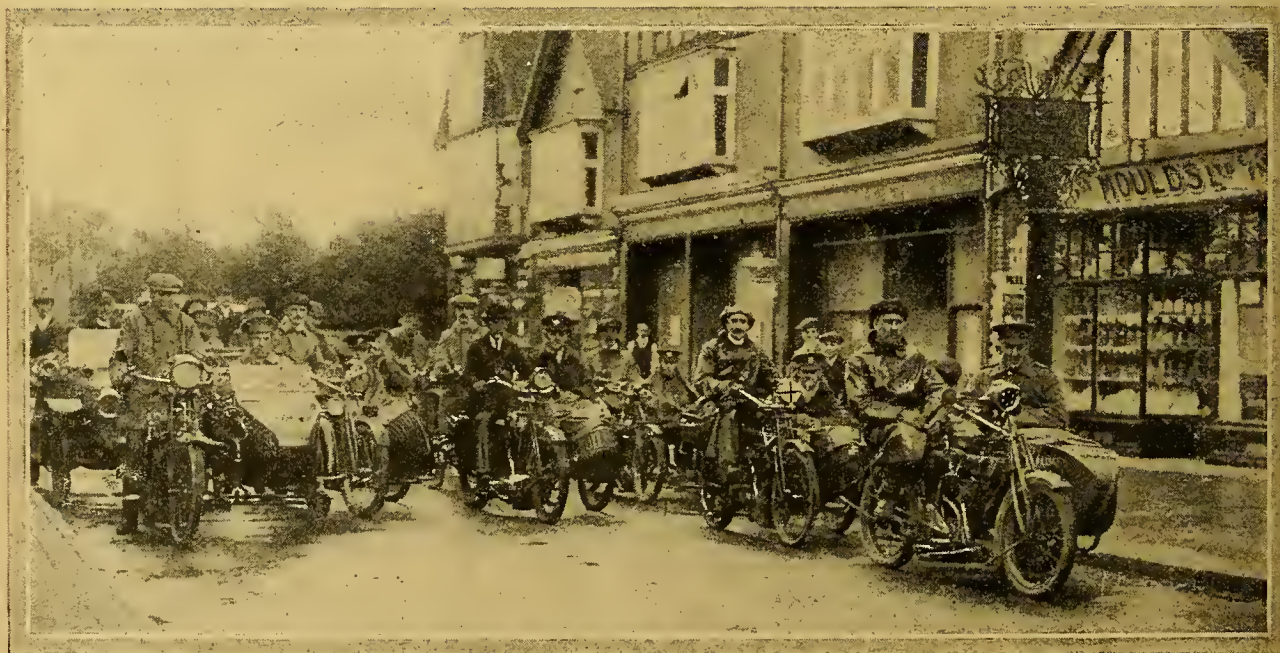
**A MOTOR CYCLIST WITH GENERAL SMUTS' HORSE-POWER TESTS (illus.).**  
**MY FIRST WEEK AS A MOTOR CYCLIST (illus.).**

## Petrol for Road Surveyors.

There does not appear to be much prospect at the moment of road surveyors who use motor cycles for business of receiving special consideration from the Petrol Control Committee. Mr. Harcourt announces that at present it has not been found practicable to make any special arrangements for such users, though chief constables have been informed that they will have plenty of petrol. If chief constables, why not county and road surveyors?

## Petrol Permits Again.

A correspondent writes: "Two cases I know of, both in the same business. One man runs a Ford van, motor cycle and sidecar, also stationary engine, all in connection with his business, and is allowed 78 gallons for three months, six gallons of it only for motor cycle. In the other case, which is a smaller business, the man runs only a Ford van, and is allowed 144 gallons for the three months."



REIGATE WOUNDED SOLDIERS SIDECAR RUN. (See next page.)  
 Some of the sidecars at Cobham.



**The Sgt. Hubbard Fund.**

Some little time ago we announced that a fund had been opened in aid of the widow and children of the late Sgt. Hubbard, R.E. Mr. A. W. Thrush, of Erdington, Birmingham, now informs us that he has collected the sum of £18 19s., which he has handed to Mrs. Hubbard, and for which she was very grateful. The sum was contributed as follows:

F. A. Newlands, M.P., £2; W. Egginton, £2 2s.; H. Reubin, £2; S. K. Jones, £1 13s.; A. W. Thrush, £1 5s.; A. E. Ansell, £1 1s.; Chas. Alder, £1 1s.; J. Rollason, £1 1s.; Alec Ross, 10s. 6d.; E. H. Bayliss, 10s. 6d.; N. Maxfield, 10s.; O. H. Wethered, 10s.; T. Coggins, 10s.; A. Butterfield, 10s.; H. Sharpe, 5s. 6d.; G. Jones, 5s.; C. Cadby, 5s.; C. Allerton, 5s.; H. Jones, 5s.; F. Whitworth, 5s.; V. C. Horrolo, 5s.; W. G. Jones, 5s.; E. A. Walter, 5s.; E. Johnson, 5s.; P. Beddoes, 2s. 6d.; F. Bowers, 2s. 6d.; C. Bowers, 5s.; S. A. Newman, 2s. 6d.; G. C. Knox, 2s. 6d.; S. Hall, 2s. 6d.; H. Lees, 2s. 6d.; S. Jones, 2s. 6d.; W. Lee, 1s.; H. Wimbush, 1s. Total, £18 19s.

**Still Plenty of Fuel.**

Hardly any appreciable difference is yet to be noted in the number of motor cyclists on the main roads in the vicinity of the large towns. It is only when a long run is made that the small number of motor vehicles of all kinds is observed. With the help of substitutes and private stocks of petrol, most riders are finding it possible to indulge in week-end runs, at least.

**Admiral Arbuthnot Trophy Fund.**

This fund has, since the last list was published in our issue of August 17th, been brought up to the total of £106 13s. by the following subscriptions:

Messrs. Douglas Bros. . . . .	£5	5	0
F. G. Short, Esq. . . . .	5	5	0
Zenith Motors, Ltd. . . . .	2	2	0
Lt. C. B. Barry . . . . .	1	1	0
H. A. Howse, Esq. . . . .	2	6	

**More Summonses for Movable Lamps in Buckinghamshire.**

We continue to hear of cases of convictions of motor cyclists under the Defence of the Realm Act for using motor cycles fitted with swivelling or movable lamps. Apparently it makes no difference whether the rider is stopped in the daytime or at night; in fact, all the cases we have heard of the rider has been stopped in daylight. The fines have ranged from 10s to £2 and the lamp confiscated. Both these cases were in the same court, the higher fine being in the case of a War Office machine. It is interesting to note that practically all War Office machines that have been turned out are equipped with Lucas King of the Road head lamps, and which are capable of movement independent of the machine. This regulation is a most absurd one when seriously considered, for what is easier, should a motor cyclist wish to signal, then to remove the lamp bodily from the machine, which, in the case of a back socket lamp, only entails the loosening of one nut, and flashing the lamp about in his hands to his heart's content? This would really be much easier than moving a lamp fixed on a swivel on the machine.

**Still they come.**

Four further petrol substitutes recently introduced are Force, Arbeco, Relico, and Lightning. This brings the number of substitutes to sixteen, so that, with paraffin, motor cyclists need not seriously curtail their riding. The *Daily Mail* might note this fact, and allow war workers to enjoy peacefully what little recreation they get.

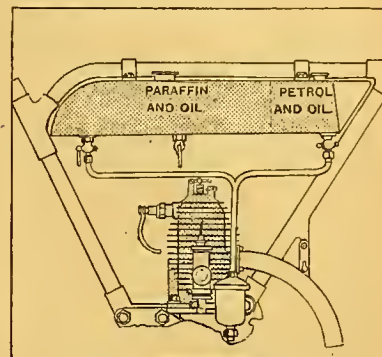
**The National War Funds.**

At the week-end the principal relief funds stood as follow:

The Prince of Wales's National Relief Fund (£3,443,250 distributed) . . . . .	£5,943,295	0	0
British Red Cross Fund . . . . .	4,193,008	0	0
Tobacco Fund . . . . .	112,430	3	4
The Kitchener National Memorial Fund . . . . .	237,500	0	0

**Paraffin with a Two-stroke.**

The Villiers Engineering Co. recommend riders of two-stroke engines, who wish to run on paraffin, to fill their main tanks with this fuel, combined with the usual proportion (one to sixteen) of oil, and to put petrol and a little oil into the



Using paraffin in a Villiers engine.

oil tank. Both tanks are then connected with the carburettor, and the procedure is now as usual, viz., start on petrol, when the engine is warm turn on the paraffin, before stopping turn off the paraffin, and turn on the petrol again to ensure an easy start next time.

**The Boys at the "Wisley Hut."**

Some forty wounded soldiers from two of the local Red Cross hospitals were taken recently by the Reigate tradesmen in sidecars representing almost every well-known make, with a sprinkling of cars. All went away in good style at 2.30 in the afternoon, and after a delightful run through the most picturesque of Surrey scenery the party arrived at the famous "Hut," situated in its glorious and health-giving surroundings of pine woods. Here the boys certainly enjoyed themselves, at once taking to the boats which the worthy proprietor of the Hut, Mr. Pullen, placed at their disposal. A muster of seventy odd sat down to tea. All proclaimed the run "great," and hoped that it was but the forerunner of many more expeditions of the same kind.

**Paraffin in the Cold.**

When the necessity for using some other fuel than petrol first arose the weather was hot, and many were the enthusiastic experimenters with vaporisers and heavy fuels, and wonderful were the results. "Absolutely no difference from petrol," and so on, were the remarks, but we fear that as the cold weather comes on the disappointments will be many. We made a run in the cold early hours recently, using pure paraffin. The result was power non-existent, and misfiring the order of the day.

**Proposed Outing for Wounded Soldiers and Sailors.**

No outing has yet been arranged for the wounded at West Ham Hospital. All readers who are able to co-operate in such an undertaking are asked, therefore, to communicate at once with Mr. Stephen S. Crouch, 140, Belgrave Road, Wanstead. If sufficient support is forthcoming, a committee will be formed and the necessary arrangements made.

**YET ANOTHER MOTOR CYCLIST AIRMAN.**

Lieut. I. B. Hart-Davies, R.F.C., who, in spite of his age—he is 39 next birthday—obtained his "wings" last week. He is doubtless one of the oldest pilots to obtain their "wings" during the war. Only a few readers will need reminding that Hart-Davies is an ardent motor cyclist, and holder of the End-to-end record on both motor cycle and light car. It will be noted that he is still faithful to the Triumph, on which make he made one of his End-to-end records.



# THE LIGHTWEIGHT MACHINE FOR THE COMMERCIAL TRAVELLER.



**T**WELVE months ago I came to the conclusion that there was a lot of good prospective business which I could not profitably reach by train. Not many commercials can afford half a day to make one or two calls, and there are many villages which cannot be reached in less time. When the war broke out my business looked like suffering, and I felt that it was time to make some effort to extend it, and a motor cycle seemed to be the best means to this end. I went carefully into the whole matter, and mapped out a series of weekly tours, yielding from fifty to eighty prospects per week. Though never previously of a mechanical turn of mind, I "read up," and sought the acquaintance of motor cyclists. My available cash was about £40, and, being a novice, I felt it expedient to buy a new machine rather than a second-hand one. So that I was limited to the choice of a lightweight, and eventually decided on the O.K. Junior, 2 h.p. And, diverting a moment from my subject, I should just like to say here that the O.K. has given me splendid service so far, and carried me—and my ugly but necessary luggage—up some fearful hills. I have only ridden eight miles in a train during the last six weeks, but have averaged 250 miles per week on the bicycle during that period, and, moreover, I have made 24% more calls than I set out to do, for I found time to branch off my main route first on my left and then to another village on my right.

## • My Itinerary.

Perhaps the districts worked will interest other commercials thinking of buying a motor cycle for business purposes only. One week's tour takes me (from Birmingham) through Coventry to Rugby, Market Harborough, Kettering (for Monday night); Tuesday I spend in the Northants villages between Kettering and St. Neots (Hunts.); Wednesday between St. Neots and Bedford; Thursday to Bucks County (overnight at Stony Stratford), and then working home to Birmingham on the Friday—292 miles in all. Another week I go round part of Shropshire, making about seventy calls between Bridgnorth, Ludlow, Shrewsbury,

Oswestry, Wellington, and home—about 250 miles. Another week is spent in some of the Worcester villages between Birmingham and the Malverns, then on to Ledbury and Gloucester. From Gloucester I go on to the Forest of Dean for three days, and find some terrible roads and hills for the little O.K. Those who know this district will agree that, after rain, these Forest roads are a very severe test for non-skid tyres, and, incidentally, have given me much confidence in the security of my carrier box. The climb—and "road"—from Lydbrook, past Joys Green, to Ruardean Hill is, I think, about the toughest proposition I have tackled so far. And it is not easy running

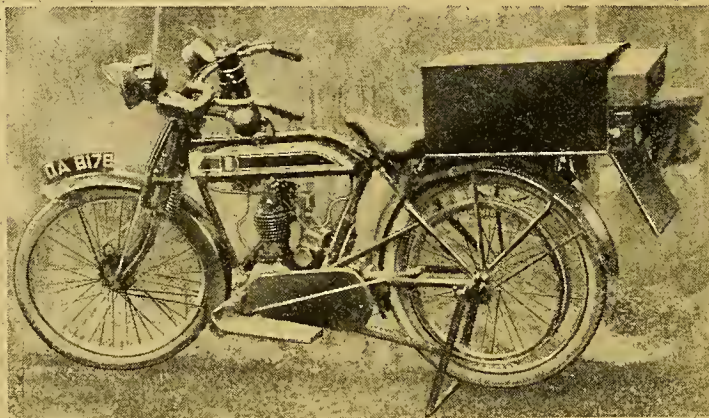
from Cinderford to Coleford. Then I have a week's work in the more scattered villages of North Staffordshire and the borders of Derbyshire, including Ashbourne, and three weeks' work in the Monmouth valleys.

At the outset I was up against the difficulty of carrying my bags—a business and a spare. I did not like the idea of strapping these things to the carrier (which would have meant leaving part of my stuff so

strapped whilst making calls). So I had a tin box built as a temporary fixture, 20in. x 12in. x 10in. high, and securely bolted to the carrier. The box is fitted with lock and key, and takes my two bags and a light rain-proof coat for evening wear. The photograph will give a good idea of the box, the bags being partly drawn out, of course. My coat folds over the top bag, thus making a tight fit, so that there is no movement whatever when on the road, and no shifting of weight. And I so arrange my stuff in the bags that the heavier stuff is near the saddle, and consequently little weight overhanging. I have had the carrier strengthened, and a supporting strap is used as a precaution against a possible fracture.

## Better than a Train.

As my calls are almost entirely "country" calls, I have found no difficulty in finding a place to leave my machine for half an hour or so whilst doing my business, and the locked box has so far secured me against petty pilfering.



A COMMERCIAL TRAVELLER'S LIGHTWEIGHT.

The machine is a 2 h.p. O.K. Junior, with chain-cum-belt transmission.  
Note the spacious case on the carrier.



**The Lightweight Machine for the Commercial Traveller.—**

Nine out of ten commercials "pass" a lot of good prospective business when they buy an 8s. 4d. railway ticket. The motor cycle costs less, and it certainly enables me to touch prospects I could not otherwise reach. And I am sure, at any rate during the spring and summer, one feels far better and more fit for work after three hours in the saddle than one does after such a period of train travelling.

The undesirable but necessary box which I have to carry, and the diminutive appearance of the engine on the O.K. Junior, have created much interest in business and "trade" circles, and I am frequently asked whether the weight I carry does not cause me to skid badly. I may have been fortunate, but I have never yet skidded when carrying the box aboard—though

twice when without it. I suppose this fact is against theory, but there it is, and, though anything but an expert rider, I have been over some bad roads, including the ride through Warrington and Wigan to Blackpool, and the greasy forest roads before mentioned.

In conclusion I can very strongly recommend any commercial traveller, say under fifty years of age, who may be anxious to open up new business, to try one of the reliable lightweights now offered. Let him approach the agents and tell them the purpose for which he desires the machine, have the carrier strengthened, be sure of good brakes and tyres, carry a few spares, and "Tracing Troubles." I feel confident the outlay could, in hundreds of cases, be made commercially profitable, and enjoyable too, as in my case.  
H.L.

## The 1916 2 $\frac{3}{4}$ h.p. Spring Frame Douglas.

### A FAST AND COMFORTABLE MACHINE.

I AM at present riding a sample of the latest 2 $\frac{3}{4}$  h.p. spring frame Douglas, which is a revelation in luxurious road travel. The type of springing should be familiar to readers from previous illustrations in *The Motor Cycle*. Long inverted semi-elliptics are pivoted centrally on the main frame; their fore ends are attached to brackets fixed to the middle rail of the frame under the tank, and the hinged rear frame rides on their tips. They allow plenty of movement, and the progress over really bad roads is devoid of shocks. Under moderate jars the rear frame rises and falls without the rider being conscious of its motion; under severe shocks the blows are eased, and the rider is conscious of a much gentler swaying than the average first-class front fork conveys.

In other respects the machine evinces mere detail improvements. The engine efficiency is higher than ever, and the speed, especially on hills, is astonishingly good. Starting is always easy with horizontal twins, and the wee Douglas, being a small engine for this pattern, is possibly the easiest starter on the market. It will start from stone cold at the first depression of the kick-starter, provided the air intake of the carburettor is covered; and it can always be paddled off in a yard or so on second gear when once warm. The bearings of the front fork links and of the rear spindle of the back frame springs are wisely equipped with screw greasers, and should wear much better than those patterns which are left to the mercy of oil helmets.

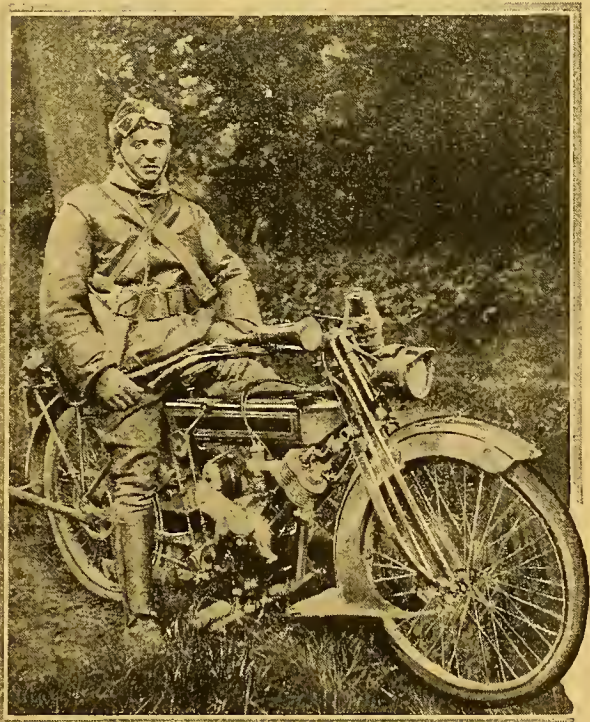
The detail work throughout is of good design and construction. The toolkit is designed and made specially for the machine, not ordered by the thousand from a tool maker without reference to the needs of the nuts and other parts requiring attention occasionally.

#### High Saddle Position.

The sole criticism I should offer is that the saddle is unduly high from the ground line (about 32in.). This high position has evidently been adopted as part of the spring frame design, and certainly affords a very comfortable upright position, without tending to make the rider hunch his shoulders. But the low

position is generally popular nowadays, and a rear-sprung machine of another make, with very similar rear-springing, shows a saddle height of no more than 26in. This low seat may tend towards round shoulders, but it is infinitely preferable when one stops, or is paddling the machine about. I should really advise the firm to drop the saddle 4in. or so for next season, and then they will have a mount possessing extreme comfort and all the handiness and controllability of the standard "Duggie."

ROAD RIDER.



Sidney George, a despatch rider in the R.F.C., mounted on a P. and M. This essentially touring mount is somewhat of a contrast to the monster eight-valve Indian on which he attained the remarkable speed of 93 m.p.h. at Brooklands. (See page 160.)



# "THE MOTOR CYCLE" RECRUITING SECTION.

M.M.G.S. Closed for the Time Being.

A GROUP of recruits attended at the Recruiting Office, Coventry, on Tuesday of last week for examination and enlistment into the Motor Machine Gun Service. The names of those motor cyclists and car drivers accepted are given below:

Ruckle, J. F., Stroud.  
Bullivant, G., Offchurch, Redditch.  
Butterfield, H., Barrowford, Lancs.  
Dowse, G., Osbournby, Lancs.  
Evans, C., Bradford.  
Ford, G. H., Tamworth.  
Foster, C. G., Norwich.  
Hewson, A. W., Coventry.  
Parkes, H. E., Oakengates.  
Sedgwick, E., Barrow-in-Furness.  
Sparkes, S. W., Coventry.  
Taylor, F., Coventry.  
William, E., Didsbury, Manchester.

Appointments with other candidates had been arranged for yesterday (Wednesday) at the offices of Messrs. Hiffe and Sons Ltd., Century Buildings, 199, Deansgate, Manchester, and on Tuesday next Mr. Geoffrey Smith will attend at the Recruiting Office, Coventry, at 2.30 p.m., in order to examine and accept suitable

Central Office for Motor Machine Gun  
Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

applicants. Only a limited number of men can be accepted at the latter inspection, as recruiting for this section has been closed. No men should attend unless they have received railway warrants. As soon as recruiting is re-opened notification will be made in this column.

Full particulars of enlistment and a form for filling-in purposes may be obtained on application, whilst the conditions of enlistment are mentioned on this page.

A free railway warrant will be issued to prospective recruits living at a distance if the applicant will previously get examined before the Medical Board for

his district and mention his class when applying.

The amended conditions of enlistment in the Motor Machine Gun Service are given hereunder:

EXPERIENCE.—At least one year's motor cycle or car driving experience.

AGE.—18 to 40.

ENLISTMENT.—For duration of the war.

MEDICALLY FIT.—For general service or for garrison duty abroad.

PAY.—1s. 2½d. per day, all found; the usual separation or dependants' allowance.

Among the candidates who presented themselves for enlistment at the Recruiting Office, Coventry, on Tuesday of last week, was a youth who produced his birth certificate showing him to be eighteen years of age that day, whilst another enthusiastic youth, who had travelled from Ulverston, had to be refused enlistment on account of age, which was given as 18½, but which proved to be 17½.

## MILITARY NOTES.

### QUITE A VETERAN!

THE man whose illustration accompanies this paragraph has had a varied experience since he joined the Army in the early part of October, 1914. L.-Cpl. H. Sargeant, the rider in question, is well known in Wimbledon motor cycling circles, and had been riding for eight years when war broke out. He found himself in France in the month



Lance-Cpl. H. Sargeant, who joined the Army in October, 1914, and has had a most varied experience since.

following that in which he joined, and he was attached to a field ambulance, riding a Douglas, for twelve months. Then he was transferred to a siege battery as despatch rider, his mount being a Triumph. After several months he was again transferred, and he is now driving a 3 ton lorry, but he says that he much prefers motor cycling.

### CANADIANS SIDECAR OUTING.

THE popularity of sidecar outings for convalescent soldiers has spread to Canada, and we hear that a Toronto agency has arranged an outing for men sent home from the firing line.

### A SIDECAR BUILT IN THE WAR ZONE.

SOME few months ago we illustrated two motor cycles that had been assembled behind the firing line in France. Now, through the courtesy of Art.-Cpl. P. J. Egerton, R.E., we are enabled to give some particulars and an illustration of a sidecar built by himself under similar conditions. The difficulties encountered must be experienced to be believed, and great ingenuity was displayed by Egerton.

The chassis was made from channel iron with the aid of a blacksmith's forge, and the body framework was sawn from a 6in. x 4in. beech plank. The hoops were made in sections and screwed together, a hack saw being found very useful for cutting out the sections. The body framework was then covered with sheet zinc, the only metal obtainable at the time. For the springing Egerton managed to secure a couple of Clyno C springs, which he attached to the rear, and hinged the front to give the necessary movement. The sidecar was then attached to a Triumph, and the outfit, we are informed, has been running daily for three months without giving trouble.

### MR. SCOTT'S BROTHER KILLED.

IT is with very sincere regret we learn that Lt.-Col. C. E. Scott, late commander of the 1st/6th West Yorkshire Territorials, and formerly director of the Scott Engineering Co., Ltd., succumbed a few days ago to wounds in the arms and thigh. Three weeks ago we mentioned in these columns that Col. Scott had been wounded, but the serious nature of his injuries was not at the time realised. Col. Scott died at Camier Hospital, his wife being present, and we tender our sincerest sympathies to her and Mr. Alfred Scott, the well-known inventor, in their loss.

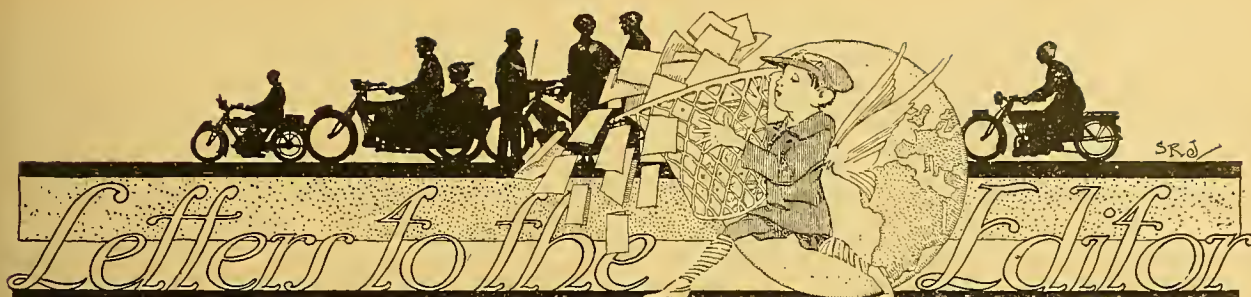


SIDECAR BUILT BY A SOLDIER IN FRANCE

(See paragraph on this page.)

Names: Standing, Cpls. Davis and Kelly, and Sgt. Moon; Cpl. Chamberlain on carrier, Cpl. Powell in sidecar, and Art.-Cpl. Egerton builder of the body, in the saddle.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

### An Appeal.

Sir,—Being a prisoner of war, a keen motor cyclist, and a constant reader of your valuable paper, I shall be pleased if you will let me appeal to your home readers for any small gift of cigarettes or eatables. Any small parcel would be very gratefully accepted by a gravel-crushing Territorial.

PHILIP T. ELLIS (CPL.)

Gefangenenlager, Dülmen i. Westf., Germany.

### Three or Four Wheels.

Sir,—Mr. Scott in his reply to Mr. Burnard writes, "hitherto the man wanting comfort and cleanliness has had no other alternative" than the four-wheeler. He ignores apparently the A.C. and the Morgan, which have, I venture to think, already accomplished what he hopes to achieve. But I welcome the coming of the Scott with interest, not at all with apprehension, and hope to meet it in friendly rivalry in competitions after the war. It is a further proof that the three-wheeler, which the Morgan has done something to popularise, is coming into its own. A correspondent in your contemporary *The Light Car* remarked that the A.C. and the Morgan had not received the flattery of imitation by other makers. As regards the Morgan, I may point out that several important points, to which the success of the Morgan is largely due, cannot be imitated. They are covered by patents.

H. G. MORGAN.

### A Home Made Turnout.

Sir,—I think the accompanying illustrations would interest many readers.

The sidecar, excepting a portion of the sidecar chassis, I made three years ago, and it has proved very successful, is very comfortable, strong, and weatherproof, is made with sheet metal, and has carried two persons on many occasions. The motor was redesigned and built since November last. The engine is a 1910  $3\frac{1}{2}$  h.p. two-stroke P.M.C. I bought this engine in 1910, but have not used it until this year. I have made a few alterations to it. Gear, four-speed Jardine. Carburetter, Binks, latest three-jet. Saxon forks. Stewart speedometer. Special guards. Large footboards, cork studded. Bowden control. Spring seat.

It is clean and comfortable to drive. The top gear is  $3\frac{1}{2}$  to 1, and it will climb any hill I have yet met with full

load. I cannot say what speed it will do, but have done just over 30 m.p.h. without forcing it all out. I have been getting 45 to 50 m.p.g., but hope to improve upon this.

W. H. MUSKETT.

### The Silver Paraffin Vaporiser.

Sir,—May we reply to Mr. A. Durant's letter in your issue of August 17th? This gentleman makes an emphatic statement contradicting Mr. T. Silver's claim.

If Mr. Durant will refer to some of the articles already published on this vaporiser he will note it is distinctly stated that this vaporiser was used in 1903, and made prior to that date. It is probable Mr. Durant was not connected with the motor trade at that time.

Therefore, until we hear of another claim previous to 1903, we must still adhere to our statement, i.e., that Mr. Silver was the originator of the vaporiser.

We would like to remind Mr. Durant that the vaporiser is protected.

QUADRANT MOTOR CO.

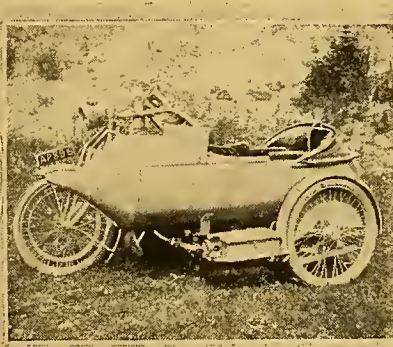
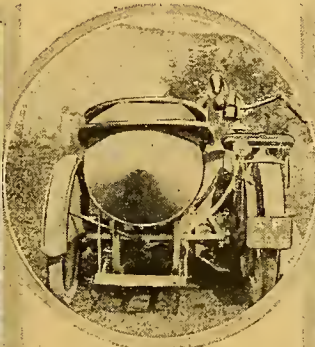
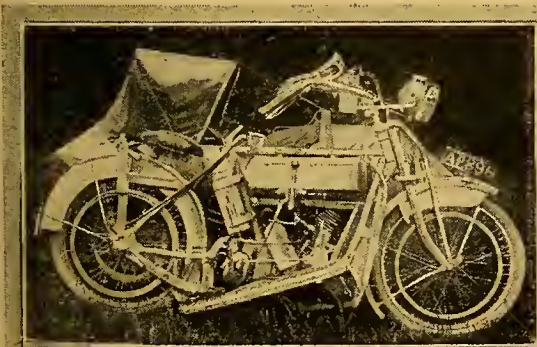
### Petrol 5/6 a Gallon?

Sir,—Like other motor cyclists, I am allowed two gallons of petrol per month. How am I to be certain that the tin with which I am supplied contains that amount? I have just weighed one tin of petrol (seal unbroken) against another and find a difference of between 7 lb. and  $7\frac{1}{2}$  lb. The fullest cannot be more than full, and, presumably, the tins are not made to contain more than two gallons. What amount of petrol does the lightest tin contain?

Can you tell me what a tin containing two gallons ought to weigh? I am a clergyman, with a large and scattered country parish, and my work involves a mileage of not less than 300 miles per month. I cannot under the present arrangement pay the same number of visits to the sick and poor, though rich neighbours may use six times the amount of petrol for pleasure rides. But at least let me be sure that I do get my two gallons.

A.J.W.

[A gallon of petrol weighs about  $7\frac{1}{2}$  lb., therefore one of the tins cannot be much more than half full. A full tin should weigh about 18 lb. This is by no means the first complaint of this kind that we have received. We should advise our readers to weigh the tins before accepting them where this is possible.—Ed.]

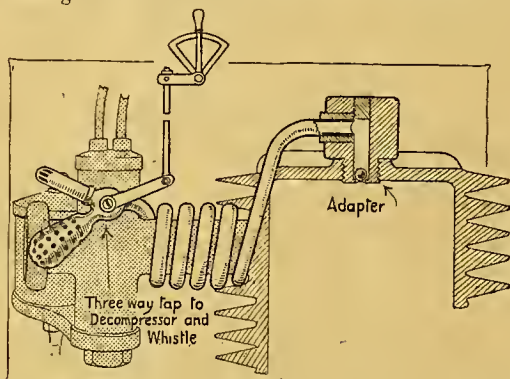


Sidecar outfit built by our correspondent, W. H. Musket



### A Combined Vaporiser and Whistle.

Sir,—I send you a sketch of an invention with which I have been running my motor cycle for some time past with very great success and also with the utmost economy. The drawing, which I have sent to the Patent Office for protection, is self-explanatory. I consider it to be an ideal and simple combination, suitable for any machine, and one which will prove to be a great boon to motorists during the coming winter.



A combined whistle, decompressor, and vaporiser. (See letter from E. Rowland.)

Taking it in the first place as a vaporiser, it is most effective. By simply opening the decompressor an easy start is assured, and a good blast of hot air is forced round the carburettor, thus warming up in a few seconds; then while running, the decompressor is closed, the air in the pipe being kept warm without any escape of gas, and the increased area of the chamber (owing to the pipe being part of it) prevents knocking and reduces any tendency to over-heating.

I believe this to be the only vaporiser that can be regulated whilst running, whilst as a syren or whistle it is a terror, and this again can be regulated from a mild to a hair-raising alarm, and it can be fitted to almost any machine with ease.

E. ROWLAND.

### Sidecars and Cycle Cars.

Sir,—I am much interested in the controversy of the passenger motor cycle problem, now raging in your most excellent journal.

I should be glad if a few remarks by myself would be acceptable. In the first place, why is Mr. Scott, that well-known talented designer, giving us a resurrection of the sidecar? Mr. Scott is, I should say, a far-seeing business man, who knows that the cycle car will come into its own by sheer merit, and the sidecar will be a relic of the past. Now, no one can possibly admit that the sidecar is mechanically correct, although as a passenger-carrying machine it answers well. But, beyond this, there is a public desire, and rightly so, that a machine may be evolved having the virtues of the sidecar combination without its defects.

The question then arises, what form must this vehicle

take? Now the point is there are three factors to be considered—efficiency, cheapness, and appearance. It must be admitted that cheapness is generally associated with inefficiency and nastiness; but cheapness should be associated with simpleness. Now we have the clue: cut away all your unnecessary complications, design your machine to be efficient, give a kind regard to the appearance, and you have the ideal cycle car.

Personally, I claim to have designed, built, and tested for a mileage of 12,000 a machine built on real cycle car lines, not a machine composed of scrap parts of small cars. The sense of security, the accessibility of working parts, and the simpleness of construction are a revelation. Is there a sidecar combination to-day whose owner does not covet the genuine cycle car, and long for the day when he may easily possess such a machine? That such a demand does exist is evident by the number of letters and enquiries I have received.

At the moment I await the opportunity of a large manufacturer who can prepare and place on the market in large numbers this ideal machine, which can easily be retailed at £75.

GEO. HADDEN.

### The Boycott of German Goods.

Sir,—It is with extreme regret that I find that *The Motor Cycle* is supporting the idea of a trade war with Germany after the present blood war shall have ceased—a support which puts "Britisher" in such high feather. Is it not enough that muddling diplomacy on both sides should have brought all Europe into the catastrophe of blood and murder? Are we, the inhabitants, and, *ipso facto*, the sufferers, going to show that even democracy is just as muddleheaded as its diplomatists, in that we are calling for a continuation of the hatred on "business lines"?

Have we forgotten that we entered the war for the purpose of defending the neutrality of Belgium, and that no ulterior motive, apart from any diplomatic arrangements to help France "in certain eventualities," moved us to take the unfortunate step?

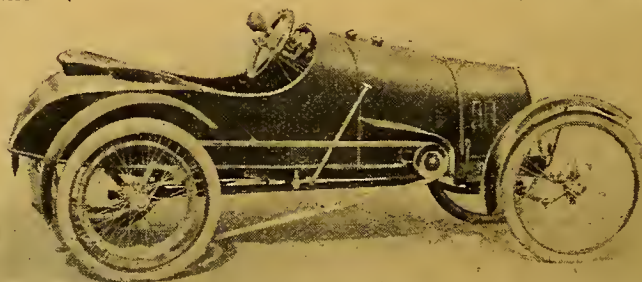
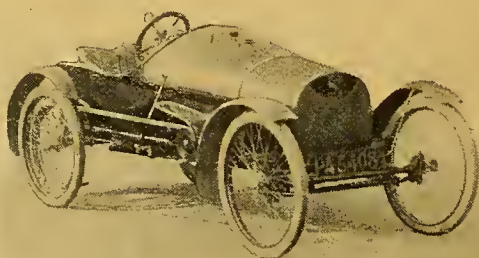
"Britisher" says we "must shut out German competition," and if we do, what then? Are not all advances in arts, sciences, or engineering brought about by a comparison? How then shall we compare our motors with German motors, and show the superiority of ours if we are to shut them out?

I take it that we all want the war to end; but are you helping the end to come by announcing the fact that you are determined to crush Germany now and after the war? You at once, by such action, give Germany the justification for saying that the war, as far as she is concerned, is a war of defence!

"Britisher" says that the "spirit of German Kultur" must be crushed, and I agree with him; but does "Britisher" imagine that he is going to accomplish that object by so stifling Germany that she is unable to rise from the baseness of that kultur by reason of the fact that she is not allowed to rise even commercially?

Suppose you do crush German trade in this country and elsewhere, will it be to the credit of Great Britain that we have crushed it by force of arms and political trickery rather than by sheer merit? Let "Britisher" reconsider, and see if he cannot propound some better means of helping Germany to rid herself of the shibboleth of "Kultur."

H. PRITCHARD.



G. Hadden's four-wheeled two-seater. The specification includes a 654 c.c. twin air-cooled J.A.P. engine, transmission by chain and belt, and a two-speed gear *a la* Ford. The weight, we are told, is only 3½ cwt., and the average consumption 75 m.p.g. (See letter on this page.)



## You don't mind

doing without the Sturme-y-Archer Gear now because you know it is on national service.

And when the "big job" is over it will reward you for your waiting.

Our designers have been busy, and the after-the-war

**STURMEY ARCHER**  
COUNTERSHAFT GEAR

will make its rivals "sit up," as the during-the-war gear is making enemies "sit up" to-day.

STURMEY-  
ARCHER  
GEARS, LTD  
NOTTINGHAM



## I SUBMIT there

is a solid reason why you should adopt a **BINKS CARBURETTER, viz.: YOU CUT YOUR FUEL BILL IN TWO**

if you adopt my system and use my fuel. You can, of course, use petrol or benzol without alteration.

Price of  
Carburetter  
complete—

**49/-**

plus 10% extra  
war cost.

**FIT ANY  
MACHINE.**

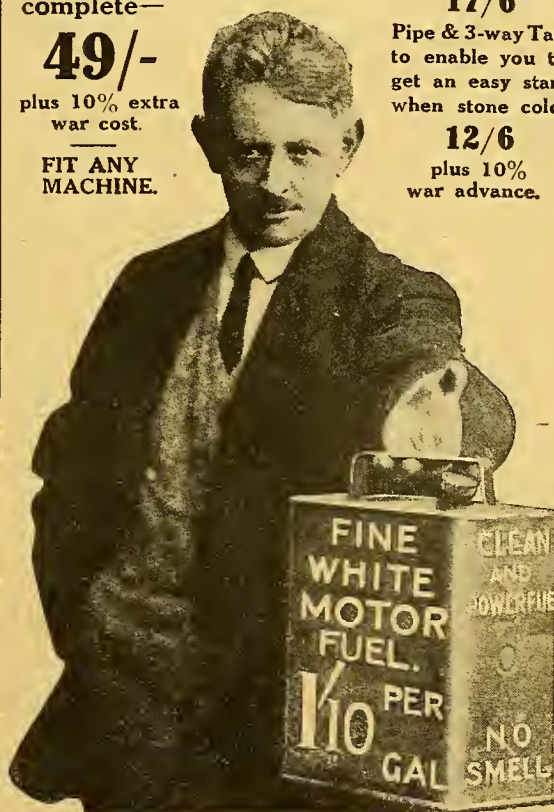
Small extra Tank  
to clip on Frame,

**17/6**

Pipe & 3-way Tap  
to enable you to  
get an easy start  
when stone cold,

**12/6**

plus 10%  
war advance.



## READ!

### MY 3-PHASE JET DAMPING CARBURETTERS

have such perfect vapourising properties that they enable you to use fuel at **1/10** per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at **2/9** a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

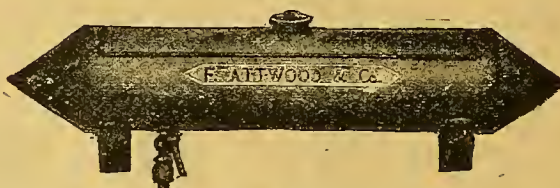
**C. BINKS, Ltd., Eccles.**



# YES-You can run on Paraffin. BUT-You want OUR SPECIAL OUTFIT.

(PROV. PROTECTED.)

Tank, Bands to fit  
all size Top Tubes,  
Filler, Tap and  
Union,



Special Brass Piece  
for connecting  
Tubing, 3 feet of  
Copper Tube.

Price, complete, 15s. 6d. Cash with order.

Or with Torpedo Tank and Superior Fittings, as above, £1 1 0

Cash with  
order.

EST.  
1876.

## ATTWOOD'S TANK WORKS,

86, Rosebery Avenue, LONDON, E.C.

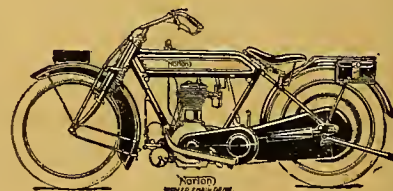
'Phone:  
12445  
Central.

EASILY FITTED TO ANY MACHINE.

PAYS FOR ITSELF IN 500 MILES.

### Extract from "THE MOTOR CYCLE TRADER," Aug. 4/16.

**WHAT A NORTON WILL STAND.**—A Norton "Big Four" machine, with De Luxe pattern sidecar attached, was recently employed for conveying **two heavy passengers**, in addition to the **driver**, four full cans of petrol and some luggage, a distance of nearly twenty miles, including the traversing of some of the worst streets in Birmingham from the traffic point of view. The sidecar passenger weighed  $11\frac{1}{2}$  stone, and the occupant of the carrier seat 14 stone, the driver turning the scale at  $10\frac{1}{2}$  stone, or **37 stone in all**. The petrol cans with their full complement of spirit would add something considerable to the weight, and the combination empty must weigh very nearly, if not more than, 400 lb. There was also a full tool kit and some heavy overalls, etc., in the "boot." The total weight resting on the three wheels would certainly run very close to **1,000 lb.**, and with this the **single-cylinder engine of 650 c.c.** simply played with the Bull Ring Hill in middle gear, and afterwards negotiated some quite long and trying grades without having to come down from top. The power of this engine is unquestionably very high.



## HOLDS 21 WORLD'S RECORDS.

# BARTLETT'S

Are Sole London and  
District Agents for—

## THE PREMIER BRITISH-BUILT MOTOR CYCLE,

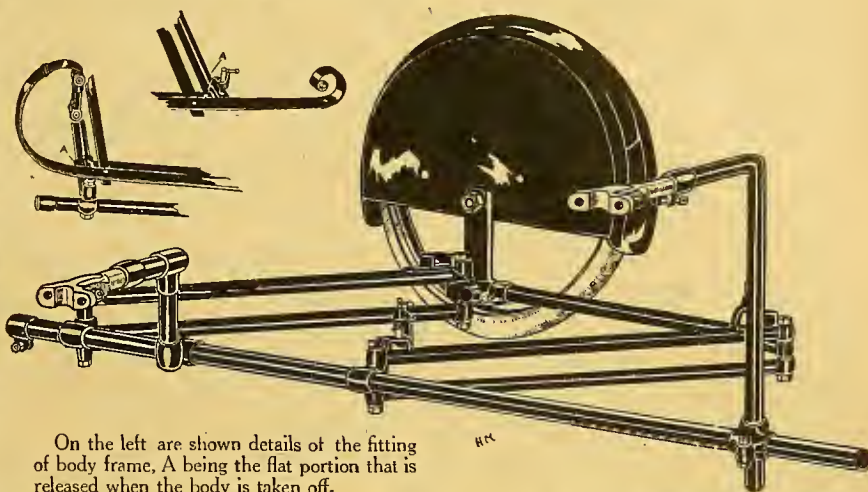
74, Great Portland Street, LONDON, W.



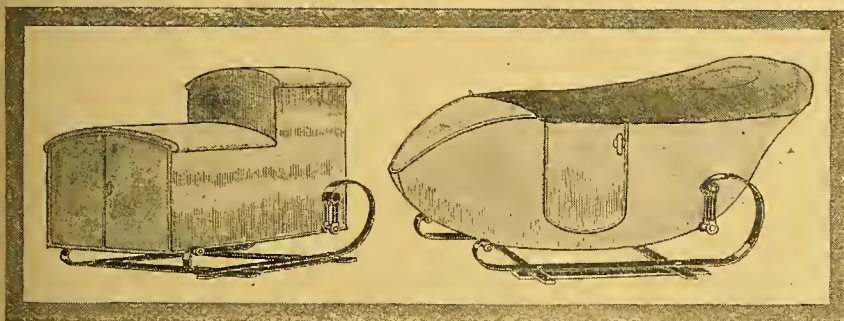
## The Paragon Folding Sidecar Chassis.

WE hear a great deal of economy these days, and motor cyclists as a body have to practise it in a rigid form, as regards petrol. At the same time, there is another kind of economy that has to be considered by some riders, and that is the economy of space. This often assumes an acute form in the case of keen sidecarists whose accommodation for their outfits is very limited. Sidecarists who are awkwardly situated as regards space will be interested in the Paragon folding sidecar chassis, the chief feature of which is the fact that it is capable of being folded. It is a sound idea that has now stood approximately two years' testing in the hands of various users.

The chassis drawing shows it on the point of being folded. The body has been removed as well as the tension arm, which is fastened to the lug by means of a quickly detachable bolt. The body is removed by pulling it backwards, and then pulling it again in the reverse



On the left are shown details of the fitting of body frame, A being the flat portion that is released when the body is taken off.



PARAGON FOLDING SIDECAR CHASSIS.

Examples of tradesman's and touring sidecar bodies on the same Paragon folding chassis.

direction. This releases the flat portion marked A, which engages with slots on the axle tube. When this is done the sidecar wheel can be pushed forward and allowed to lie closely up against the machine, and this will enable it to pass through a 30in. doorway.

The fact that the body is so easily detachable is a most important point, as a tradesman may use his machine for delivering goods and for pleasure purposes during the week-end. The sidecar is substantially constructed, the cross members, both in front and behind, being duplex and pivoted at each corner. Spring washers are provided top and bottom to prevent rattle, and castellated nuts are supplied secured by split pins. The front ends or tongues of the frame on which the springs are mounted are held in position by special trigger bolts.

## Sidecar Dust and its Preventive.

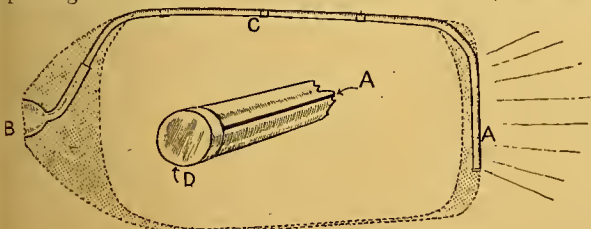
ONE of the greatest drawbacks to sidecaring is the dust that is sucked up by the back draught of the body, and which generally deposits itself in the hair of the lady passenger.

The idea, as seen from the sketches, consists of an air scoop and tube led through the offhand side of the sidecar, and so through to the back. A saw-cut through the tube, a stopper in the end of it, and slot cut in the back of the sidecar complete the fitment, and a neat and non-obtrusive job can

be made of it with a little care. My idea is that the wind pressure sucked up by the scoop will, when forced through the narrow slit at the rear of the sidecar, effectually break up the air eddies that cause the dust.

I should be interested to hear from any sidecarist who tries the experiment and to compare results. It is, of course, necessary to have a scoop of greater capacity than the slit at the rear—about 4 to 1, I think, would be the happy medium. H.M.

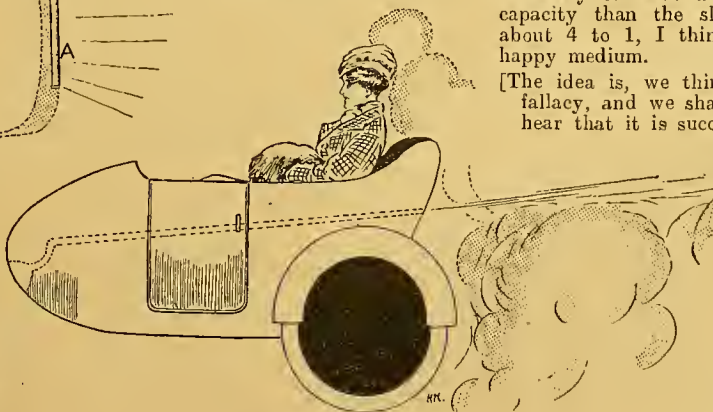
[The idea is, we think, based upon a fallacy, and we shall be surprised to hear that it is successful.—Ed.]



An attempt to lay the dust. In the plan view the letters refer to the following:

- A. Saw-cut letting out the compressed air.
- B. Scoop.
- C. Thin tubing.
- D. Small tin can cover soldered to end piece of pipe.

A simple gadget which I am fitting to a sidecar might, I think, prove interesting to family men, or those who have sidecars and are lucky enough to have fair passengers for them.

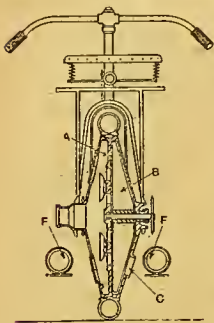






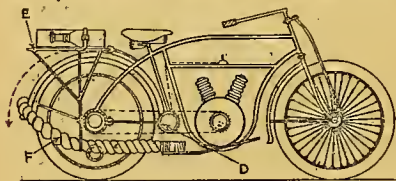
### A Motor Cycle Fire Engine.

The illustrations depict a motor cycle, the rear wheel of which is adapted for use as a water pump. The motor cycle



could thus be used for quenching fires, emptying flooded cellars, etc. In construction the enclosed rear wheel is divided into two chambers by a partition A, the right-hand chamber enclosing a rotary pump B. The water enters at C, and from the pump chamber it passes

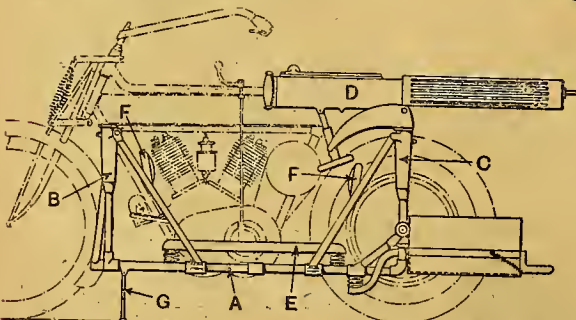
through valves in the partition A to the left-hand chamber, and thence to the delivery pipe. Chain gearing D is provided on the motor cycle, whereby the back wheel may either be driven in the ordinary way, or, when the back of the machine is supported on the stand E,



the gearing may drive the rotor B of the pump. The necessary hose piping is shown at F. Whilst possibly the machine might not be particularly comfortable to ride, it would probably be very useful for the contingencies for which it is apparently designed.—W. H. Bridges, No. 10,284, 1915.

### Another Sidecar Gun Mounting.

The sidecar frame has an approximately rectangular base A, and supports at the front and rear sockets B C for the

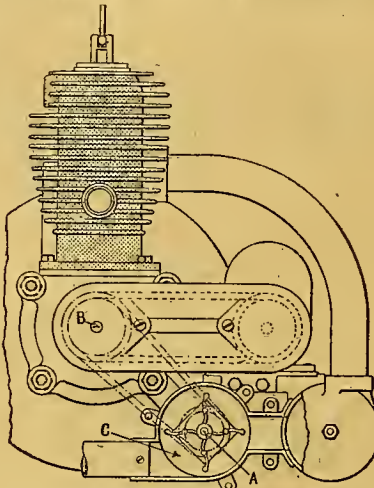


machine gun D. The gun may thus be mounted in either socket so as to face either forwards or backwards with regard to the machine. A spring-supported seat

E is provided for the gunner, with back rests at F. A support G is provided on the sidecar to give stability when the outfit is stationary.—The Enfield Cycle Co., Ltd., and P. W. Smith, No. 914, 1915.

### Two-stroke Exhaust System.

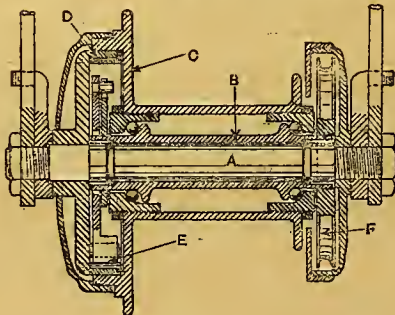
In order to improve the exhausting of burned gas from the cylinder a rotary air pump A, driven from the crankshaft B, is arranged in the exhaust box C. The result is to set up a partial vacuum



in the exhaust system, which has an eductor effect on the burned gases directly the port is uncovered by the movement of the piston.—Villiers Engineering Co., Ltd., and F. H. Farrer, No. 13,986, 1915.

### An Internal Hub Brake.

The fixed spindle A has mounted on it a sleeve B, upon which is carried the



hub shell C. At the left-hand end the hub shell is enlarged to enclose a stationary brake ring D, and this ring D is expanded by cam mechanism, as usual, operated by rotating the sleeve B. To effect this the sleeve has fixed upon it a grooved wheel F, around which wraps the cable of a Bowden wire mechanism (not shown). By pulling on the wire the sleeve B is rotated, expanding the fixed ring D into contact with a surface on the rotating hub shell C.—W. S. Harris, No. 8,853, 1915.



### The County Chemical Co.

The manufacturers of the Chemico specialities are now in a position to give much better deliveries than at any period over the last eighteen months, and the position is daily improving.

### Catalogues Received.

We are in receipt of the latest catalogue of Ixion two-stroke motor cycles. The latest model Ixion is a 2½ h.p. three-speed sidecar, the three-speed gear being in the hub. (The Ixion Motor Manufacturing Co., 35, Great Tindal Street, Ladywood, Birmingham.)

### Scott Spare Parts.

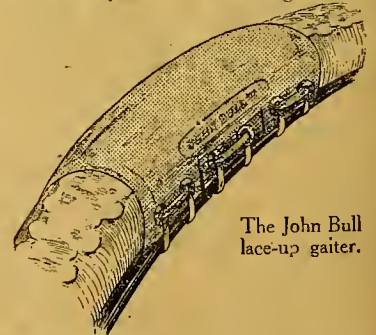
The Enfield Cycle Co., Ltd., of Redditch, inform us that they have a number of spare parts for frames, forks, etc., for Scott machines. They will be pleased to send particulars to any motor cyclists or agents who are wanting such parts.

### Repairs to Three-speed Gears.

We recently paid a visit to the workshop of the County Cycle and Engineering Co., at 64, Staines Road, Hounslow, who make a speciality of repairs to three-speed gears, a special work which is often in demand by our readers. We noted that the work was carried out extremely well, and that the parts made were excellently finished, and looked as if they would give first-class service.

### The John Bull Lace-up Tyre Gaiter.

A bad burst often, in the end, means a new cover; a large cut in the tread can be temporarily filled with tyre stopping, but this does not last long, and ultimately the cover must be remodelled by the makers or discarded. One of the most effective methods of extending the life of a tyre is to use a gaiter. The



The John Bull lace-up gaiter.

Leicester Rubber Co., Ltd., has introduced a new type which meets the requirements of the higher powered passenger motor cycle fitted with the larger section of tyres. It can be adjusted, by means of the strong lace supplied with each gaiter, to fit perfectly any section tyre from 65 mm. up to 80 mm. The rubber employed in its manufacture is of exceptionally good quality, and it will form a very useful addition to the equipment of the motor cycle.



# WAR - TIME TESTIMONY

In War  
as  
In Peace

**THE  
MOTOR CYCLE**

produces  
excellent  
results

and

Maintains  
its  
Pre-eminence  
as a  
market place  
for  
Second-hand  
Bargains



The rates for paragraph advertisements in *The Motor Cycle* are: First 12 words or less 1/6, and 3d for every additional two words. Each paragraph is charged separately and name and address must be counted. Advertisements should be posted to arrive not later than by first post on FRIDAY morning for the following Thursday's issue. Address *The Motor Cycle*, Coventry, or 20, Tudor Street, London, E.C.



During the war *The Motor Cycle* has enhanced its already high reputation as THE newspaper for motor cyclists. It is read by practically every owner (and intending buyer), whether in the army, navy, air service, or civil life, and is, therefore, the most suitable medium for readers' advertisements of second-hand goods — for sale, wanted, or to be exchanged.

## Callers on day of publication.

In respect to my advert. in *The Motor Cycle*, on arriving home on Thursday afternoon I found a gentleman had been waiting two hours to see my machine. Since then I have had 10 APPLICATIONS, and my wife informs me that as early as eleven o'clock on Thursday morning a man came to see the machine.

C. HECTOR PETERS,

13, Mayow Rd., Forest Hill, S.E.

## An excellent advertising medium.

I must give *The Motor Cycle* credit for being an excellent advertising medium. Your paper must have been newly published when QUITE A HOST OF OFFERS came for my carburetter, and also offers to supply tank I asked for.

JAMES PAUL,

124, High St., Perth.

## Sold same day.

I wish to thank you for inserting the last advert. I sent in place of the one that was too late.

It may interest you to know that the machine was SOLD THE SAME DAY that the advert. appeared. I also had MANY WIRES AND LETTERS.

Undoubtedly *The Motor Cycle* is THE paper for motor cyclists in every way.

J. L. RUTTER,

Newlands Park, Sydenham.

## Delighted with speedy replies.

I am delighted with speedy replies received through the medium of your valuable paper, *The Motor Cycle*. Last week, advertising exchange, I have HAD REPLIES EVERY POST, and have suitably exchanged with a satisfied reader.

G. HARROP,

57, Abbeyhill Rd., Oldham.



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be couched. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal to perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1916, early delivery of one 6h.p. combination. —Moss, Wem. [X6274]

1916 A.J.S., 2½h.p., early delivery.—Williams, A.J.S. Export, Chapel Ash Depot, Wolverhampton. [X6250]

1916 2½h.p. A.J.S., 3-speed, very little used, as new; 59 gns.—Julians, Broad St., Reading. [X4701]

A.J.S., 1913, 6h.p., sidecar, excellent order; £45, or reasonable offer.—Watt, Crooksbury Sanatorium, Farnham. [X9885]

A.J.S., 1914, 2½h.p., 3-speed countershaft, lamp, horn, and accessories; £36.—Cyril Kilner, 54, Gloucester Rd., Finsbury Park. [X9939]

1915 2½h.p. A.J.S., 2-speed, drop frame, lamp set, horn perfect; £40.—Stout's Garage, Egremont, Cumberland. [X6125]

### Alldays.

ALLONS in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [X9988]

1914 3½h.p. Alldays Matchless, 2-speed, splendid condition; £33.—Parker and Son, St. Ives, Hunts. [X1001]

1916 Alldays Allons, 2-speed models, in stock; £42, easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [X7008]

## THE OLD FIRM VARIED STOCK.

### NEW MODELS.

MORGAN de Luxe, M.A.G. engine, hood	£127 0
EXCELSIOR (American), 7 h.p., 3 speeds	£75 0
NEW IMPERIAL, 2½ h.p., variable magneto	£38 0
OVERLAND, 12 h.p., 4-seater, electric starting and lighting (44 4s. tax)	£225 0
RITZ 4-cylinder 2-seater Light Car	£145 0
CONNAUGHT, 2½ h.p., 2-speed	£41 16
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed	£39 10
ROYAL RUBY, 6 h.p., 3-speed, shop-soiled	£68 10
REX, 6 h.p., kick start, and Rex Sidecar	£71 0
WILLIAMSON Cy-cl-ca, W.C. Douglas eng.	£126 0

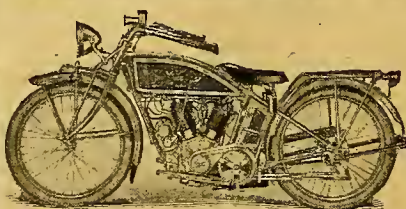
### 1916 (U.S.A.) EXCELSIOR.

7 h.p., twin, 84 × 80, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

A few late 1915 new 7 h.p. 3-speed models, with electrical equipment, at pre-tax price of £71 10s. Exchanges quoted. Easy payments 2½% extra.

We are sole Yorkshire distributors. Liberal terms to trade.

Coachbuilt PERFECTION SIDECARS to suit, £13 10.



### SOLO MACHINES.

DOUGLAS, 1914, 2½ h.p., 2-speed	£37 10
DOUGLAS, 1914, single gear, chain-belt	£28 10
INDIAN, 1912, 4 h.p., 2-speed	£29 10
1912 3½ h.p. ZENITH-GRADUA	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£29 10
1912 6 h.p. 2-speed CLYNO	£23 10
1912 2 h.p. HUMBER Lightweight	£15 10
BRADBURY, 1911, T.T.	£19 10
RUDGE, 3½ h.p., F.E., good order	£19 10
EXCELSIOR, 3½ h.p., 3-speed, Druid forks	£17 10
ALLDAYS, 3½ h.p., 2 speeder	£25 10
TRIUMPH, magneto, spring forks, new tyres	£14 10
DOUGLAS, 1911, 2½ h.p., twin	£15 10
N.S.U., 3½ h.p., 2-speed, spring forks	£17 10
F.N., 2½ h.p., 2-speed, shaft drive	£17 10
REX, 1910, 3½ h.p., semi-T.T.	£16 10
VICTORIA-PRECISION Lightweight	£17 10
CALTHORPE Junior, 2-speed	£16 10
PREMIER, 2½ h.p., wants repairs	£12 15
DOUGLAS, 2½ h.p., twin, spring forks	£15 10

### SIDECAR COMBINATIONS.

6 h.p. (new) REX Sidette; reduced to	£71 0
1916 5-h.p. COVENTRY EAGLE Combination	£72 10
1914 7-h.p. 2-speed INDIAN Combination	£53 10
1913 7 h.p. 2-speed ARIEL and Sidecar	£42 10
1913 6 h.p. 2-speed REX and Sidecar	£43 10
3½ h.p. 3-speed TRIUMPH and Sidecar	£27 10
QUADRANT, 7-h.p., 2-speed, twin, chain drive, and coach Sidecar. Fine lot	£45 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1909 3½ h.p. 2-speed TRIUMPH and Sidecar	£26 10
HAZLEWOOD, 4-5 h.p., twin, and coach Sidecar, 3-speed countershaft	£42 0

## Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone, 766.

Telegrams, "Perfection."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### Alldays.

COLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Alldays All

1915 2½h.p. 2-speed Alldays Allon, in perfect condition; £27/10; seen any time.—Bounds, Gan High Rd., Kilburn. [X619]

ALLDAYS Allon, 1916½, 2-stroke, 2-speed, 26× tyres, hardly ridden; best offer secures.—65, Arm Rd., Anfield, Liverpool. [X619]

ALLDAYS Allon, 2-speed, new; special bargain; £38/17 cash; gradual payments 2%.—Referee Co., 332, High Holborn. [X610]

ALLON, 1915, 2-speed, speedometer, lamp, 6in. Lucas head lamp, and light coachbuilt car, all in excellent condition; £32.—25, Alpha Cambridge. [X619]

ALLDAYS Matchless, 3½h.p., 2-speed, F.E. 6in. Lucas head lamp, and light coachbuilt car, all in excellent condition; £32.—25, Alpha Cambridge. [X619]

ALLDAYS Matchless, 3½h.p., 2-speed, F.E. 6in. Lucas head lamp, and light coachbuilt car, all in excellent condition; £32.—25, Alpha Cambridge. [X619]

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ALLDAYS Matchless, 3½h.p., 2-speed, F.E. 6in. Lucas head lamp, and light coachbuilt car, all in excellent condition; £32.—25, Alpha Cambridge. [X619]

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## MOTOR CYCLES FOR SALE.

## Bradbury.

- PETROL** Free with 1913 Bradbury, 1915 3-speed; 26 gns.—Rider Troward, 78, High St., Hampstead. [9903]
- BRADBURY**, 1912, good condition, re-bushed, coach sidecar; £26.—Haywood, 95, Tufnell Park Rd., N. [X6250]
- 1914** 3½ h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0822]
- 1912** Bradbury Combination, 3½ h.p., 2-speed, free engine, good order; £25.—22, Beechwood Av., Thornton Heath. [X6205]
- BRADBURY**, 3½ h.p., 2-speed N.S.U., Amac carburettor, Bosch mag., lamps, tools, etc., good condition; £25.—25, Morton Rd., Islington. [9890]
- BRADBURY** Combination, 4 h.p., 2-speed, clutch, kick starter, 95 m.p.g., excellent condition; £35.—A. Smith, 15, Bramshot Av., Charlton, S.E. [9826]
- BRADBURY**, 1915, 4 h.p., countershaft 3-speed model, h.p. clutch, with coachbuilt sidecar, lamps, horn, speedometer, an almost new combination, had most careful use, 75 m.p.g.; price £52, or reasonable offer; approval anywhere.—Laytons' Garage, Bicester, Oxon. [X6237]
- 1914** Bradbury, 4 h.p., 3-speed S.A., Philipson pulley, new Dunlops, recently overhauled by makers, £32; with Phoenix C.B. sidecar, Walbro screen, luggage grid, lamps, spares, complete, £40, or offer, or exchange with cash later model, countershaft S.A., or higher power. Motor, Heron Villa, Western Rd., Brentwood. [9933]
- FOR Sale**—Petrol allowance. To car owners. Garage your car, and eke out your petrol allowance by buying my 6-h.p. twin Bradbury motor cycle with built-to-order tandem-sidecar seating 2 adult passengers comfortably. Does 50-55 m.p.g. Cost £110 in 1914. Done under 3,000 miles; everything the best; seen, by appointment only, at Miramar, Bellingh, Heron Bay, or 18, Temple Fortune Lane, Golder's Green, London, N.W. [9731]

## Brough.

- BROUGH**, 1915, horizontal twin, 2-speed; 39 gns.—Rider Troward, 78, High St., Hampstead. [9905]

## Brown.

- BROWN**, 1914, 3½ h.p., grand condition, bargain; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9604]

## B.S.A.

- COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

- B.S.A.** New 1916 Models H and K actually in stock, no waiting.—Moss, Wem. [X6272]

- B.S.A.**, all models in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [9989]

- B.S.A.**, 1914, 3-speed, chain-cum-belt model, perfect condition; 38 gns.—Colmore Depot, 261, Deansgate, Manchester. [9845]

- B.S.A.** 1916 Model K, brand new, just delivered, £60.—Jones, Withyhold Farm, Charlton Kings, Cheltenham. [X6262]

- B.S.A.** 1916 Models H and K in stock, immediate delivery; prices £64 and £62.—Wallace, Fountain Buildings, Bath. [9020]

- B.S.A.**, 1915, 4 h.p., model K, 3-speed, overhauled, guaranteed condition; £46, or reasonable offer.—Laytons' Garage, Bicester, Oxon. [X6238]

- B.S.A.** 1916 Chain-cum-belt Model, 4½ h.p., 3-speed countershaft gear, with sporting sidecar, lamp set, rear light, horn, speedometer; £65.—Below.

- B.S.A.** 1916 models in stock, ready for immediate delivery, 4½ h.p., 3-speed countershaft gear, chain-cum-belt drive, £62, all chain drive £64; exchanges or extended payment terms quoted.—Elce and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Canonville St., E.C. [0597]

- B.S.A.**, 1914, 2-speed, F.E. smart coachbuilt sidecar, very little used, splendid condition; nay trial; £42/10, or nearest offer.—Hill, 24, Silvester Rd., W. [X6191]

- B.S.A.** 1915 Combination, art cane sidecar, 3 speeds, countershaft, Lucas lamps, automatic horn, speedometer; £52/10.—Jacques, 17, Riland Rd., Sutton Coldfield. [9814]

- 1916** 4 h.p. B.S.A. and Canoelet Sidecar de Luxe, almost new, done about 300; £475; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9697]

- 1916** B.S.A. and 13 gn. coach sidecar, electric lamps, mechanical horn, w.h.b., speedometer, tools, etc., as new; £74.—Seen Earl's Garage, 5, Heath St., Hampstead. [9963]

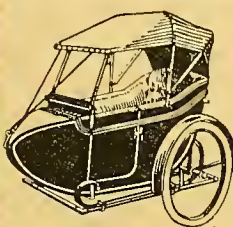
- B.S.A.** Motor Cycles, models H and K, immediate delivery from stock; trade enquiries entertained.—Colmore Depot, B.S.A. Agents, 261, Deansgate, Manchester. [9544]

- 1913** B.S.A., 2-speed, kick starter, all chain drive, with sidecar, just overhauled, everything splendid condition; £38/10, bargain.—Maxwell, Wells St., Seunthorpe, Lincs. [X6115]

- B.S.A.** 1916 Chain-cum-belt Model, 4½ h.p., 3-speed countershaft gear, with sporting sidecar, lamp set, rear light, horn, speedometer, £66.—Elce and Co., 15-16, Bishopsgate Av., Canonville St., E.C. [0552]

## CORONET SIDECARS.

We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28×3¼ in. tyre and four point attachment.

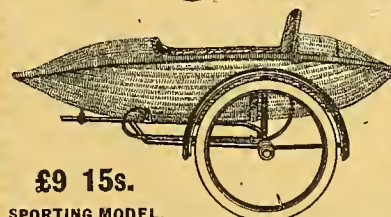


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Send for Illustrated Catalogue describing these well-known Sidecars

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£9 15s.

SPORTING MODEL.

1916 HARLEY-DAVIDSONS.

We can give immediate delivery, and we will make a big allowance for your old machine.

## CASH OFFERS WANTED.

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|--|--------|
| 4½ h.p. STAR, brand new £68 model, big single, 3 speeds  | £55 0  |
| 2½ h.p. Stationary Petrol Engine, new £22 10s. model, magneto, 2 flywheels                     | £16 10 |
| 4 h.p. ZENITH, 1911, Gradua variable gear  | £19 15 |
| 2 h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc.  | £32 10 |
| 7-9 h.p. PREMIER, 1914, 2-speed countershaft, with £13 10s. new coach Sidecar                  | £49 15 |
| 6 h.p. REX, 2-speed, magneto   | £11 15 |
| 2 h.p. DOUGLAS, 1910   | £13 15 |
| 2 h.p. MINERVA, magneto, variable gear   | £9 15  |
| 7-9 h.p. INDIAN, 1915, 3-speed, electrical model, and 7½ h.p. Montgomery Sidecar               | £63 15 |
| 1916 7-9 h.p. HARLEY-DAVIDSON  | £80 15 |
| 1916 ditto, electrical model   | £89 0  |
| 1914 Dorr Touring Car, detachable wheels   | £85 0  |
| 2½ h.p. WOLF, 1910, 2-stroke, 2-speed  | £33 10 |
| 20 h.p. FORD Van, new, 1916 model  | £130 0 |
| 20 h.p. FORD Van, 1915 model   | £90 0  |
| 2½ h.p. TYLER, 1915, 2-speed model   | £24 15 |
| 3½ h.p. TRIUMPH, 1910 model  | £16 15 |
| 3 h.p. LINCOLN-ELK, 1912 model   | £14 15 |
| 8 h.p. WILLIAMSON, 1913, with torpedo coach-built Sidecar                                      | £45 0  |
| 3½ h.p. HUMBER, 1913, 2-speed, Sidecar   | £23 15 |
| 3 h.p. PREMIER, 1913, 2-speed countershaft gear, belt and chain                                | £26 15 |
| 3 h.p. LINCOLN-ELK, 1911, magneto  | £12 15 |
| 3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn                            | £25 15 |
| 7 h.p. PREMIER, 1912, 3-speed model  | £16 15 |
| 2-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar                         | £69 15 |
| 3½ h.p. HUMBER, 1911, 2 speed  | £17 15 |
| 2½ h.p. MATCHLESS-J.A.P., 1910   | £10 15 |
| 1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps | £89 0  |

## MISCELLANEOUS BARGAINS.

- New £5 weatherproof Magneto, £3 10s.; 1911 Rex Spring Forks, 30/-; ditto Tank, 17/6; Long Lengths Steel Tubing, 1½ × 12g., 14g., 16g.; Bosch Magneto, 50/-; B. and B. Carburettor, 12/6; Amac Carburettor, 12/6; New 20/- Brass Electric Sidecar Lamps, 5/6; Ditto Tail Lamps, 5/6; approval; New Spare Valves for Harley-Davidsons, 4/9; Bosch Magneto for twin Rex, 55/-; Douglas Carburettor, 10/6; New 26×2½ or 2½ Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); £16 16s. Gloria Coach Sidecar, just repainted, £7 15s.; Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburettor taken in exchange).

BOOTH'S MOTORCIES,  
PORTLAND PLACE, SKIRCOAT ROAD,  
HALIFAX.

\*Phone: 1062.

Close at 6 p.m.

## MOTOR CYCLES FOR SALE.

## B.S.A.

- 4½ h.p.** New 1916 B.S.A., 3-speed and free engine 4 models, with kick start, chain-cum-belt, £62; all chain drive, £64; immediate delivery from stock; cash, exchange, or easy terms.—Wanchope's, 9, Shoe Lane, Fleet St., London. [9916]

- 1916** B.S.A., 4½ h.p., chain and belt drive, 3-speed, coachbuilt sidecar, Lucas lamps, Stewart speedometer, horn, mileage 1,500, splendid condition; 67 gns., including 9 months' comprehensive insurance policy.—Brooklyn, Mayfield Rd., Sanderstead. [9869]

- B.S.A.**—Models H and K actually delivered from stock with Canoelet B.S.A. sidecars, models B3, C3, and C4, also a 1912 free engine machine £29/10, with accessories; deferred payments by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9797]

- B.S.A.**, 1915-16 4½ h.p. model K, and Mills-Fulford family sidecar, is new, unscratched, child's seat, wind screen, apron, and storm cover, 1½ and 1½ head light set, Lucas rear set, horn, watch, spares, etc., with complete insurance cover (£4/10/2) to 1917 (transferable); lot cost £88, sacrifice for £78; bike and sidecar alone £70.—H.H., 78, Cowley Rd., Oxford. [X6259]

## Calthorpe.

- 1915** Calthorpe, 2-stroke, 2-speed, not used much; £22.—Bond's Dental Offices, Newbury. [X6263]

- CALTHORPE**, 2 h.p., 2-speed, footboards, horn, in very good order; £15 cash.—Brook, Burnham, Som. [9494]

- CALTHORPE**, J.A.P., 2½ h.p., Enfield 2-speed; £27.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9605]

- 1915** Calthorpe-Jap, 2½ h.p., Enfield gear, all accessories; bargain, £24.—Earl, 5, Heath St., Hampstead. [9934]

- 1915** 2½ h.p. 2-speed Calthorpe and accessories, perfect condition; seen any time.—Bounds, Garsc. High Rd., Kilburn. [9803]

- 1915** Calthorpe-Jap, 2-speed, Enfield, lamps, tools, spare tyre, perfect condition; £28.—Casterton, Chemist, Market Rasen. (D) [9521]

- CALTHORPE-J.A.P.**, 1915, 2½ h.p., perfect condition, private owner; £27.—10, Tidswell Rd., Putney. Phone: 1660 Putney. [9435]

- CALTHORPE** Junior, 1914; will exchange or part exchange for higher power, or sell £17/10.—4, Pleasant Rd., Eccles, Manchester. [X6254]

- COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

- CALTHORPE-J.A.P.**, 1916, latest model, 2½ h.p., Enfield 2-speed gear, just arrived from works; £37/16.—Wilkins, Simpson, and Co., 11, Hammesmuth Rd., London. [9240]

- CALTHORPE** 2-stroke 1916 Latest Model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammesmuth Rd., London. [9241]

- CALTHORPE**, 1914 wicker combination, 4½ h.p., mag., gear box, variable, 2-speed, Precision engine, new condition; sacrifice 35 gns.—R. Summerton, Halford, Slipston-on-Stour. [9714]

- CALTHORPE-J.A.P.'s** with Enfield gears, 36 gns., 4 models actually in stock; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [9794]

- 2½ h.p.** Calthorpe, 2-stroke, 2-speed, December, 1915, 24 lamp, spares, just re-bushed, owner serving, £20; deposit.—2nd Lt. Victor Burns, No. 5 Artillery School, Scotton Camp, Catterick, Yorks. [9303]

- CALTHORPE-J.A.P.**, late 1915, 2½ h.p., Enfield 2-speed gear, with pretty little coachbuilt sidecar, electric horn, etc., all in perfect condition, take 2 up any hill; £35.—Hill, 24, Silvester Rd., W. [X6190]

- CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

- CALTHORPES**, J.A.P. 2½ h.p. engines, 1916 models, £37/16, with Enfield 2-speed gear; also single-speed models, £32; and 2-strokes; we have several good second-hand machines of this make to offer from £17/10.—Wanchope's, 9, Shoe Lane, London. [9919]

## Campion.

- CAMPION-VILLIERS**, 1915, 2½ h.p., extra good engine, thoroughly sound machine, offered at £17/10, worth much more.—Laytons' Garage, Bicester, Oxon. [X6233]

## Chater-Lea.

- 1914** Chater-Lea, 6 h.p., No. 7, and coachbuilt sidecar, all accessories; a cheap lot, £44; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9698]

- 1915** 8 h.p. Chater-Lea, J.A.P. engine, Mabon variable gear and clutch, and coach sidecar; a good bargain, all in perfect order, £40; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9699]

## Chater-Lea-Murphy.

- CHATER-LEA-MURPHY**, 2-stroke, 1915, Bosch, B and B, Saxon forks, Palmer back unpunctured; £10/10, no offers.—Wadhams, 42, Milverton Rd., Erdington, Warwickshire. [X6212]



## MOTOR CYCLES FOR SALE.

## Chater-Peugeot.

6 h.p. Chater-Peugeot and Coronet sidecar, Bosch, B. and E., Druids, Gradua gear, free engine; £22, or nearest; sea any time; any examination, trial run, photo.—Mills, Coombe House Lodge, Coombe Rd., Croxson. [9778]

## Chater-Precision.

1914 Chater-Precision, 3½ h.p., Sturmer-Archer 3-speed, coachbuilt sidecar, speedometer, spare tyres and belt, all accessories; trial; bargain, £35.-1, Roswell St., Radford, Nottingham. [9809]

1914 8 h.p. Chater-Precision, 3-speed, chain drive, large coachbuilt sidecar, all accessories, light car tyre, Palmer, new, a good, sound lot; £47/10; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9700]

## Clyno.

1914 Clyno, 2-stroke, 2½ h.p., footboards, etc.; £21.—Colmore Depot, 31, Colmore Row, Birmingham. [X6100]

1912 5.6 h.p. Clyno, 2-speed countershaft gear, 18 in. Turner sidecar, lamp, horn, speedometer; only £40.—Parker and Son, St. Ives, Hunts. [1003]

CLYNO Combination, 1912, 5.6 h.p., wicker sidecar, excellent condition, and in good running order, all accessories, and spare tyre. £27.—Sgt. Turner, Royal Engineers, Dunstable Signal Depot. [X6170]

## Connaught.

1914 Connaught, 2-stroke, 2-speed, spare petrol tank; £26.—Colmore Depot, 31, Colmore Row, Birmingham. [X6088]

CONNAUGHT, first-class condition, 3 speeds, handle start, very silent running, Watsonian coachbuilt sidecar, all accessories; £35, or offer, bargain.—Green, 81, Herongate Rd., Wanstead. [9737]

## De Dion.

2 h.p. De Dion, B. and B., spring forks, new Hutchison tyres, splendid condition.—Apply, 34, Rowell St., Bow, E. [X6215]

3 h.p. De Dion, Bosch mag., variable ignition, h.b.c., 32 splendid running order; £16, or offers.—Jenkins, Govilon, Abergavenny. [X6267]

## Diamond.

1915 2½ h.p. 2-stroke Diamond, in good condition, all complete, nearly new; £27.—Tott, 81, High St., Ponders End, Enfield. [9739]

## Dot.

6 h.p. Dot-Jap, 1914, 2-speed, free engine, underslung sidecar, big Kemphalls, Lucas lamp; trial Leeds, appointment; £45.—Box L1, 981, c/o The Motor Cycle. [9760]

## Douglas.

DOUGLAS, 1911, no fault; bargain, £15.—14, Dodbrook Rd., West Norwood. [9678]

DOUGLAS, 1912, 2½ h.p., 2-speed, good order; £23.—8, New Rd., Bexley Heath. [9787]

IN Stock, immediate delivery, 1916 3-speed Douglas; £52/10.—Clenale's Garage, Chelmsford. [X6199]

DOUGLAS, 1914, 2½ h.p., 2 speeds, free, clutch, kick; £38.—Goode, 165, Stockwell Rd., Brixton. [9843]

1916 Douglas, 2½ h.p., 2-speed, new, full equipment; £52.—The Garage, The Green, Southgate, N. [9743]

GENUINE 1914 T.T. Douglas, 3½ h.p., 2-speed, lamps, horn, etc.; £37.—Newham, 223, Hammersmith Rd., W. [9954]

1913 2½ h.p. Douglas, grand condition, all accessories; must sell; best offer secures.—Henly, 7, Wolmar Place, W.C. [9870]

DOUGLAS, 1913, very little used, in perfect condition; £30.—Swadling, 144, High Rd., Streatham, London, S.W. [9780]

1913 Model W Douglas, 2½ h.p., 2-speed gear, very good order; £34.—Colmore Depot, 31, Colmore Row, Birmingham. [X6096]

DOUGLAS, 1911, 2-speed, perfect running order; £16/10, or part exchange typewriter.—47, Bonner Hill Rd., Kingston. [9971]

DOUGLAS, 1914, 2-speed, perfect condition, little used, all accessories, electric light; £33/10.—16, Camden Rd., Wanstead. [9850]

1914 2½ h.p. T.T. Douglas, 2-speed gear; £33, including spare tank; bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [X6092]

2 h.p. Model W Douglas, 3-speed, clutch, kick start, in stock for immediate delivery.—Robinson's Garage, Green St., Cambridge. [9857]

DOUGLAS Combination, 4 h.p., late 1915, 3 speeds, kick starter, coachbuilt sidecar, speedometer, lamp set, in new condition; £70.—Below.

DOUGLAS, 1915, 2½ h.p., 3 speeds, T.T., in exceptional nice condition; £48.-6, Warren St., London. [9979]

DOUGLAS, 1914, 2-speed, horn, lamp, been overhauled and re-enamelled; £38.—Nichols, 20, Bernard Rd., Wallington, Surrey. [9868]

1912 Douglas, 2-speed, speedometer, fast, and in good condition; £20, or offer.—Lt. Keating, Cambs. Regt., Halton Park, Bucks. [X6169]

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INDIAN, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar ... £62  
INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame ... £42  
ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ... £60  
A.J.S., 1915, 6 h.p., 3-speed, and Sidecar ... £28  
REX, 1913, 6 h.p., 2-speed, cane Sidecar ... £28  
RUDGE 1913 5-6 h.p. Multi, with Rudge coach-built Sidecar ... £50

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CALTHORPE, 1914, 2 h.p., 2-speed ... £19  
RUDGE 1913 3½ h.p. Multi, T.T. bars ... £38  
IVY, 1915, 2-stroke, single-speed ... £15  
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TRIUMPH, 1912, 3½ h.p., clutch model ... £34  
NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine ... £30  
TRIUMPH, 1912, 3½ h.p., clutch model ... £33  
ROYAL RUBY, 2½ h.p., 1915, J.A.P., 2-speed ... £28  
TRIUMPH, 1912, 3½ h.p., clutch, Philipson pulley ... £34  
N.U.T., 1914, 2½ h.p., T.T., twin, overhead valves ... £23  
BUT-J.A.P., 1911, 8 h.p., 2-speed, spring frame ... £35  
RUDGE, 1913, 3½ h.p., multi, large tank ... £29  
REX, 1913, 3½ h.p., 2-speed, and clutch ... £45  
BROUGH, 1914, 8 h.p., T.T. model ... £45  
NEW RYDER, 1916, 2-stroke, dropped frame ... £56  
HARLEY, 1915, 7-9 h.p., 3-speed, T.T. bars ... £42  
RUDGE, 1913, 3½ h.p., Philipson pulley ... £43  
INDIAN, 1913, 3½ h.p., 3-speed, T.T. model ... £42  
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WAR Office Douglas, brand new, latest pattern, 2-speed, semi T.T. bars, in stock; immediate delivery.—Robinson's Garage, Greca St., Cambridge. [9856]

DOUGLAS, 1911, perfect, all accessories, new Dunlop back, higher power wanted; £20, or exchange sidecar outfit.—Johnson High St., Burnham, Bucks. [X6241]

PETROL Free.—Douglases, 1910 single-speed £16, 1912 2-speed £22, 1913 T.T. (45 m.p.h.) 24 gns.—Rider Troward, 78, High St., Hampstead. Phone: 5392. [9906]

DOUGLAS, 3½ or 4 h.p., 2 or 3-speed, wanted in exchange for Alldays Matchless, 2-stroke, 2½ h.p., 3-speed, and cash, or sell £27/10.—Robinson, Hilltop, Landaff. [9934]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

1912 T.T. Douglas, new tyres, belt, F.R.S. lamps, £20; 1913 clutch model, condition as new throughout, guaranteed, lamps, horn, etc., £35.—Emmerson, Gamlingay, Sandy. [9898]

DOUGLAS, 1914, 2½ h.p., T.T., special madguards and long exhaust pipe, Lucas horn and lamps, complete kit of tools and spares, beautiful condition; £38.—D. Collins, 11, Blandford Rd., Basing, W. [9972]

£25.—Douglas, 2-speed, 2½ h.p., just overhauled by Douglas, new Dunlops, Bosch, 2 lamps, horn, 2 toolbags, tools, runs perfectly, plate, etc., splendid.—Pte. Medhurst, H.A.C., Armoury House, Finchbury, E.C. [X6211]

1916 4 h.p. Douglas, 3-speed, kick start, latest model, used for demonstration only, complete with coachbuilt sidecar, Lucas dynamo lighting set, 3 lamps and accumulators, electric horn, Cowey speedometer, complete set tools, ridden under 2,000 miles, condition as new throughout guaranteed; £95/10.—Robinson's Garage, Green St., Cambridge. [9854]

## Enfield.

1913 Enfield Coach Combination; 46 gns.—8, Connon Rd., Enfield Wash, Middlesex. [9758]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ENFIELDS in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [9990]

ENFIELD 2½ h.p. Twin, 2-speed, chain; £18.—Chamfear, Woodlands Lodge, Gallewood, Chelmsford. [X6184]

ENFIELD Combination, coachbuilt, splendid condition; 45 gns.—10, Temple Fortune Hill, Hendon. [9946]

ENFIELD 6 h.p. Combination, late 1914 model, splendid order, Lucas equipped; £65.—Moss, Wem. [X6273]

1916 8 h.p. Enfields actually in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [9701]

1914 3 h.p. Enfield, thoroughly sound, and complete; £54/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X6091]

6 h.p. Royal Enfield Combination, 1913, perfect; £60.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [9607]

ENFIELD 5 h.p. Twin, 1914, good condition, 140 m.p.h. petrol substitute, vapouriser fitted.—89, Oak Lane, Bradford. [9840]

1916 6 h.p. Enfield Combination, as new, and accessories; £77/10; seen any time.—Boards, Garage, High Rd., Kilburn. [9804]

ENFIELD 8 h.p. Combination, 1914, good condition, 2 Lucas head lamps, Low generator, etc.; £55.—Coates, 75, Alexandra Rd., Hendon. [9892]

ENFIELD 1916 6 h.p. Combination, latest model, just arrived from works; 90 gns.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9238]

1913 Royal Enfield 6 h.p. Combination, coachbuilt sidecar, and Lucas accessories; £50.—Colmore Depot, 31, Colmore Row, Birmingham. [X6076]

1912 6 h.p. Enfield Combination, coachbuilt sidecar, 2-speed gear; £45, with accessories.—Colmore Depot, 31, Colmore Row, Birmingham. [X6094]

ENFIELD Combination, 6 h.p., 1913-14, lamps, horn, speedometer, condition perfect; accept £42/10 quick sale.—50, Hagghenden Rd., High Wycombe. [9834]

ENFIELD, 3 h.p., 1915, with Empire lightweight sidecar, Lucas horn and speedometer; £50, or near offer.—Harrison, Englefield Green, Surrey. [9774]

ENFIELD 6 h.p. Combination, C.B., done 5,100, splendid condition, plenty of spares, 3 lamps, speedometer, Lucas horn; £50.—3, Exeter St., Rochdale. [X5898]

ENFIELD Combination, 6 h.p., late 1914, hood, screen, spare chain, tube, cover, speedometer, condition as new; bargain, £60.—5, Little Ilford Av., Manor Park, Essex. [9819]



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1915 ROYAL RUBY, 2-stroke, as new ..... £24 0  
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1915 NEW RYDER, 2-stroke ..... £20 0  
3 1/2 h.p. PREMIER ..... £12 10  
3 1/2 h.p. 1913 RUDGE-MULTI ..... £35 0  
4 h.p. BRADBURY, 2-speed ..... £23 0  
1913 3 1/2 h.p. TRIUMPH, free engine, speedometer, lamp, horn ..... £26 0  
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ENFIELD 1916, immediate delivery of latest 6h.p. combination, now in stock; 90 gns.; make sure of this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9239]

ROYAL Enfield, 1915 T.T., 3h.p., 2-speed, footrests, free engine, T.T. bars, head lamp and rear light, horn; £47/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

ENFIELD 3h.p. 1916 latest model, just arrived from works, immediate delivery, make sure of this now; 55 gns.; we are Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9242]

ENFIELD Combination, 1916, 6h.p., 2-speed, delivery from stock, 90 gns.; also dynamo lighting model, 105 gns.; exchanges or extended terms quoted.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0479]

6 h.p. New 1916 Royal Enfield Combination, all chain drive, handsome turnout, highly finished machine and sidecar; 90 gns.; delivery from stock; cash, easy terms, or exchange arranged.—Wauchope's, 9, Shoe Lane, Fleet St., London. [5918]

ENFIELDS.—Two 8h.p., two 6h.p. combinations, and one 3h.p. lightweight actually in stock; also electric 1915 model, with hood and screen and speedometer, £29/10; generous deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Ru., Wood Green. [9796]

1915 Enfield Combination, mechanically perfect, 75 m.p.g., appearance as new, fitted with Blundell's triple wind screen, speedometer and watch combination, Miller lamps and generator, not used, new spare tyre and tube, and spares; £80.—Collier, Undertaker, Sturry, Kent. [9788]

ENFIELD 1916 6h.p. Combination, just received from works; £94/10; the finest and most economical 2-seater proposition yet issued. Get our exchange quotations; they make a new outfit possible, even in war time; balance can be paid by instalments if desired.—Laytons' Garage, Bicester, Oxon. [X6239]

ENFIELD, 6h.p., late 1912, splendid condition, overhauled to commence season with, rear wheel 650×65 Bates special heavy, other wheels Bates and Dunlop, little worn, lamps, horn, and spares, carefully used; 100 miles trial run if necessary; also motor suit; £55 the lot.—Ineson, Plumber, Heckmondwike, Yorks. [9777]

### Excelsior.

EXCELSIOR, 1914, 4 1/2 h.p., sidecar, Armstrong 3-don. speed; £35.—7b, Eden St., Hampstead Rd., London. [1006]

### Fafnir.

3 1/2 h.p. T.T., late 1912 Fafnir, Chater frame, splendid condition, hardly used during war, fast, smart, sporting machine; bargain, £25.—5, Thornton Place, York St., Baker St. [9925]

FAFNIR, 3 1/2 h.p., n.o.v., and cane sidecar, Mahon variable gear, handle starting, Bosch mag., Sen-spray carburettor, sound running order; best offer over £15.—Smith, 92, Melford Rd., Leytonstone. [9846]

### F.N.

F.N. 5-6h.p. Coachbuilt Combination, 2 speeds, hand clutch, overhauled, 1912 model; 25 gns.—Rider Troward, 78, High St., Hampstead. [9907]

F.N., 4-5h.p., 2 speeds, free engine, Bosch mag., tools, lamp, generator, fine running condition; exchange considered.—L1, 995, c/o The Motor Cycle. [9992]

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BRAND New Harley-Davidsons.—See below.

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MODEL J, 7-9h.p., 3-speed, with dynamo electric lighting outfit; £75.—The Premier Motor Co.

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SPECIAL Gloria Sidecars, to match; 19 and 25 gns. You save £17 by purchasing your new combination direct from the recognised I.D. experts. Delivery carriage paid to any address.—The Premier Motor Co., Aston Rd., Birmingham. [8352]

HARLEY-DAVIDSON, 1915, 11F, bought 1916, very little used, good as new; £55.—3, King's Rd., Windsor. [9876]

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

HARLEY-DAVIDSON, late 1915, Montgomery sidecar to match, outfit as new, small mileage; best offer; must sell.—8, Stockwell Park Walk, Brixton. [9815]

1915 Harley-Davidson, 7-9h.p., electric equipment, and Harley coachbuilt sidecar, in splendid condition; £76.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480]

HARLEY-DAVIDSON and new sidecar, machine absolutely perfect, has had thorough overhaul at makers; £75, very cheap.—Colmore Depot, 31, Colmore Row, Birmingham. [X6086]

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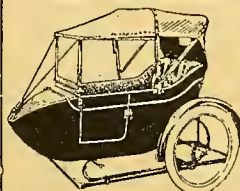
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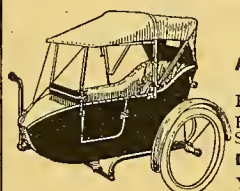


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**HARLEY-DAVIDSON** Model 11J, electric light, engine L 13041K, slightly shop-soiled, guaranteed brand new, unused; £70.—Stout's Garage, Egreton, Cumberland. Phone: 13. [X6122]

**1915 Model 11F** 7-h.p. Harley-Davidson, 3-speed, completely overhauled and re-enamelled, fitted with special coachbuilt Canelet sidecar, in excellent condition throughout; £70.—The Premier Motor Co., Aston Rd., Birmingham. [X911]

**HARLEY-DAVIDSON** Combinations actually in stock, £101/15 and £110, or solos £80/15 and £89; deferred payments if desired; liberal exchanges. Also several sidecars to suit, £13/10 upwards.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X9800]

**HARLEY-DAVIDSON**, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 51, Renshaw St., Liverpool. [X617]

## Hazlewood.

**HAZLEWOOD**, 1914, 5-h.p., 3-speed gear, clutch, lamps, speedometer, nice condition; £35.—Renier, 15, Creswell Rd., Twickenham. [X9893]

## Henderson.

**HENDERSON**.—This week's bargain. Nearly new 4-cyl. Henderson combination, 20 gn. Swan coachbuilt sidecar, smart turnout; £52/10, or offer; must be sold.—3, The Mews, Victoria Rd., Clapham, S.W. [X9867]

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**1914** 2-speed 2-stroke Hobart, splendid order, and complete; £24/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X6082]

**HOBART** 3-speed 4-h.p. Twin, and 9 gn. Gloria sidecar, all accessories; any trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [X6832]

**HOBART**, 1915, sacrifice, 2-stroke, lamps, generator, watch, horn, not done 80 miles; £14/15, bargain; joining up.—Smith, 1, Charlton Villa, Staines Rd., Bedford, Middlesex. [X9770]

**HOBART-VILLIERS**, 1915, 2½-h.p.; we have an extra fine sample, exceptionally fine engine, good appearance, well tried; £21; approval anywhere.—Layton's Garage, Bicester, Oxon. [X6234]

## Humber.

**HUMBER**, 3½-h.p., 2-speed, handle start; 16 gns., cheap.—White, Dental, 332, Lillie Rd., Fulham. [X9742]

**1914** 2-h.p. Humber Lightweight; £19, complete with accessories.—Colmore Depot, 31, Colmore Row, Birmingham. [X6075]

**HUMBER**, 3½-h.p., 1912, 2-speed, free, handle start, £18; with sidecar, £20.—14, Dodbrooke Rd., West Norwood. [X9676]

**1911** 3½-h.p. Humber Motor Cycle, less back wheel, carburettor, and mag.; a bargain, all in perfect order; £9.—Jones, Garage, Broadway, Muswell Hill. [X9702]

**HUMBER**, 3½-h.p., 2 speeds, handle start, free engine, wicker sidecar, splendid condition, well tried, accessories; £30; owner enlisted; seen and tried by appointment.—Walter Bros., 21, High St., Clapham. [X9750]

## Indian.

**1915** Indian and Sidecar, 5-h.p., 3-speed, good condition; £55.—C. F. Hooper, Fruit Merchant, Evesham. [X9768]

**3½-h.p.** Indian Lightweight, sporty machine, good condition; £16.—A. O. Walker, 90a, Elmsmore Rd., Forest Hill. [X9669]

**1915** Indian, 7-h.p., clutch model, complete with accessories; £35.—Colmore Depot, 31, Colmore Row, Birmingham. [X6085]

**1914** Indian, electrically equipped, nice sidecar (Montgomery); £45.—Colmore Depot, 31, Colmore Row, Birmingham. [X6087]

**1914** Hendee Special, with Middleton C.B. sidecar; £58, lowest.—Letters only to 5, Western Rd., Mitcham, S.W. [X9772]

**INDIAN** Combination, 7-9-h.p., 2-speed, 2 new tyres, splendid condition; £50.—L.B.F., "Herald" Office, Sutton, Surrey. [X9728]

**7-h.p.** Indian Outfit, new March, 1915; £62; would entertain exchange 1916 Triumph.—38, Radnor Drive, Liscard, Cheshire. [X6128]

**3½-h.p.** Twin-cyl. Indian Motor Cycle, 1915 model, 32 3-speed, fast solo mount; price £47/10.—Wauchope's, 9, Shoe Lane, London. [X9921]

**INDIAN**, 1913, 7-h.p., sporting combination, 2-speed countershaft, h.c. clutch, little used, splendid order; £37/10.—Lee, 30, Cholmeley Rd., Reading. [X9806]

**INDIAN**, 1912, 7-h.p., 2-speed, in excellent condition, wicker sidecar, many spares; £40.—Steele, 1, Connaught Gardens, Muswell Hill, London, N. [X9747]

**INDIAN**, 1915, 5-h.p., 3-speed, clutch, kick starter, accessories, in really good condition; £42.—2nd Lt. J. V. Carter, 3/9 Middlesex Regt., Belhus Park, Aveley, Essex. [X6261]

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## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN** Combination, late 1915, 7-h.p., 3-speed, 3 electric lamps and horn, hood, screen, speedometer, tools, etc., practically new; £80.—Winkworth, 3, East Cliff, Broadstairs. [X9823]

**1915** Indian, 5-h.p., 3 speeds, free engine, kick starter, large P.H. lamp set, Lucas horn and back lamp, tools, machine, condition as new; £43.—697a, Old Kent Rd., London. [X6277]

**INDIAN** Combination, 7-9-h.p., 1914½, electrically equipped, 2-speed, clutch spring frame, Millford coach sidecar, hood, wind screen, luxurions outfit; cost £105, sacrifice £52/10; lightweight part.—28, Wesley St., Fallowfield, Manchester. [X6242]

**INDIAN** 5-h.p. 3-speed 1915 (September) Combination, practically new, complete with speedometer, horn, lamp, generator, kit of tools and spares, Millford coachbuilt sidecar with stern apron and lamps; cost £88, accept £70.—Oscar Davies, c/o Norton's Garage, Llan-drinded Wells. [X6116]

## Ivy.

**4-h.p.** Twin T.T. Ivy, nearly new; £30.—O. F. Hooper, Fruit Merchant, Evesham. [X9769]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [X829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [X803]

**JAMES**, 1914½, 4½-h.p. combination, speedometer, lamps, horn, perfect order; £50.—173, Victoria Rd., Alexandra Park. [X9880]

**2½-h.p.** James, 2-stroke, 1915 machine, complete with all accessories and speedometer, and almost new; £37/10.—Wauchope's, 9, Shoe Lane, London. [X9925]

**JAMES** Combination, 1915, 4½-h.p., 3 speeds, with Lucas dynamo lighting set, Lucas electric horn, speedometer, good condition; £68.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [X6551]

## J.A.P.

**A GENUINE** Bergain.—6-h.p. J.A.P., free engine, 2 speeds, and sidecar, coachbuilt, extra new tyre for same, luggage carrier, lamps, and all accessories, new belt, good tyres, recently overhauled; all at £28.—P. Foley, 65, High Rd., Lee, S.E. [X9751]

## Juno.

**1914** Juno Combination, 4½-h.p. Precision, 3-speed Sturmey-Archer, kick starter, 85 m.p.g.; sacrifice £35; coachbuilt sidecar, perfect; deposit.—139, St. Michael's Hill, Bristol. [X9960]

## Kerry.

**KERRY-ABINGDON**, 3½-h.p., 2-speed, with cane sidecar; £25.—Seen at Newson's Garage, Palace Parade, Hornsey, N. [X9891]

**1913** Kerry-Abingdon, 3½-h.p., P. and H. lamps, tube and belt case, spare belt and tube, all in good condition; £18, or best offer.—Miller, Bishop Middleham, Ferry Hill. [X6102]

## Lea-Francis.

**LEA-FRANCIS**, 1914, perfectly sound, not used for 6 months, owner on active service; £50, or very close offer.—Lt. Hunter-Smith, Merlees, Cedar Av., Chelmsford. [X6213]

**LEA-FRANCIS**, late 1915, 3½-h.p. twin J.A.P., Bosch mag., 3-speed gear, clutch, and kick starter, with Montgomery De Luxe 21 gn. sidecar, and Lucas accessories, practically new throughout; £75.—Moos, Wem. [X6275]

## Levis.

**LEVIS**, 2½-h.p., excellent order, runs perfectly; £21.—The Garage, The Green, Southgate, N. [X9744]

**LEVIS** 2½-h.p. 1915 Popular, all accessories; £22.—Kingsford, 22, Platts Lane, Hampstead. [X9965]

**1915** Levis, splendid condition, mileage under 1,500; £22, or offer.—Posnett, Bernouddsey Settlement, S.E. [X6210]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [X604]

**1914** 2½-h.p. Levis, perfect condition; sale owing to rider's ill-health; £20, no offers.—C. L. Whalley, Aston Lodge, Malvern Wells. [X6014]

**LEVIS** Popular, new; special bargain; cannot repeat; £28 cash; gradual payments 2%.—Referees Cycle Co., 332, High Holborn. [X9764]

**LEVIS** 1916 Popular Model, 2½-h.p., slightly shop-soiled; special bargain, £29.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [X9243]

**LEVIS**, late 1914, 2½-h.p., single speed, overhauled and re-enamelled, good condition; £22.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [X6491]

**1915½** Levis Popular, only done 40 miles, entirely like new and fully equipped; sacrifice, £22 gns., or exchange with cash for good 3½-h.p. combination.—136, Dalnally Rd., E. Croydon. [X9974]

**LEVISES**, Popular models £32, model E with 2-speed gear, rustless rims, £47/10; also 1916 Popular, with accessories, £24/10, bargain; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X9795]



## MOTOR CYCLES FOR SALE.

## Lincoln-Elk.

**L**INCOLN-ELK, 4½ h.p., sidecar, 2 speeds, kick start, speedometer; £25.—Bazzart, 14, Shottesbury Rd., Holloway. [19773]

**1915** 4½ h.p. Lincoln-Elk, 2-speed, F.E., kick start, perfect condition, good sidecar machine; officer leaving country; sacrifice £35.—Rees, R.S.M., 21st Wilt. Ambulance, Howbury Camp, Bedford. [X6255]

## Matchless.

**6** h.p. Matchless C.B. Combination, 2 speeds and free, 3 lamps, speedometer, tools and spares, all good condition; £37.—14, Chipley St., New Cross, S.E. [X6193]

**MATCHLESS** J.A.P., 1914, 6 h.p. Twin, 6-speed Gradua gear, overhead valves, new Dunlop tyres and belt, perfect running order; any trial; 50 gns.—31a, Broomfield Rd., Chelmsford. [X6214]

**MATCHLESS** 1913 8 h.p. and Canoelet sidecar, all accessories; bargain, 45 gns.; generous deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [19798]

**MATCHLESS** 1913, 6 h.p., twin belt, Lucas head lamp, Dunlop extra heavy tyre, 2-speed gear and hand clutch, kick starter, and sidecar; 38 gns.—Julians, Broad St., Reading. 'Phone 1024. [X4129]

**3½** h.p. Twin Matchless Motor Cycle, 3 speeds, free 2 engine clutch, kick starter, countershaft, new tyres, lamps, and horn, in excellent condition, very fast and flexible; price £38.—John O. Beadle, Ltd., Motor Engineers, Dartford. [10827]

**MATCHLESS** 1915, 7-h.p. M.A.G. engine, 3-speed gear, kick starter, and Matchless coachbuilt sidecar, complete with Lucas dynamo lighting set, including lamps and Cowey speedometer; cost over £115, accept £87, bargain.—Head, 112, Wellesley Rd., Croydon. 'Phone: 273. [19729]

**MATCHLESS** J.A.P., 7-h.p., Gradua gear, racing model, with aluminium sidecar, Bosch mag., accumulator electric head and tail lamps, latest Binks carburettor, new tyres, belt (Bates), fine condition; exchange for cycle car; sell for £50.—Penoyre, Hurst Grove, Walton-on-Thames. [19786]

**MATCHLESS** Combination, 1914-15, 8B model, M.A.G. engine, 7 h.p., 3-speed countershaft, lamps, electric horn, screen, etc., 700×80 Palmer cover tyres; the Bolls-Royce of motor cycles, perfect condition throughout; 3½ h.p. twin Zenith or 4-h.p. considered in port; £65.—8, King St., Acton. [19927]

## Metro.

**METRO**, 2½ h.p., few months old, 2 lamps, horn, full kit, fine climber, fast and economical, new condition; £25.—Wheeler, Bryn Awel, Mold. [X6117]

## Minerva.

**MINERVA** 4½ h.p. Twin, sidecar, Roe gear, Binks carburettor, Bosch, Whittle, splendid going; £24.—Glen, St. Brides, Callander, N.B. [19932]

## Moto-Reve.

**MOTO-REVE** Twin, 2½ h.p., Bosch, Druids, good tyres, low, up to date; £7.—Baker, c/o Purnoch, Alexandre Rd., Morecambe. [X6182]

## New Hudson.

**1916** New Hudson Lightweight, single, exceptionally good; £26.—20, Potternewton Lane, Leeds. [X6223]

**NEW** Hudson, 4 h.p., 3-speed, 1914 coach sidecar, new upholstery; £48.—1, Queen's Av., Winchmore Hill N. [19967]

**NEW** Hudson, 1914, 4 h.p., 3 speeds, kick starter, coachbuilt sidecar, speedometer; £38.—6, Warren St., London. [19980]

**3½** h.p. New Hudson, 3-speed, clutch, consumption 130:24 £26/10.—21, R.F.C. Villas, Lynchford Rd., S. Farnborough. [X5900]

**1915** 6 h.p. New Hudson Combination, in excellent order, very little used; £65.—Turpin, 22-29, Preston Rd., Brighton. [10716]

**1913** New Hudson, 3½ h.p., 3-speed, and very nice sidecar, enamelled New Hudson grey; a cheap lot of £38; all accessories; easy pavements arranged.—Jones, Garage, Broadway, Maxwell Hill. [19704]

**NEW** Hudson, 1913½, 4 h.p., coach sidecar, 3 speeds, clutch, kick starter, spring footboards, speedometer, lamps, perfect condition throughout; bargain, £40, or offers—exchange solo and cash.—Write, Aldridge, 12, Sandrone Rd., Charlton, S.E. [19947]

## New Imperial.

**1916** New Imperial-Jap, 2-speed; £33.—Parker and Son, St. Ives, Hants. [1004]

**NEW** Imperial-Jap, latest models, in stock, £38 and £44/8.—Crow Bros., Guildford. [18336]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [10805]

**NEW** Imperial-Jap, 1914-15, 2-speed, good condition; £23.—Fluck, 102, Manor Rd., Stoke Newington N. [19733]

**NEW** Imperial, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [10765]



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## MOTOR CYCLES FOR SALE.

## New Imperial.

**NEW** Imperial-Jap, 2½ h.p., 2 speeds, speedometer, Lucas lamp set, watch, new this year; £30; driving officer.—100, High Rd., New Southgate, N. [1989]

**2½** h.p. 1916 New Imperial-Jap, 2-speed countershaft gear, complete with all accessories; 35 gns.; guaranteed.—Wauchope's, 9, Shoe Lane, London. [19924]

**9½** h.p. 1916 New Imperial-Jap's for delivery from 4 stock; 2-speed countershaft models, price £38; easy terms arranged.—Wauchope's, 9, Shoe Lane, London. [19920]

**1915** New Imperial-Jap, 2½ h.p., 2-speed, little used enamel and plating equal to new, good tyres, in perfect order; £28/10.—Turner, 141, Beckett Rd., Lancaster. [X6232]

**NEW** Imperial-Jap, 1916, 2½ h.p., 2-speed, variable mag., unregistered, never been on road; called up unexpectedly, must sell; offers.—Magdala, Alfred Rd., Cromer. [X6011]

**NEW** Imperial, 1916, 2-speed, kick starter, ridden 70 miles; £38/10, real war bargain; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [19799]

**NEW** Imperials, the haughty lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool districts, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [1814]

## New Ryder.

**PETROL** Free with 1915 New Ryder-Jap, 2-speed; 24 gns.—Ryder Troward, 78, High St., Hampstead. [19904]

## Norton.

**NORTON**, 1915-16, 3½ h.p., T.T. lamps, etc.; £45; no offers; military reasons.—7, St. Mark's Rd., Notting Hill, W. [19827]

## N.S.U.

**6½** h.p. Twin N.S.U. Engine, overhead valves, Rothardt mag., brand new; £21.—Pilot, John Bright St., Birmingham. [X6295]

**FOR** Sale, bargain, N.S.U. motor cycle, 4½ h.p., unfinished; £21.—F. Barnett, Belleville, Lower Whitely, Reading. [19782]

**N.U.T.** 3½ h.p. Twin, 1914, 3-speed, bargain; £36.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [19606]

## O.K.

**1915** O.K., 2½ h.p., 4-stroke, overhead valve, Bates and Dunlop tyres, perfect condition, engine just overhauled; £22/10.—Robinson's Garage, Green St., Cambridge. [19853]

## Omega.

**OMEGA** 2-stroke, July, 1915, 3 h.p., as new, all accessories; £20.—Murphy, 57, Rochdale Rd., Blackley, Manchester. [X6010]

## P. and M.

**3½** h.p. P. and M., 2 speeds, and free engine, entire chain drive; £21/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X6078]

**1914** 3½ h.p. P. and M., 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [10721]

**P. and M.**, 1912, 2-speed, wicker sidecar, good condition, recently overhauled, fully equipped; £35.—170, Granville Rd., Child's Hill, N.W. [19832]

**1915** 4-speed 6 h.p. P. and M., with 25 gns. Gloria sidecar, 5 gns. Cowey, Lucas horn, unscratched, perfect, all tools, tyres like new, only done 1,800 miles; cost £120, accept £95.—66, Morpeth St., Hull. [X6268]

**3½** h.p. P. and M. 1913 Coachbuilt Combination, under slung screen, handle starting, 2-speed, free engine, lamps, back-rest, 95 m.p.g., smart lot; any trial after 7; £35.—44, George Lane, Lewisham, S.E. [19872]

**P. and M.** 1914½ Combination, with Phelon and Moore coachbuilt sidecar, full equipment, in perfect condition; only reason for selling, owner in the army; must be sold; best offer secures.—Campbell, Outgate, Cleator, Cumberland. [X6121]

## Peugeot.

**PEUGEOT**, 6-7 h.p. N.S.U. 2-speed, free, new belt and tyres, sidecar, Millfold side entrance, perfect; £20.—Laurel, Smith Works, Twickenham. [19852]

## Precision.

**1915** 3½ h.p. Precision, Calthorpe 2-speed countershaft, enamel and plate as new; exchange for twin, or sell £30.—42, Mellows Rd., Beddington, Surrey. [19767]

## Premier.

**PREMIER**, 2½ h.p., runs on substitute; £18, or offer.—9, Holly St., Smethwick. [X6251]

**3½** h.p. Premier Combination, 2-speed countershaft, like new; £45.—193, High St., Tonbridge. [X6206]

**1914** 2½ h.p. Premier, perfect order, new condition; £17.—Montgomery, Victoria Rooms, Bristol. [X6105]

**PREMIER**, 3½ h.p., T.T. engine, new tyres and belt, Binks carburettor; £25.—101, Tooting Bec Rd., S.W. [19949]



## MOTOR CYCLES FOR SALE.

## Premier.

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Ourages), Ltd., Swansea. [0823]

1913 Premier, 3½ h.p., 3-speed, and sidecar, re-enamelled and overhauled; £32.—Hyde, 69, Newlands Rd., Stirlchley, Birmingham. [X6231]

1914 2½ h.p. Premier, clutch model; Armstrong 3-speed, perfect condition, h.b.c.; £25.—Rigby, Liverpool Rd., Loughton, Lancs. [X6243]

PREMIER, 1913, 2½ h.p., complete; this machine is in exceptional condition, quite economical, and thoroughly desirable; £20.—Laytons' Garage, Bicester, Oxon. [X6240]

PREMIER, 3½ h.p., and Millford sidecar, new 1915, 3-speed countershaft, F.R.S., speedometer, every spare, faultless condition; nearest £50, real bargain.—10, Genoa Rd., Anerley. [X6247]

PREMIER, 3½ h.p., 3-speed, late 1913, little used, in first-class condition, new back tyre, will stand any investigation, £35; also 1915 coachbuilt sidecar, with hood and screen, £9; will sell together or separately.—L., Atlas Co., Stanley Rd., Woodford. Tel.: 189. [X6259]

## Radco.

RADCO, 2½ h.p., little used, must be sold; price £17/17, bargain.—T.H.L., 288, Romford Rd., E. [X6258]

1915 Radco, 2-speed countershaft gear box, T.T. bars; £24/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X6097]

GENUINE 1915 Radco, single speed, 2-stroke, lamps, etc.; 18 gns.; pay good cash difference for recent combination.—Newham, 223, Hammersmith Rd., W. [X6255]

RADCO, 1914, 2-stroke, 2-speed countershaft gear, practically new tyre, in real good order; must sell; £18, no offers, bargain; bring reasonable distance.—Butlin, Bungalow, Galleyswood, Chelmsford. [X6185]

## Regal.

1914 Regal, 2-speed, 2-stroke, open frame, guaranteed as new; £24/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X6096]

REGAL-GREEN-PRECISION, 5½ h.p., 3 speeds, coachbuilt sidecar, very little used, perfect condition; £42.—38, Nicholls St., West Bromwich. [X6207]

1915 Regal-Green, 3-speed Sturmey countershaft gear, and clutch, special sporting sidecar; £47/10, complete with accessories.—Colmore Depot, 31, Colmore Row, Birmingham. [X6083]

## Rex.

REX, 3½ h.p., free engine, kick starter, £7/10; wanted, combination, about 4½ h.p., below £40, instalment, preferred.—89, Marlborough Rd., Bowes Park, N. [X6208]

3½ h.p. Rex, accumulator, h.b.c., new Dunlop belt, 2 engine fine condition, less tyres and saddle; what offers?—William Cook, Stafford Cottage, Philadelphia Rd., Portcawl. [X6130]

REX de Luxe Twin, 6½ h.p., 1913-14, art cane sidecar, lamp, horn, speedometer, and carrier, all new tyres; 48 gns.; seen by appointment.—181, Bowes Rd., New Scutgate, N. [X6253]

REX, 6½ h.p., 2 speeds, clutch, Service belt, speedometer, lamps, grand tyres, cane sidecar, whole turnout in thorough order and condition; great bargain, £28.—38, Loughborough Rd., Brixton, London. [X6889]

1914 Rex 6½ h.p. Twin, 3-speed combination, with 2-seater sidecar, complete with accessories, in first-rate order; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [X6749]

REX 6-8 h.p. Twin, coachbuilt combination, 2-speed, belt drive, free engine, kick starter, shop-soiled only; accept £65; take any machine part payment; good price allowed.—A. Holland, Clarendon St., Coventry. [X6287]

## Rex-Jap.

6 h.p. Rex-Jap, fitted with coachbuilt sidecar, Grado Multi pulley and free engine; £27/10; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X6195]

## Rover.

1915 Rover Combination, cannot tell from 1916 machine; £65.—Colmore Depot, 31, Colmore Row, Birmingham. [X6095]

1913 Rover, 3-speed gear, clutch, and pedal start, splendid order; £35.—Colmore Depot, 31, Colmore Row, Birmingham. [X6099]

ROVER, 1915½, countershaft 3-speed, in excellent condition, lamp, horn, and spares; £48.—Helling, Beechen Cliff House, Bath. [X6127]

ROVER, 1916, 3-speed, kick start models, immediate delivery from stock.—Colmore Depot, Rover Agents, 261, Deansgate, Manchester. [X6545]

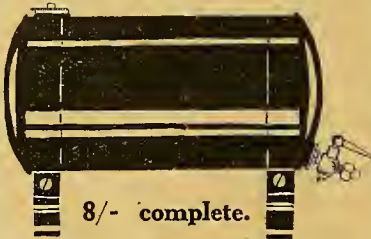
ROVER, 1916, 3½ h.p., 3-speed countershaft, £66/10; combination, £85; in stock, immediate delivery.—Wallace, Fountain Buildings, Bath. [X6021]

1914 3½ h.p. Rover, and brand new Canoelet Minor sidecar, all in splendid order; £45.—Colmore Depot, 31, Colmore Row, Birmingham. [X6081]

ROVER, 3½ h.p., 1912, clutch model, sound order, finish £20; a good sturdy machine at the clearance price of £20; no offers, please.—Laytons' Garage, Bicester, Oxon. [X6235]

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## MOTOR CYCLES FOR SALE.

## Rover.

1912 Rover, 3½ h.p., free engine, B. and B. carburettor, Bosch mag., excellent condition, with good tyres and engine; £20.—Robinson's Garage, Green St., Cambridge. [X6855]

ROVER, 1914, 3 speeds, enamel, etc., perfect, unused 18 months, new coachbuilt sidecar used once; £45, or exchange for 1916 Douglas, or with cash for really good twin combination.—S., 41, Ash Rd., Stratford. [X6951]

GENUINE 1914 Rover Coachbuilt Combination, 3½ h.p., 3-speed model, exceptionally fine condition, complete with special aluminium numbers, speedometer, lamps, horn, etc., very handsome outfit; 53 gns., or close offer.—Newham, 223, Hammersmith Rd., W. [X6956]

## Royal Ruby.

ROYAL Ruby, 1915, 2½ h.p., 2-stroke, spare belt, accessories, excellent condition; £19.—Seed, 14, Laburnum Av., Vauxhall. [X6756]

1915 Royal Ruby, 2 speeds, 2-stroke, open frame, spit either lady or gent; £27.—Colmore Depot, 31, Colmore Row, Birmingham. [X6095]

## Rudge.

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

1913 Rudge Multi, 3½ h.p., coach sidecar, good condition throughout; £37.—Collins, Harlow. [X6951]

FOR Sale, Rudge Multi; owner joined the forces.—Apply, Simpson, The Old Hall, Ackworth, Pontefract. [X6746]

RUDGE, 3½ h.p., 2-speed, and sidecar, disc wheels; £35.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X6066]

1913 Rudge, 3½ h.p., clutch model, in fine condition; £29; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [X6949]

RUDGE, 1912, 3½ h.p., T.T., 3 new tyres, belt, good condition throughout, very fast; £26.—6, West Heath Av., Golder's Green. [X6771]

1914 Rudge Multi, 5-6 h.p., with Rudge sidecar, complete with all accessories and spares; £45.—11, St. Anthony's Av., Eastbourne. [X6874]

RUDGE T.T., late 1912, specially tuned, racing cams, very fast, excellent condition and appearance; will sacrifice for 19 gns.—1, King St., Acton. [X6928]

1914 3½ h.p. Rudge Multi, Empire coachbuilt sidecar, in perfect condition, 3 lamps, speedometer, and horn; £40.—201, East Barnet Rd., New Barnet. [X6938]

RUDGE Multi, 3½ h.p., late 1915, military finish, with Montgomery sporting sidecar, tip-top condition; £40, no offers.—F.A., 614, Wandsworth Rd., S.W. [X6194]

5-6 h.p. Multi Rudge, in good condition, and accessories; £32, or will exchange for good lightweight; seen any time.—Bonnds, Garage, High Rd., Kilburn. [X6801]

1915 Rudge Multi, 5-6 h.p., and coachbuilt sidecar, fully equipped, speedometer, spares, etc., little used, fast, powerful; first cheque £45 secures; called up, must sell.—A. Hurley, 2, Eden St., Kingston, S.W. [X6875]

## Scott.

COLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

SCOTT 1913 Combination, in real nice condition; £32.—6, Warren St., London. [X6977]

SCOTT, 1913, excellent condition, newly overhauled and enamelled; £35.—Henderson, 4, Mary's Place, Edinburgh. [X6942]

1914 Scott Combination, absolutely perfect, Binks carburettor, speedometer, lamp, horn, spares; 45 gns.—Tunstall, Draper, Huddley. [X6181]

1914 Scott Combination, in splendid order, guaranteed in perfect order, all accessories; £50; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [X6963]

1913 Scott, perfect condition, 15 gns. Canoelet sidecar, wind screen, B. and B. electric horn, lamps, new tyres; £38/10.—Garaged at 163, Loughborough Rd., Brixton. [X6966]

SCOTT, 1913, Millford cane sidecar, 1914 lubrication, thoroughly overhauled by makers, new crankcase, front wheel, mudguard, and forks 1916; £42, offers.—Findlay, 98, Bryn Rd., Swansea. [X6257]

## Simplex.

1914 2½ h.p. Simplex, 2-stroke, splendid order; £19.—Colmore Depot, 31, Colmore Row, Birmingham. [X6090]

## Singer.

SINGER, 3½ h.p., free engine, 1912, in nice condition; £18.—6, Warren St., London. [X6978]

1914 4½ h.p. Singer Combination, 2-speed gear, pedal start and clutch; £37.—Colmore Depot, 31, Colmore Row, Birmingham. [X6080]

3½ h.p. Singer, 1913, clutch model, good condition, £10 new parts, runs well on pure paraffin; any trial; £24/10.—Glenville, Desboro Park Rd., High Wycombe. [X6192]

## Sparkbrook.

SPARKBROOK, 1916, 2-stroke, 2-speed, month old; £34.—Digby, Mersea, Essex. [X6735]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## Overheating and Engine Stops.

THE writer of an article which we publish in this issue puts forward a very interesting theory with reference to the results produced by overheating, or what is commonly supposed to be overheating. The case to which he alludes is when an engine simply "peters out," after a long spell of hard work, without konking (owing to pre-ignition) or any of the usual symptoms of under-oiling and partial seizure. He found, when making some observations of an electric spark passing between two wires .5 mm. apart (about the distance plug points are usually set), that as the wire points, and consequently the air surrounding them, became heated, the sparks diminished in intensity until the electric current passed in the form of a "silent discharge," i.e., without causing any spark, the reason for this being that heated gas becomes a fairly good conductor. Presumably the air was more or less at rest, and was therefore heated by the wires. This condition would not obtain at the plug points, where the gas is being replaced at every stroke, but, on the other hand, the same amount of heat might easily be present in the gas, owing to the general temperature of the whole cylinder head after the hard work done by the engine in hill-climbing or a speed burst.

The ignition of petrol vapour requires a minimum temperature of rather more than 700° F. (In the case of paraffin and benzole the temperatures are 600° F. and 900° F. respectively. These figures explain why konking is common with paraffin, but extremely rare with benzole.) If compressed gas becomes a sufficiently good conductor to admit of a "silent discharge" at a less temperature than this, the theory is obviously a possible one. And, be it noted, it is not yet put forward as being proved, but only tentatively. It is, however, a matter of much importance and interest, and if any of our more scientific readers can throw any more

light on the subject, they will be conferring a benefit upon motor cyclists, and, in fact, the whole motoring community.

## Motor Fuels after the War.

IN view of the fact that the question of motor fuels is a most important one at present and likely to remain in the front for some considerable time after the coming of peace, the article in *The Autocar* of August 19th on "The Yield of Benzole" will have been read by many with very great interest. In the opinion of some, petrol will be dumped on the market at a very cheap rate: so cheap that motorists will not consider the purchase of benzole at ordinary prices. If petrol be cheap, so much the better; but we know many riders who always used benzole in preference to petrol in the pre-war days when petrol was really petrol.

The author of the article to which we refer, however, makes the welcome assertion that, "judging by the fact that the coal tar industry is vastly more profitable than most others, it does not seem outside the regions of possibility that good profits can be made, even if benzole were almost given away." Without going deeply into technicalities, we may say that benzole is only one of several valuable by-products obtained from coal in the making of gas, some others being coke, tar, and ammonia. Coke is used for metallurgical industries and for household purposes. Tar produces many valuable compounds which yield important dyes, toluene used in the manufacture of explosives, solvent naphtha, a certain amount of benzole, pitch, and other substances too numerous to mention. There is a large demand for ammonia as a fertiliser.

Thus we see that, quite apart from the value of the benzole, the coking of coal and subsequent distillation of the by-products may be very profitable. It has been estimated that, if 50% of our yearly consumption of coal were treated in this way, the yield of benzole would be about two hundred million gallons.





### Difficult Starting.

In view of the many complaints about reluctance to start which we receive, I give prominence to the ancient tip of covering the air intake of the carburetter. I met a new machine at the station last week, and, after filling the tanks, made about thirty vain attempts to get the engine going with the kick-starter. Finally I held a rag over the air intake, and it started at the next kick. The engine has behaved similarly ever since, and though it will not start at all by any other dodge, it invariably answers to the first kick if the air intake is covered up.

### Spring Frames and Freak Hills.

I have now had time to test Mr. Bethwaite's contention that spring frames are inferior to rigid patterns on freak hills. My conclusions are that the answer must depend on the type of spring frame, crediting Mr. Bethwaite with complete sincerity. In my tests a spring frame A.B.C. and ditto  $2\frac{3}{4}$  h.p. Douglas (1916) were pitted against a 1916 rigid frame machine up two hills of phenomenally bad surface; I can indicate the atrocious nature of the road by saying that the foot-rests on both sides of the A.B.C. were bent backwards by the sides of a rut in which I had to ride, in order to avoid boulders lying on the hoof track. Nobody outside Bedlam would pretend after three ascents of this hill on my trio of machines that the spring frames are not infinitely superior; and Mr. Bethwaite's experience must surely be based on some pattern of spring frame which gives an excessive rebound.

### Converting a Douglas to Heavy Fuel.

I was sufficiently pleased with my early experiments with Binks fuel to order a full conversion set for my  $2\frac{3}{4}$  h.p. Douglas. The set is, of course, standardised for this popular make, and will slip into place after half an hour's work with a soldering outfit. It consists of three-jet carburetter, hot air pipe, neat black pint tank and clip (to carry a supply of petrol for starting), length of petrol pipe, T piece, and spare cone nut and union for coupling up. A cheaper mode of using heavy fuels and mixtures would take the form of utilising the existing carburetter; but I am a great believer in multiple-jet carburetters for this purpose, as the finer spraying orifices certainly assist the vaporisation of a sluggish fuel. Previous experience of three-jets indicates that even petrol benefits by their superior atomising properties; *a fortiori*, they are still more useful for petrol-paraffin and other noxious compounds.

### The A.B.C. Bicycle.

I have been overwhelmed with letters about my article on the A.B.C., and have one small correction to make. The article was written some months ago,

and the actual weight of the jigger was considerably overstated, partly because I came to it fresh from a baby two-stroke, partly because Mr. Bradshaw's typist struck a "3" instead of a "2" in writing to me on the subject. The weight is not more than that of the ordinary vertical single-cylinder 500 c.c. In reply to various correspondents, the machine is not capable of remarkably slow speeds on the fourth ratio; though it will tick over absurdly slowly in neutral, more slowly (I fancy) than any other engine would in normal adjustment, its power is attained by high engine revolutions, and there is not sufficient power at very low revolutions to permit the machine to run dead slow on a very high gear; I always change down to third gear for traffic work. I am hardly in a position to state what the normal petrol consumption should be, as I keep two or three bicycles running, and use the A.B.C. for speed work on good roads, or for fast climbing on freak roads. Still, I can get 70 m.p.g. under these conditions, and opine that a higher economy should be possible in steady riding on ordinary undulating roads. A further point is that the maximum speed obtainable on fourth gear is only possible when conditions allow the machine to be "whacked up." You cannot work engine revolutions up to an abnormal figure on an abnormal gear except where conditions approximate to track work. The machine is fast because it can attain unusual speeds on second and third gears, rather than because its phenomenal fourth gear maximum can often be resorted to, and because the combination of high r.p.m., a variety of gear ratios, and a terrific carburetter allow of ferocious acceleration. The "jump" when the engine is put on second gear and full throttle at the corner footing a single figure gradient is truly remarkable.

### Rapid Cylinder Wear.

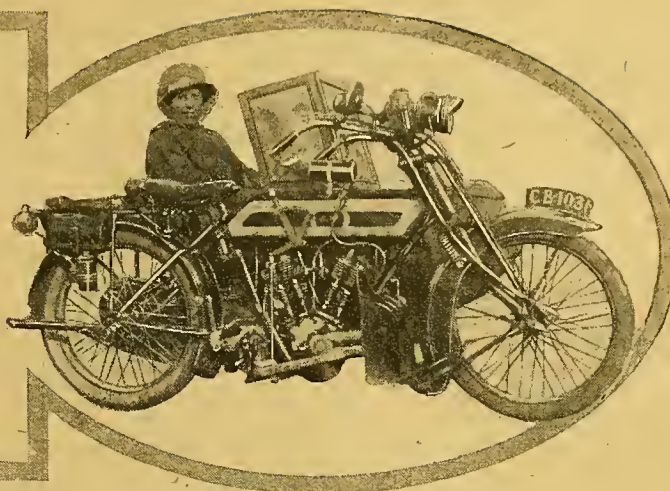
Some months ago a reader in India asked my help in diagnosing an engine knock, which had developed on a new British machine of the first class within 700 miles of purchase. The knock turns out to have been due to wear of the cylinder bore, and two facts worthy of notice are that such wear should occur after such a short mileage, and, secondly, that it was not accompanied by any loss of power. The owner suggests that the dust of the Indian roads may be responsible. On this point the testimony of other Colonial riders would be interesting. Many Colonial riders have told me that naked chains are useless in their districts, as the fine dust permeates the chains and wears them out rapidly; but I never heard a Colonial rider complain that dust ground his cylinder bore oval so quickly. Makers of Overseas models may care to consider whether it is worth while providing extra protection for the main air intake.



## 1,200 MILES ON CHEAP FUEL.

Experiences of a Petrol Substitute  
with a 6 h.p. Sidecar.

The Petrol Restrictions need not  
Stop Motor Cyclists.



**A** DESIRE to keep going an only hobby and means of recreation, coupled with an intimation that permission could not be granted me to join His Majesty's Forces, led my wife and myself carefully to consider the possibilities of running on cheap fuel. Our machine is a 1914 model A.J.S. of 750 c.c. capacity, and up to this time had given us about 5,000 miles of faithful service, its running being all that could be desired in every respect. The sidecar is a Montgomery of 1915 pattern chassis, a worthy successor to a two-year-old chassis of lighter pattern, which (fortunately when empty) tried conclusions with a hedge and ditch in the New Forest at 4 a.m. on a summer day in June, 1915, the result reducing the chassis to a heap of scrap iron, but the light cane body survived, and was easily repaired and reinstated. For the sake of easy comparison the petrol consumption up to this time is appended.

Carburetter.	Jet No.	m.p.g.
Amac ... ..	26 ... ..	56

This over a year and five months, mainly with sidecar.

The ever increasing price of petrol, the difficulty of obtaining even the modicum allowed by Government, finally decided us, and a Binks three-jet carburetter was fitted and a supply of the Binks fuel obtained.

### Fitting the Carburetter.

The carburetter connection as sent was about 4in. long, and this was at first fitted to the already long induction pipe of the A.J.S. machine. The jets fitted when sent were Nos. 0, 3, and 7, and some little time was spent in trying over the machine with petrol as a fuel, and the jets finally decided on were Nos. 00 (a size smaller), 3, and 8 (a size larger).

At this stage a week-end run of 190 miles solo was undertaken over main roads in the South of England, the outward journey coming out at:

Carburetter.	Jets Nos.	m.p.g.	Fuel.
Binks ... ..	00 ... ..	66 ... ..	Petrol 2 with
	3		paraffin 3/4th.
	8		

The return journey was ridden under less favourable conditions in heavy rain for about half the time, and with a view to petrol economy the time taken was a good deal longer. Results:

Carburetter.	Jets Nos.	m.p.g.
Binks ... ..	As above. ... ..	77

Thus is the effect of an easier pace clearly seen. The supply of Binks fuel had now arrived, and a business run with sidecar attached of about thirty-five miles, necessitating some six or seven stoppages, was the first essay on the new fuel. I should say that the Binks system had been fully adopted, and a smaller tank for petrol for starting purposes had been fitted. I do not wish to lay too much stress on this first ride, as the effect of the overlong induction pipe and the want of a hot air intake was apparent. Most of the defects of bad carburation presented themselves in that thirty-five mile run, and the consequent inability to climb hills which should have been easily taken on top gear proved very disappointing; and this with a 143 mile run in prospect on the morrow.

### Improvements.

That night several alterations effected a marked improvement; a hot air intake pipe was fitted, bending round behind the back cylinder, and about one and a half inches was cut off the induction pipe, this then being turned down in a lathe to accommodate the stump of the carburetter, which was thus brought into a position between the cylinders. On the following morning a start was easily effected by lightly priming the cylinders from the main tank and filling the float chamber with petrol from the small tank (the float chamber having been previously nearly emptied of the heavy fuel by allowing the engine to run itself out on the last occasion). The sidecar carried a cargo of spare cans of Binks fuel, about a pint of petrol in a bottle, kit bag, maps, a weight to help the controllability of the outfit in the absence of a passenger, and a windscreen (carried in its usual position, as the "Usual Passenger" was to be picked up later). The 143 mile run to the Midlands over the Holyhead Road was accomplished in the time expected, and a business appointment kept exactly to the minute. It was somewhat of a surprise to find the road in good condition, having regard to the present war conditions. The most noticeable feature of the run was the excellent speed maintainable on the second pilot jet (No. 3), but a knocking occurred on hills on the main jet (No. 7).

On the second day a further run of 151 miles to the South Coast was done, and Cheltenham, Stroud,



**1,200 Miles on Cheap Fuel.—**

Nailsworth, Bath, and Shaftesbury were all visited in turn. The same characteristics as in the previous day's run were reproduced, but as the hills were more frequent (the way to Cheltenham leading up the hill to Winchcombe, the widespread view from the top of which was greatly admired), the knocking occurred more frequently, although several small adjustments to the carburetter were made, and it was realised that careful experiment would doubtless effect a cure.

The destination that week-end was Bournemouth, and during the following week a trip was taken to Lyme Regis, accompanied by the "Usual Passenger" in the person of my wife. Now the road to Lyme Regis from Dorchester lies on the roof of Dorset; and you have to get there. However, the verdict of the "Usual Passenger," which should be received with all respect, was "very good." The steepest hills were taken on middle gear on the second pilot jet, and the run was practically a non-stop one in each direction. However, the knocking continued slightly on the main jet when going uphill.

**A Larger Main Jet.**

Further details of the return home—a journey of ninety-five miles from Bournemouth—and the subsequent week-end run back through Mid-Sussex, Fareham, and Southampton need not be entered into except to say that Bury Hill, north of Arundel, was climbed in the usual excellent style. I had unfortunately left the spare jets behind the previous week, but now fitted a No. 9 jet in the main—i.e., two sizes

larger than No. 7—and on the last run taken, but with an empty sidecar, the larger jet effected decided improvement in the running of the engine, the knocking having decidedly decreased, but the extra air lever was called into use now and then.

To sum up, the results obtained with the cheap fuel are as follow:

Mileage travelled to date.	Jets	Nos.	m.p.g.
1,263	...	00	58½
		3	
		7 (now 9)	

The engine had been decarbonised just previously to the arrival of the Binks fuel, and after 1,100 miles running the engine was again taken down and cleaned. The carbon deposit found was no more than when petrol was used, but the absence of a gauze screen in the hot air intake (since fitted) was responsible for an increased amount of road dust found, chiefly in the inlet valve chambers.

The writer has covered upwards of 10,000 miles on various machines purely as a private rider, and, though not a novice, has no curiosity to "see the works" so long as things are well, but he is a sensitive rider who can quickly recognise any deficiency in the running, and occasionally, in the opinion of the "Usual Passenger," nearly degenerates into fussiness. The result of the experience gained is sufficiently good to justify the continued use of the fuel, and it will be interesting to see how the machine behaves during the colder weather of the winter months which are now before us.

F.J.P.

## H.M. the King Inspects Motor Sections.

IT is not generally known that the first inspection of troops by Mr. D. Lloyd George after he took up his new office as Secretary of State for War was the Heavy Section of the Machine Gun Corps. It has been stated in the press that when Mr. Lloyd George reviewed the Australian troops a few days ago it was his first official appearance among the troops, but such is not the case, as he visited the Armoured Car Section of the Machine Gun Corps at its training camp and saw a demonstration of the vehicles forming the equipment some days previously.

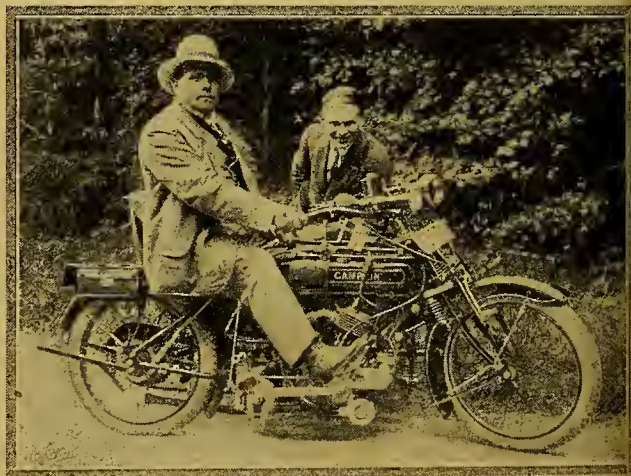
The men of this section, it may be added, are mainly motor cyclists and motorists originally intended for the Motor Machine Gun Service. They were recruited and examined by Mr. Geoffrey Smith, Editor of *The Motor Cycle*, who recently received a letter from Lt.-Col. R. W. Bradley, D.S.O., containing the following extract:

"I must place on record my high appreciation of your work—both for the Motor Machine Gun Service and for the Heavy Section Machine Gun Corps. The raising of the latter Corps within the time limit available would not have been possible but for your valuable assistance."

It may be remarked that, since Mr. Lloyd George witnessed the demonstration of the Heavy Section, Machine Gun Corps, His Majesty the King has also visited the camp on the occasion of a field day of the Corps, and was delighted with what he saw, finally shaking hands with the officers.

This is another feather in the cap of the Motor

Sections, for, as we have already stated, a battery of the Motor Machine Gun Service which went to the Front at the end of 1914 proved to be the first representatives of Kitchener's Army to go overseas. The battery in question, No. 1, was commanded by Captain R. J. Colson, now Lt.-Col. and Commanding Officer of the Training Camp.

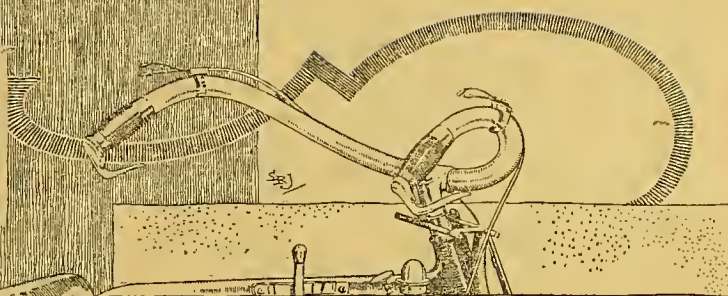


BRITISH MOTOR CYCLES IN DENMARK.

A Campion sidecar, showing Axel Andersen, of Aarhus (leaning on the sidecar), the Campion Company's Danish agent, and his manager. Quite a number of Campions are now running in Denmark.



## THE CAUSE OF OVERHEATING.



### A NEW THEORY ON A VERY VEXED QUESTION.

THE question of overheating has been much discussed, but is always interesting. It will, I think, be agreed that there are at least two types of what is known as "overheating," each of which represents certain typical phenomena. We have instances where an engine, when driven hard, commences to knock, and again we get cases in which the engine simply peters out without any sign of a knock. Now the first condition is, I think, almost certainly due to pre-ignition. It would seem probable that some internal part of the explosion chamber becomes heated to such a temperature that when the gas is compressed its temperature just round this heated part is raised to a point above its temperature of ignition. The mixture in this way is fired just as if a spark had passed at the plug points, the only difference being that the ignition takes place too early, which results in a very sudden shock being given to the piston and other parts which are moving with it. The whole phenomenon is pretty simple, and can be brought about at will by advancing the ignition too far.

The second condition is, however, considerably more puzzling. There is no suggestion of early ignition, and, in fact, when matters reach their worst state there is apparently no ignition of the mixture at all. The engine simply stops firing.

I think most motor cyclists who have done much riding will remember cases when, after having travelled all out either on the level or up-hill for a considerable distance, their machine has commenced to slow down, and has finally stopped entirely. In these instances there is no trace of knocking, the first noticeable symptom being a slowing down, and a feeling as though "all the power had gone out of the engine." The explosions become muffled and woolly and then cease.

#### Two Suggested Explanations.

I myself have had motor cycle engines which did this, and I have also noticed the same thing on a cycle car, though in this case the engine did not stop entirely. The particular car to which I refer had a practically open exhaust, and made a particularly healthy noise. Whilst climbing a long and very severe gradient the exhaust gradually tailed off until at the top of the hill it could hardly be heard. The climb was made on second and first speed with the throttle almost fully open the whole way. I think from this description the reader will be able to recognise the particular type of overheating to which I refer.

Now I seem to have seen two suggested explanations, which were as follow :

(1.) That, owing to the heat of the engine, the incoming charge becomes expanded so much that the amount (weight) drawn into the cylinders is too small for the development of any appreciable power.

I do not think this explanation can be correct. The velocity of the gas passing into the cylinders when the engine is running fast is great. The gas is a bad conductor of heat, and one does not see how in the exceedingly short space of time during which it is in contact with the hot walls and passages of the cylinder it could become sufficiently attenuated to produce the phenomenon in question.

(2.) *Defective Lubrication.*—This, I think, is certainly not the cause. It is difficult in the extreme to see how this could cause a failure of the engine to fire. One would expect the result to be a general tightening of the moving parts—the piston in particular—in fact, an extra load on the engine. It should bring the machine to rest more or less gradually, but there appears no reason why the engine should cease firing.

#### A Likely Theory.

I will now turn to what I think may possibly prove to be the real explanation. During the course of some investigations on an entirely different subject I had cause to examine the sparks produced by an induction coil between the ends of two wires separated by about .5 mm. The examination was made under a microscope specially rigged up for the purpose. The apparatus was so adjusted that the strength of the current producing the sparks was perfectly under control. When the current was fairly weak the sparks presented more or less the normal appearance, though many minor points of interest were observed, which it is unnecessary to enter into here. Matters continued thus until the current was increased to a value at which the ends of the wires commenced to glow a dull red colour. The sparks then became much less sharply defined, and presented a more or less nebulous appearance. On further increasing the current until the electrodes were bright red the sparks disappeared entirely. This phenomenon is, indeed, entirely in agreement with the well-known fact that at high temperatures gases become quite good conductors (comparatively speaking) of electricity.

Now these experiments were conducted under normal atmospheric pressure, and since the conductivity of a gas varies inversely as its pressure (within



**The Cause of Overheating.—**

limits), it occurred to me that it was worth while seeing whether a similar effect could be obtained in a gas when under increased pressure. I accordingly constructed a glass tube, containing two suitably placed electrodes, which could be filled with gas at a pressure of about 30 lb. per square inch. An examination was then made under these conditions, when very much the same effect was obtained, though in this case the temperature before the sparks disappeared was higher.

Now I think it will be clear from the foregoing that I suggest that in the case of a petrol engine the points of the plug, and as a result the gases in their immediate neighbourhood, become so hot that they (the gases) present no considerable resistance to the passage of the current. Under these circumstances the current does not pass in the form of a spark, but rather as what may perhaps be termed a "silent" discharge.

The heat developed by a given current varies directly as the resistance through which it passes, and in this case, the resistance being small, the amount of heat developed is small—in fact, too small to raise the gases to their ignition temperature. Of course, this theory requires the plug points to be hot, but not necessarily so hot as themselves to ignite the gas. I am quite ready to admit that the whole question requires careful investigation before any real reliance can be placed on the results. One wants to know the temperature of ignition of the compressed gases, and also the minimum temperature of the gases between the electrodes to prevent a spark passing. If the latter figure is higher than the former the theory is exploded;

if, on the other hand, the converse holds, then the gas will not be exploded.

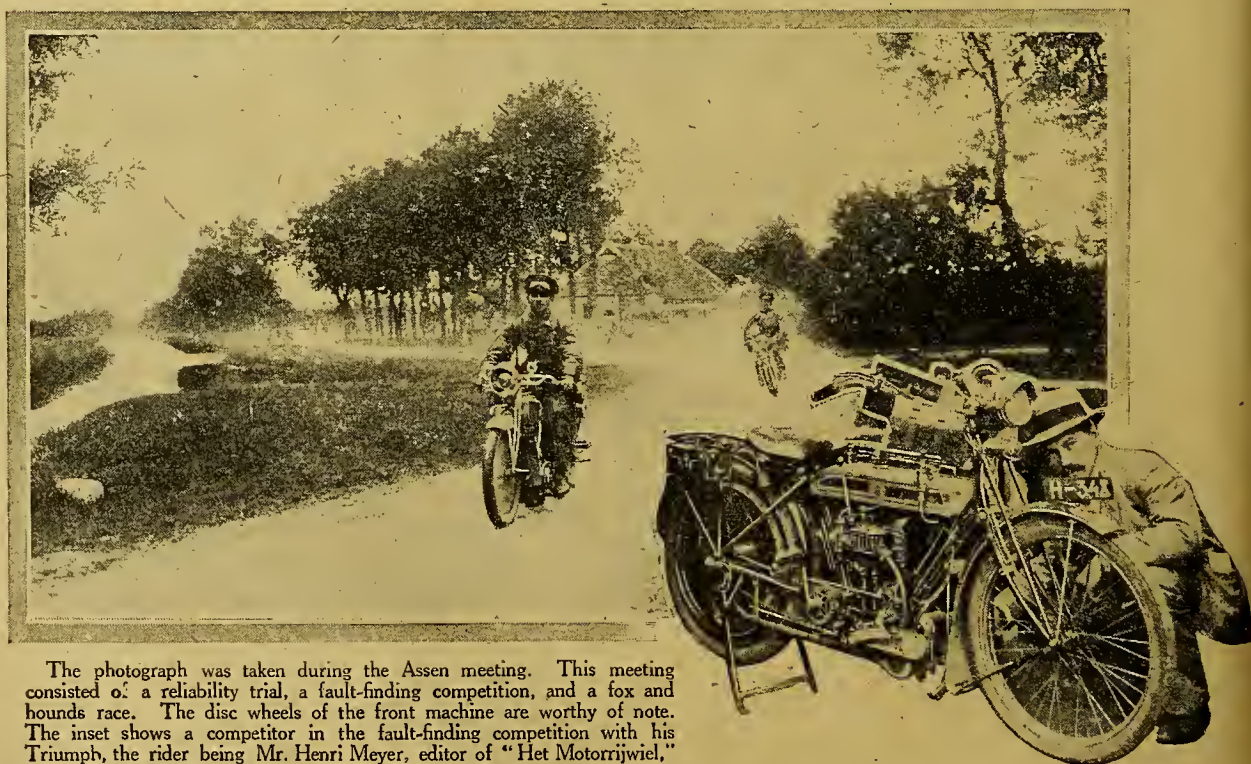
**Further Investigation Necessary.**

Unfortunately I have neither the time nor the apparatus to investigate these two points. I am tempted to bring forward the facts as observed and the suggestions resulting therefrom in the hope that some comments may be made which may serve to clear up a matter still shrouded in mystery. I have entirely omitted one consideration, viz., that the insulation of the plug may break down in many cases at a high temperature. Perhaps after all this may prove to be a sufficient explanation. However, that is a question which I would leave to those more capable of expressing a definite opinion. I used in all cases a 2in. objective in the binocular body of my microscope; of course, the binocular instrument gives a much more satisfactory result than the monocular, but is not in any way necessary, and I think an ordinary magnifying glass, magnifying about eight times, would give a fairly good result, though I have not tried it. If a small coil is used, the electrodes should consist of very thin wires, say number 36 or 40 S.W.G. copper. The current from a small coil is not able to heat up thick electrodes, whilst in the case of a plug in an engine, the points are heated by the explosions.

If a microscope is used it is well to connect it by a wire to a gas or water pipe, as in the event of one of the wires from the coil coming into contact with it, a very unpleasant shock will be experienced when making an observation unless the instrument is earthed.

C. H. STEPHENSON.

A TYPICAL DUTCH ROAD RUNNING ALONGSIDE A CANAL.



The photograph was taken during the Assen meeting. This meeting consisted of a reliability trial, a fault-finding competition, and a fox and hounds race. The disc wheels of the front machine are worthy of note. The inset shows a competitor in the fault-finding competition with his Triumph, the rider being Mr. Henri Meyer, editor of "Het Motorrijwiel," who will be remembered by competitors in the Anglo-Dutch trials.



# THE MOTOR CYCLE IN JAPAN.

## A. Motor Cyclist's Impressions of the Fine Scenery and Difficult Roads.

**M**OTOR cycling is becoming increasingly popular in Japan, not only amongst the resident foreigners, but also amongst the Japanese themselves. Prices run rather high, owing to the cost of freight and the import duty of ¥90.00 (about £9 ros.) per motor cycle of any power. This fact alone debars all but the relatively small moneyed class from the pleasures of motor cycling. This is easily understood when it is considered that the average monthly income of a professional man, say a doctor, is but £10, and that of a clerk about £4.

As examples of the prices of new machines ruling before the war, a 2½ h.p. Douglas two-speed kick starter cost about £62, and a 3½ h.p. B.S.A. with three-speed hub gear cost about £76. The agents for the various makes of machines carry practically no stocks of spares, and competent repairers are very few.

The female Japanese rider has not yet appeared, and I am convinced will not appear for a few generations to come, as the woman occupies a very low position in the relations of the sexes.

There are many drawbacks to motor cycling in Japan, the foremost being the roads and the native road users. The few main roads are reasonably good, but are spoilt by the extensive use of loose gravel, which, thrown periodically upon the road surface, is left to the traffic to roll in. As the road traffic is very light, this operation takes a considerable time to complete, by which time a fresh lot of gravel is due.

There is, it is rumoured, actually a steam roller in Tokio, but it is not used because the road bridges are unable to carry it.

### Japanese Roads.

The roads have no foundations, and consequently break up badly in the wet weather or under heavy traffic. In the country the bridges are usually crazy wooden structures, very shaky, and with always a modicum of loose or rotten flooring planks. Ferries abound, and in flood times, when the rivers are swollen to a breadth much greater than normal, they are very difficult to negotiate. Many of the bridges disappear entirely during the wet weather, as also do whole stretches of the roads. In the dry weather the dust

is very thick, and in the wet weather the roads are seas of mud.

Amongst the hills and off the main roads fine scenery is to be found, but trials and tribulation await the bold wanderer off the beaten tracks. Ferries with precipitous approaches, water splashes, narrow serpentine tracks, rising and falling at terrific grades, loose stones and boulders, mud, gulleys, river beds, and hysterical pack horses all go to spice the journeyings of the intrepid motor cyclist who forsakes the main roads. These exploring expeditions are not without their charm, however, despite the adverse road conditions encountered. I advisedly designate these trips off the main roads "exploring" expeditions, because of a complete absence of really truthful maps: that is, truthful from a motor cyclist's point of view.

Except in a few of the most important cities there are no rules of the road. In the country the people have no conception of a speed above that of a trotting rikisha man; consequently they are very sluggish in making way for an approaching motor cycle, and, generally, when the motor cycle is all but upon them they are seized with panic.

The traffic mostly met with consists of hand carts, two-

wheeled horse carts, pack horses, rikishas, and four-wheeled omnibuses called "basha." The last-named are only encountered about the larger towns. Their speciality act is that of obstructing motor vehicles, but a liberal use of horn and cut-out almost invariably reduces the horse to such a state of nerves that, rather than endanger his passengers, the "basha" driver instructs his horn-boy to alight and hold the plunging horse until the motor cyclist is safely by. On occasions I have seen the "basha" driver, on hearing an approaching motor cycle, actually take his horse from between the shafts and lead it into a near-by field in order to avoid the bout of equine hysterics likely to ensue should the motor cyclist pass too close to the excitable quadruped. The horn-boy referred to above is generally a diminutive ragged youth who trots before the "basha" blowing a strident horn, when passing through towns or villages, in order to clear a way for the ramshackle vehicle. This is made necessary by law for the "basha," but



Interested villagers at Toya, showing author's Brough motor cycle in the foreground.



**The Motor Cycle in Japan.—**

does not apply to the speedier motor car. The speed limit for the latter, however, is 12 m.p.h. Needless to say, this limit is habitually exceeded by car drivers.

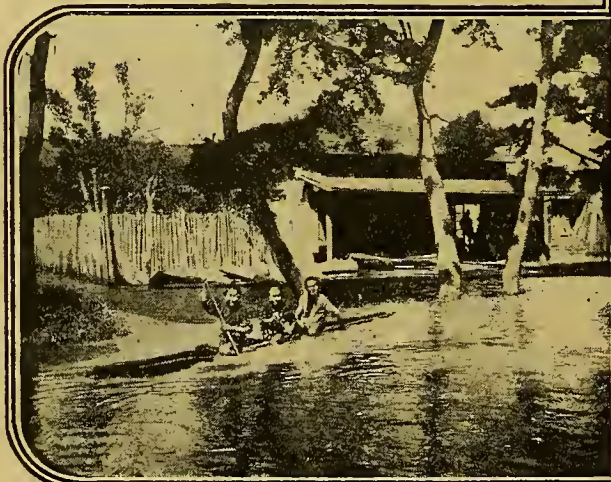
**The Animal Population.**

Horses, generally, in Japan, being totally unused to the sound of the exhaust from a petrol engine, shy



Pontoon bridge over the Tangawa river at Furuto.

violently upon the approach of a motor cycle, and cause considerable anxiety to both drivers. The effect of a plunging horse attached to a two-wheeled cart



The Tokido (Japan's main thoroughfare), near Hiratsuka, in flood time.

carrying long bamboos, or an excited, overladen pack horse with nothing to restrict the full use of its hind legs, when encountered upon a narrow road, can better be imagined than described.

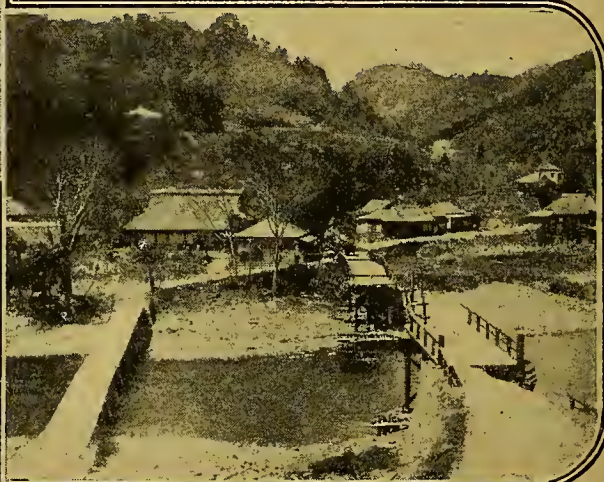
The people, however, are generally very helpful and considerate to the motor cyclist in trouble or enquiring the way. A curious, jostling crowd always throngs round the halted motor cyclist. The various members explain the working of the machine to one another; burn their fingers on the engine; ask questions as to

speed, etc.; and unwittingly impede the rider's movements. On a sweltering summer's day these attentions are extremely exasperating, especially when one's temper has already been ruffled by the advent of a fault developing on the machine. But the crowd is quite amiable; not aggressive, but merely interested.

Punctures are very rare. The stones with which the roads are made up, being taken from the river beds, have no sharp edges; and the road surfaces being soft, the stones are rolled in by the vehicular traffic without being broken. As the natives use no nailed boots, very few nails are deposited upon the roads; and broken glass or jagged-edged tin cans, etc., are very rarely encountered.

**A Rise in Petrol.**

Petrol of a kind can be obtained in nearly all the towns and larger villages. It is used by the Japs for cleaning purposes, and is sold in one pint beer bottles.



Bridge at Tashiro swept away at flood time. Temporary bridge on left.

True, it is more often than not well flavoured with foreign solid matter, water, etc., but it serves its purpose. Imported Pratt's and Shell, or petrol pro-



A provincial hotel at Gotemba.



**The Motor Cycle in Japan.—**

duced in Japan, can be obtained in the larger towns in the ordinary four-gallon sealed cans. Petrol produced in Japan, which in pre-war days cost 5s. per four-gallon can, now costs 9s., and bids fair to rise yet higher in price.

Japan as a motor cycling country has its advantages, however. There is no speed limit for motor cycles, though "driving to the danger" is a punishable offence. The pastime of timing unwary motor cyclists over alleged measured stretches of road with 5s. Yankee watches is denied the police here. We carry no identification number-plate except a small wooden tag, which is, in effect, just a receipt for the tax, and need not necessarily be attached to the machine. The licence in this district is 10s. per annum for any motor cycle, plus a local tax of about 2s.

**An Ideal Mount.**

My specification for a suitable machine for solo riding in Japan is as follows:

**ENGINE.**— $3\frac{1}{2}$  h.p. opposed twin. Cylinders both easily detachable without removing the complete engine from the frame. Overhead valves. Valve gear protected, and provided with lubricators. Engine should not form a stressed member of the frame, but be independently attached. The outside flywheel should not make magneto contact breaker inaccessible.

**CARBURETTER.**—Fitted snugly against crank case, out of the way in case of a fall. Ample gauzes to keep road dust out of mixing chamber, and large area petrol filter.

**GEARS, ETC.**—Three-speed countershaft gear. Change lever should not prevent rider from gripping petrol tank with both knees. Gears  $4\frac{1}{2}$ , 7, and 12 to 1. Large diameter countershaft pulley. Handle-bar controlled clutch, capable of withstanding continued slipping without burning out.

**TRANSMISSION.**—Chain-cum-belt. Chain should be outside engine flywheel, and be enclosed in an oil bath case. 1in. belt, well protected from mud and rain. Belt rim attached to rear hub shell by independent spokes, and as small in diameter as possible. Large diameter belt rims become damaged when riding in deep ruts.

**WHEELS, ETC.**—28in. diameter. Tyres, 28in.  $\times$  2 $\frac{3}{4}$ in. or 3in., extra heavy. Rims extra strong, and of a width smaller than the sectional diameter of the tyre, so as to escape damage when riding amongst large loose stones.

**BRAKES.**—Enclosed band brakes on both wheels. Wheel and belt rim brakes are useless and dangerous when rims are at all battered.

**A Chain-mail Mud-flap.**

**MUDGUARDS.**—5in. or 6in. wide, almost flat in cross section, and at least 1in. clear of tyres. Side valances are useless, as they cause mud to clog, and make tyres inaccessible for repairs. Front mudguard should not be carried too far forward, but be bent upwards at a point immediately above the wheel centre. Indestructible mud-flap should be fitted to front guard: I would suggest a light steel chain-mail flap.

**FRAME.**—Loop pattern, reinforced, with front and rear springing. Springs must be very stiff. The usual

Druid pattern spring fork allows the front mudguard and base of steering column to come into contact when a bad shock is received.

**SILENCER.**—Fitted with extra baffle for making exhaust very silent when passing restive horses, etc., and which can be cut out for ordinary riding conditions.

**LIGHTING.**—In default of a really compact, powerful, and reliable dynamo lighting set, a powerful acetylene head light with large generator is essential, and a small auxiliary storage-battery electric head light would be very handy for use when passing through the many long dark tunnels met with on the main Japanese roads.

**General Requirements.**

There should be at least 6in. clear ground clearance

Ample petrol tank, not too wide about the rider's knees, fitted with large filler caps and petrol filter.

Large pan saddle well sprung; springs enclosed so that rider's coat tails cannot enter between the coils when springs are loaded, and so be caught when the springs are relieved by the rider dismounting.

Semi T.T. handle-bars clipped direct to steering head or forks, so that bars cannot twist when subjected to excessive side strain.

Footboards kept as high and narrow as possible. In deep ruts or amongst large loose stones footboards suffer badly if at all low or wide. A bar fitted across each board towards the forward end, against which the front of the rider's boot heel could rest, would assist to keep the feet from being jerked off the boards when riding over bad roads.

A complete set of the necessary tools, spanners, etc., should be enclosed in two ample pannier tool-bags of stout metal reinforced leather, kept flush with the sides of the rear carrier. A third bag should be fitted between the mudguard and back rail of carrier, and be divided into receptacles for carrying the necessary spares, a complete set of which should be included in the machine's equipment.

All black finish.

All bolts and nuts standardised, and fitted with locking devices, spring washers, or split pins.

Rear stand arranged to be operated from the saddle, so that when the rider is forced to stop suddenly on a steep hill the stand can be used as a sprag to prevent the machine from running backwards when gear is put into neutral to restart the engine.

A mechanical horn on the lines of the "Auto Vox" (in which a friction pulley driven by the engine flywheel causes an air current to pass through an ordinary reed) would be a useful fitment. Such a mechanical horn could be made very small, and could be tucked away under the forward end of the tank.

I am convinced that by paying special attention to such small items as control levers, lamp and speedometer fittings, etc., by substituting neat brazed lugs for loose clips, and by making the accessories suit and fit the machine, much could be done in the way of weight cutting without reducing the strength.

The foregoing specification appears to me to voice the requirements of the general run of overseas motor cyclists, judging from the letters reproduced from time to time in the much appreciated Overseas section of *The Motor Cycle*, and by my own experience in Japan.

E. V. STEVENS.



## MILITARY NOTES.

## News of Service Motor Cyclists in Egypt, France, and German East Africa.

## CONDITIONS IN EGYPT.

THE name of A. G. Fenn will be familiar to many readers, as he took part in numerous competitions in the pre-war days. At the moment he is a driver in the A.S.C., M.T., and stationed in Egypt, whence he has sent us some impressions of Army life.

The following are extracts from Fenn's letter, which has been passed by the British Press Censor:

"I do not suppose you hear much of what goes on in Egypt, as I see very little mention of affairs here in the English papers; but you must not be surprised at the magnitude of operations when you eventually learn the truth, which, I suppose, will be published one day.

"It is insufferably hot here just now, although up to six months ago it was fairly respectable. In the towns it is not so bad, but out in the desert the heat seems to be magnified tenfold, as though we lived in the focus of an immense mirror. Temperatures of 120 degrees are not at all uncommon, and it is no joke when anything needs repairs, which, fortunately, is not too often. On the whole, the War Office has selected some of England's best in the M.T. line. I have had Vauxhalls, Sunbeams, Daimlers, Fords, Austins, etc.—of all sorts of ages and respectability—lorries, a Holt Cater-

pillar, and even an afternoon on a steam roller! The chassis number of each car I write down in my diary (not counting the roller), and perhaps I may run across some of them in future years.

"I could tell you all sorts of falsehoods about hairbreadth escapes from fanatics and howling Dervishes, but, to be quite candid, I have not had, nor heard of, anything of the sort since I have been out here. Shells we have, and occasional visits from enemy aeroplanes, but, beyond a bang or two in the distance, there is nothing which could be magnified into war horrors. Of course, we sometimes find ourselves in an irrigation canal at night time, when we have no lights, or get stuck in the sand, and go hunting for camels, which is really great fun, and helps to pass the time, but nothing sufficiently exciting for me.

## The Dreaded Sandstorm.

"What we dread most is a sandstorm. When we get caught in one of those it is as near hell as matters not. The hot wind seems to blister one, and the sand gets in everywhere—goggles, eyes, ears, throats. We simply cannot drive in one, and have to wrap ourselves up in our side curtains and wait until it stops.

"But for these, and the specially designed insects which seem to have been invented expressly for troops, we should be quite contented; as it is we

are all right. Literature is expensive where I am; a copy of *The Motor Cycle* costs me 5d.

"I managed to pick up a 1915 Indian at a reasonable price when I was in the nearest town, but do not get much chance to use it because we are so busy. The chains take some protecting, for we have over two miles of sand to get over somehow before we strike anything in the least resembling a road. What a game!"

## THE MARRIAGE OF MAJOR WATSON.

WE offer our congratulations to Major W. H. L. Watson, the author of "The Adventures of a Despatch Rider," on his marriage to Miss Barbara Wake-Walker. Major Watson went out in the early days of the war as a despatch rider (corporal R.E.), and later on transferred to the Army Cyclist Corps. His delightful book, which we reviewed in the early part of the year, is a true record of the excellent work of the motor cycle despatch riders.

## MORE GERMAN EAST AFRICAN EXPERIENCES.

AS a sequel to the article on page 160 of *The Motor Cycle* of August 24th, describing the experiences of a motor cyclist serving in German East Africa with Gen. Smuts's troops, we now reproduce a letter from another man serving with another light armoured battery in the same country. The writer of this second letter is Sgt. Bilbe, at one time a technical journalist, and before the war a leading light in the Endrick Engineering Co. The two articles together assist one in realising the enormous transport difficulties that are being overcome in this campaign; also the super-severe testing the motor cycles are getting.

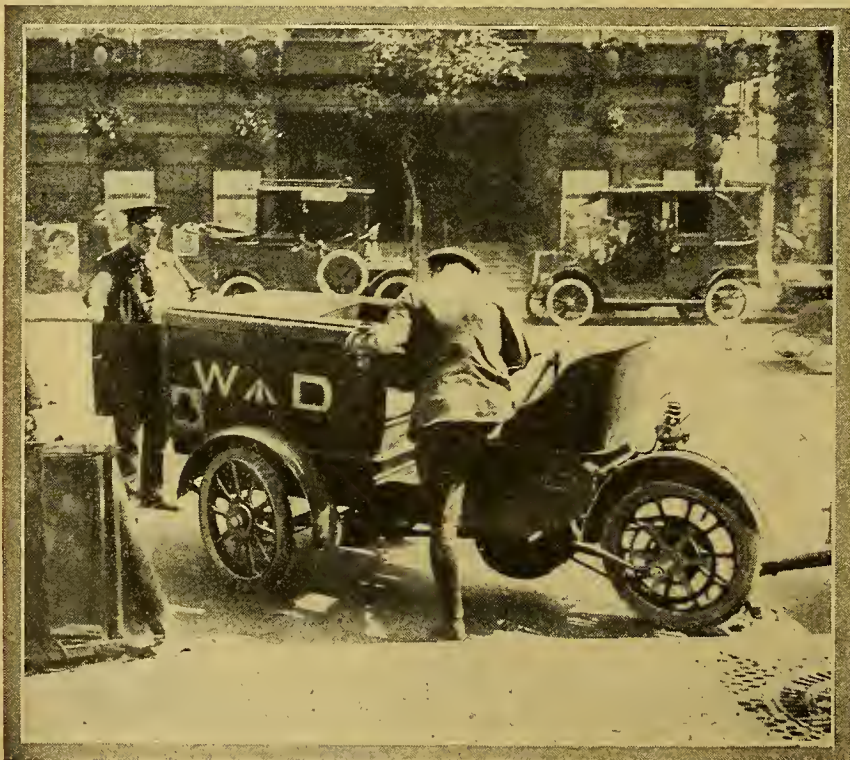


Sgt. Bilbe, L.A.B.

The letter is reproduced herewith practically *in extenso*, after being passed by the British Press Censor:

"Three days since I received *The Motor Cycle* for February 10th, sent on from training quarters at home, and this reminds me that I might have advised you that I left there on February 4th. I had put in some seven months, mainly as sergeant-in-charge of the armoured shop, which was responsible for the production of some good things in the way of machine gun hand carts and some other things which one must not particularise.

"There were sudden changes made at the end of January, and I found myself appointed to this battery, which, along with another L.A.B., left home on February 4th. We came out to Mombasa via Cape Town and Durban, along with the cars and motor cycles, and had quite a good passage, as the company



## THREE-WHEELERS ON WAR WORK.

Both the War Office and the Admiralty employ numbers of Auto-Carriers for express delivery purposes. Our illustration is from a snapshot taken a few days ago in Kingsway, and shows a War Office Auto-Carrier loading up.



**Military Notes.**

on board was not large enough to cause uncomfortable crowding. We came up country—partly by rail, rest by road—at the end of March. At present we have not seen any actual fighting, having been in reserve, but two other batteries (one Sir John Willoughby's) have taken part in recent advance work, and, I believe, done very well.

"Life with this battery is by no means unpleasant. We get excellent rations, including soap, tobacco, and matches, and can obtain extras, such as tinned fruit, sardines, pickles, etc., at various stores, which spring up under the control of enterprising Indian traders or the Y.M.C.A. at almost every place where there are troops. On the trek the men have perforce to rough it a bit, but in the camps everything is done for their health and comfort. The climate is good, and here on the high plateau, over 2,000ft. above sea level, the heat is not excessive, and we are all fairly well used to it, though topees and spine protectors must be worn.

**Road Conditions.**

"The rainy season, which should have ended some three weeks since, but is lingering on in some districts, held up operations. The roads are, of course, unmetalled, simply worn tracks, and on these the mud was very bad; indeed, it is still so in many parts, though not here. To get about at all on the Douglasses during the rains the mudguards had to be removed, as they clogged up. Most of the riding now is over bush, and for this the machines have been stripped of the front guard and the mudshield, while the back guard has been cut at the centre of the carrier, and only the tail piece with the stand clip retained. Most of my work is in connection with the motor cycles of the battery, and I have done some riding. The roads are better than one would expect, the deep sand patches being the worst feature. Riding through the bush is distinctly exciting, and the tyres get stuck full of thorns, yet very few cause punctures. Bent footrests are pretty common, of course.

"The armoured cars have done quite good work here, and can operate well in the bush. Possibly the most suitable type has not been evolved yet, but the moral effect on the blacks has been enormous; they call them rhinos, as the armour is proof against anything except pom-poms or shell fire.

"There is a depot of the R.F.C. here, and this is provided with P. and M. machines, one or two with sidecars. It is a remarkable thing that these machines (P. and M.) are invariably run as supplied, i.e., with mudguards, etc., and also are kept scrupulously clean, presenting a contrast to most other makes, which, whether in the original finish or daubed over with khaki paint, usually are stripped, almost always damaged somewhere, if only footrests bent, and invariably dirty. It should, however, be remembered that the work of the P. and M.'s is mainly that of carrying messages, etc., in the vicinity of the depots. We get all sorts of transport—long Cape waggons with strings of twelve mules or oxen, Ford cars, heavy motor lorries, some trailing howitzers, and there is a rickshaw (commandeered from somewhere)

which is driven behind two mules, sometimes as a pair, and at other times as a tandem by two officers, who run a fair risk of the affair tipping up and dropping them on their heads.

"This is a great country for game. I have been out after buck and zebras, and have seen the spoor of lions close to camp. Unfortunately, hunting has now been prohibited, and the only chance of getting any sport is when on the move."

**A LETTER FROM SALONIKA.**

**A**MONG our Service letters the other day was a communication from an R.E. officer, a former despatch rider, who went out with the original Expeditionary Force. He is now a lieutenant R.E. in charge of Signals with the British Force at Salonika. He says: "We are still 'carrying on' with motor cycling here. The roads are beyond description. I do not think the people at home quite realise the kind of tracks we have to ride over. The 'Six Days' are play to it; the hills are not bad either. We have one run with a hill very nearly up to Applecross standard. The Triumphs are good, but have not a great amount of crank case clearance, and the spring forks give a certain amount of trouble; they are always strapped, which saves a good many springs.

**A Composite Machine Suggested.**

"I think the ideal machine, or rather, combination of machines, for this part of the world, or any part of the world, would be Rudge with I.O.M. frame, forks, and wheels, Triumph engine, countershaft three-speed or four-speed gear, and all chain drive, but with chain covers, not chain cases. Still, as we do not get what we want, only what we can, and not much of that, what is the use of day-dreaming?

"It is raining like the d—l at the moment, and I pity the poor D.R. who gets a long run to-night; the roads will

be in a lovely state, *mais c'est la guerre*. Things seem to be moving in France a bit. Well, the sooner it is over the better we shall all be pleased. I dream of a powerful twin and smooth straight roads.

"They are teaching the Serbs to ride, and are giving them new Triumphs—men who have never seen a motor bicycle before most likely, and they will have to ride over tracks which would make a 'way up' competition rider think hard, and brand new Triumphs I would give my eyes for."

**DOWN WITH FEVER.**

**W**E are sorry to hear that Cpl. A. J. Sproston has been down with fever contracted after six months' service in Mesopotamia. At the end of July he was recuperating in a hospital in South India and hoping to be sent home when fit. Sproston has seen service since the beginning of the war, and *The Motor Cycle* of July 27th last contained a vivid account of his despatch riding experiences in Mesopotamia.

**THE SOMME FILM.**

**A**LL motor cyclists should see the wonderful War Office film of the Battle of the Somme. In the very first picture thrown on the screen one sees some excellent riding by motor cyclist despatch riders. A column of troops is passing through a French village, apparently on *pavé*, while the side of the road is thick with mud. The troops naturally occupy the best part of the road, and the D.R.'s come swinging round the corner in the slish, and again swing off it on to the hard road. This is a fine exhibition of riding, especially when one sees it accomplished by one machine carrying a passenger on the carrier. One frequently sees a D.R. flash past in a picture so fast that one cannot distinguish the make of his machine.



COY. SGT.-MAJOR, SERGEANTS, AND SECTION LEADERS, MOTOR CYCLISTS CO. ADVANCED SIGNAL DEPOT, R.E., FRANCE.

Names from left to right—Back row: Cpls. H. G. Gray, J. S. Larking (New Zealand), G. Tranweiser (Canada), W. Pooley, H. A. Oakes (Canada), and L. W. Bates.

Middle Row: Cpls. Mendoza, E. Bartlett, E. C. Bromley (Canada), J. Lawrence and E. H. Beaton (Canada).

Front row: Sgt. F. Early, Sgt.-Maj. W. Jeffrey, Sgt. Moir, and Cpl. J. R. A. Savidge.

All these men ride Triumphs. We are indebted to Cpl. Savidge for the original photograph



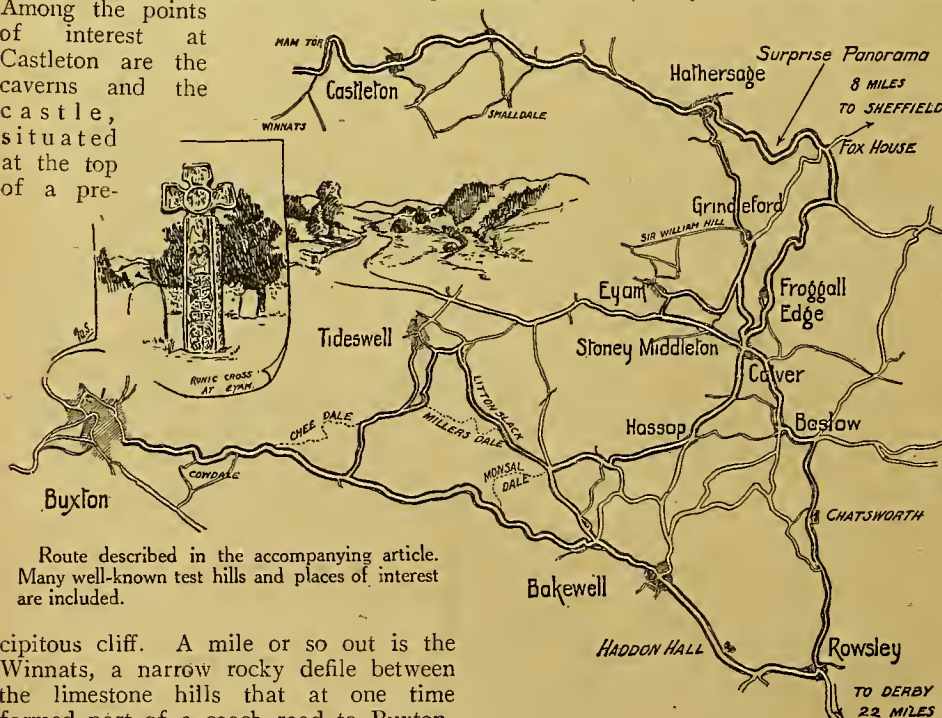
# THE CHARMS of DERBYSHIRE

**D**ERBYSHIRE and the Peak District have always proved a strong attraction for motor cyclists. The reasons are not far to seek, and may be put down to several causes, such as the grand scenery, the sporting hills that are to be found off the main tracks, the excellence of the main roads, and, above all, the historical associations of the neighbourhood. The principal places of interest are within easy reach of the big centres of population of the Birmingham, Sheffield, and Lancashire districts, and hence Derbyshire is a popular week-end rendezvous with riders from these districts.

A map reproduced on this page, together with the photographs, will be of interest to those riders who have not yet explored the delights of this section of the country, and the following notes may prove of use to those about to make their first visit.

## Outline for a Round Trip.

Castleton is a good starting place for Lancashire riders, who would reach it *via* Chapel-en-le-Frith. Among the points of interest at Castleton are the caverns and the castle, situated at the top of a pre-



Route described in the accompanying article. Many well-known test hills and places of interest are included.

cipitous cliff. A mile or so out is the Winnats, a narrow rocky defile between the limestone hills that at one time formed part of a coach road to Buxton.



The "Surprise" Panorama that one sees when travelling between Fox House and Hathersage.

It is now grass covered, but one or two climbs have been made by motor cyclists and described in these pages. The road to Tideswell provides another good test for the hill-climbing powers of one's mount, the surface being fair. This road was embodied in the 1914 A.C.U. Spring Trial.

Leaving Castleton by the Hope Valley one soon reaches Hathersage. A right-hand turn in the village leads to Grindleford and the well-known test hill, Sir William. The surface of this difficult hill has much improved since the days of trials, and is now in fairly good condition. The plague village of Eyam is reached from the top of the hill, and it contains many relics.

## More Hills.

There are two more good test hills at Stoney Middleton. From here the main Derby-Buxton road can be reached direct *via* Monsal Dale, though the better road is *via* Calver, Hassop, and Longstone to Monsal and Miller's Dale. The views in this neighbourhood are grand, and one of the best standpoints is a little to the right of the hotel at the Dale Head. There are various roads to Miller's Dale, one of them leading to the top of Litton Slack, another famous test hill. The valley can again be reached by an easier descent at the side of the hill, and the journey resumed through Miller's Dale, and so to Buxton.



**The Charms of Derbyshire.—**

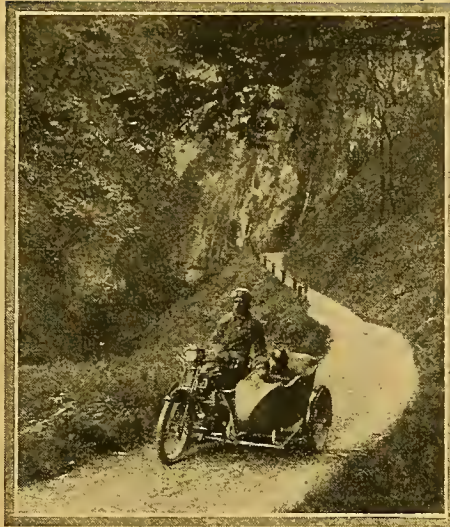
Cowdale, approaching Buxton, is another hill for the gradient-hunting enthusiast, and on the other side is yet another, *i.e.*, Kingstondale. The best way is to go up Cowdale and continue along the road at the top, which will bring the rider down Kingstondale. Care must be taken to avoid missing Cowdale; it is about two miles from Buxton, on the left-hand side of the road coming from the south, and a farm gate has to be opened.

**The Descent Through Taddington Dale.**

Travelling southwards along the main road from Buxton, one has a grand run to Bakewell, including a magnificent two-mile descent through Taddington Dale, and a couple of miles further on is Haddon Hall, immortalised by Dorothy Vernon. A stop might well be made here to look over the beautiful old hall and its grounds.

At the station at Rowsley a left turn should be taken for Chatsworth (the road to the right leads to Matlock).

The run through Chatsworth Park is very enjoyable, and Chatsworth House is open to the public on certain days. Baslow



Approach to Peak Cavern, Castleton

is just north of the park, and the main road may then be followed through Calver until the junction with the Sheffield road is reached at Fox House. Here turn left and travel on to Hathersage and the original starting point, Castleton.

After passing over a stretch of level moorland road just beyond Fox House, a sharp turn in the road suddenly reveals a beautiful panorama, and if the day is clear a stop should certainly be made to enjoy for a few minutes the extensive view at this delightful spot.

When proved substitutes are available in abundance, tired munition workers might do worse than follow up this interesting circuitous route, which embraces the majority of the interesting spots of the Peak District. With a well-stocked

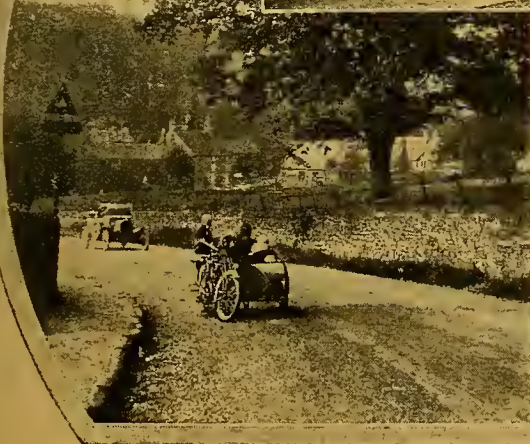
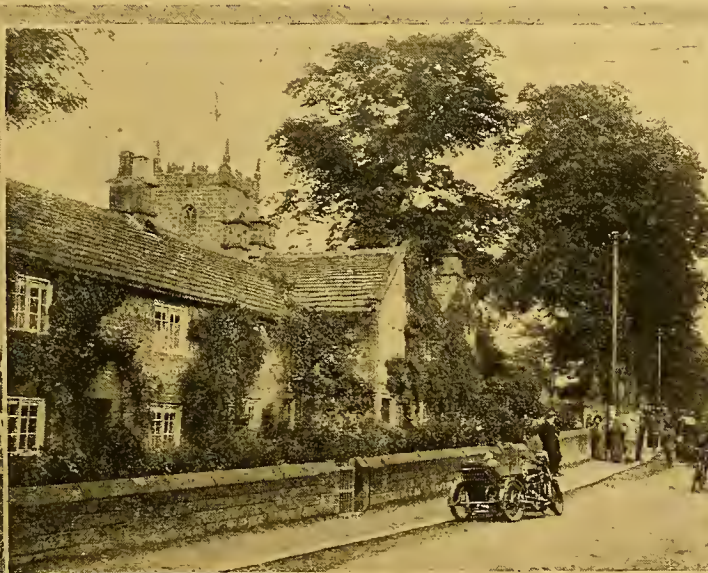
luncheon basket and fine weather, a very pleasant day's outing may be said to be assured.

**TYPICAL  
DERBYSHIRE  
SCENERY.**

(Top) Scene in Eyam, fourteen miles from Sheffield. The plague is said to have made its appearance in the cottages shown

(Bottom left) Foot of Hathersage Hill. The church in the background is well worth visiting.

(Bottom right) Grindleford Bridge, over the Derwent. "Sir William," a well-known test hill, commences to ascend in the village of Grindleford







## TIME TO LIGHT LAMPS

"SUMMER" TIME.

Aug. 31st	...	...	8.19 p.m.
Sept. 2nd	...	...	8.14 "
" 4th	...	...	8.10 "
" 6th	...	...	8.5 "

### No Competitions in New Zealand.

Owing to the fact that so many of the young men have enlisted, motor cycle competitions in New Zealand have been practically dropped, though an occasional meeting is held.

### Hobart-Launceston Record.

The motor cycle record for the road that separates the two principal towns of Tasmania changes hands at fairly frequent intervals. We hear that it is now held by Sidney Stearnes, a youngster of 17, who rode an Indian.

### Will it Come to England?

Motor races and aeroplane displays that were to form part of the programme of the American Liberty Day celebration at the Sheepshead Bay Speedway, near New York, on a recent Sunday, were called off at the last moment because the Sunday Observance Committee obtained an injunction. This is interesting in view of the opposition to Sunday competitions in England.

### The Bristol Avoiding Route.

We recommend motor cyclists journeying to the West, who wish to avoid Bristol traffic, on approaching the city from the Gloucester side to leave the main road at Filton, immediately after reaching the city tramways, by a turning to the right through the suburbs of Southmead and Henleaze to Durdham Downs. Continue with the open Downs on the right, past the Clifton Zoological Gardens, and Clifton Promenade, to the Suspension Bridge over the River Avon (tolls—motor cycle, 2d.; car, 6d.). Follow main road for one mile, and take left-hand turn through Beggar Bush Lane, down Belmont Hill (some care needed here), and join the main Weston-super-Mare Road at Flax Bourton. Turn away to the left, six miles on towards Weston, at Congresbury village, to join Bridgwater Road at Churchill. This route will be found to be full of interest, and abounding in pretty scenery, whilst traffic will be at a minimum. A pleasant diversion may be obtained by running round Durdham Downs—an extra two miles—the views over the River Avon and Bristol Channel from the sea walls being especially good, and many riders whose previous knowledge of the city is of the sordid tram ride through its slum districts will be agreeably surprised at its many beauties.

## SPECIAL FEATURES

ITALIAN MACHINE GUN SIDECARS (Illus.). THE CAUSE OF OVERHEATING.  
1,200 MILES ON CHEAP FUEL (Illus.).

### Trip for Wounded Soldiers.

It is proposed to arrange a Sunday afternoon outing for wounded soldiers quartered in Birmingham during September. Those sidecarists who are able to assist are asked to communicate with the Easting Windscreen Co., of 79, Colmore Row, who will arrange the whole affair, and, if possible, assist those who are held back by a shortage of petrol.

### A Fast Four-cylinder.

A four-cylinder motor cycle is hardly considered the mount for track work. Consequently, the performance of the rider of a four-cylinder Henderson in California is worthy of note. The Henderson was driven from San Francisco to Los Angeles, a distance of 462 miles, in 10h. 39m. This is an average of about 45 m.p.h. over roads of all kinds. It beats the previous motor cycle record by six hours.

### Improved Road Directions in the West.

During a week-end visit to the West we noticed improvements in signposting in the central parts of Bristol. This city, like many others of ancient origin, has retained a tortuous network of narrow streets, so much so, that strangers experience great difficulty in finding their way across the town. Recently signposts, giving many names and distances, have been erected at the principal junctions, notably at the Tramway Centre and Bristol Bridge, and motorists can now cross the city with a minimum of difficulty.

### A Missing Machine.

An Enfield two-stroke was let out on hire by the Manchester Motor Cycle Hire Co., 194, Oxford Road, Manchester, to a man who has deserted from the King's Liverpool Regiment. The fly-wheel is weighted with lead in the sunk part, and the cylinder head supported by an iron strap from the back down tube to the compression tap. Frame number 287, engine number 15,789.

### New Inner Tube after Excessive Pie Eating.

At a picnic of Portland, Ore., motor cyclists there were several competitions, one being a pie-eating contest. In this competitors had to lie flat on their stomachs, with their heads down hill and their hands folded, and gobble up blackberry pie without the use of their hands or rising up. The winner was awarded a new inner tube, for his motor cycle we presume.

### Making the Most of the Petrol.

One of the latest means for getting over the petrol shortage has been evolved by the Hercules Motor Spirit Co., of Blomfield House, London Wall, E.C. This firm is prepared to receive consignments of petrol, which will be mixed with a heavier oil, then treated chemically, and eventually returned to the owner. The mixture will show, we understand, an increase in bulk of approximately 50%, giving an appreciably greater mileage per gallon, and still retaining all those characteristics which render petrol suitable for internal combustion engines.



### A 1916 TRIUMPH IN SOUTH AFRICA.

W. E. Courtney, who won a gold medal in the hill-climb held on July 22nd by the East London M.C.C. Third, fourth, and sixth places were also secured by riders of Triumphs.



**The Admiral Arbuthnot Trophy Fund.**

Below are given the total donations to the Admiral Arbuthnot Trophy Fund received up to August 28th by the secretary of the Auto Cycle Union.

	£	s.	d.
Auto Cycle Union .. ..	5	5	0
S. Bettmann, Esq. .. ..	5	5	0
B.S.A. Co., Ltd. .. ..	5	5	0
Bosch Magneto Co., Ltd. ..	5	5	0
Messrs. Douglas Bros. ..	5	5	0
S. G. Frost, Esq., R.F.C. ..	5	5	0
Gloria Cycle Co., Ltd. ..	5	5	0
Hendee Mfg. Co. .. ..	5	5	0
Humber, Ltd. .. ..	5	5	0
The Motor Cycle .. ..	5	5	0
Temple Press, Ltd. .. ..	5	5	0
Messrs. Phelon and Moore, Ltd.	5	5	0
J. A. Prestwich and Co. ..	5	5	0
Royal Automobile Club ..	5	5	0
M. J. Schulte, Esq. .. ..	5	5	0
G. F. Sharp, Esq. .. ..	5	5	0
Triumph Cycle Co., Ltd. ..	5	5	0
Aston Motor Accessories, Ltd.	2	2	0
W. Hughes Butterfield, Esq.	2	2	0
Coventry Chain Co., Ltd. ..	2	2	0
Messrs. Godfrey, Ltd. ..	2	2	0
G.W.K., Ltd. .. ..	2	2	0
Messrs. J. Lucas, Ltd. ..	2	2	0
Lycett Saddle and Motor Acces-	2	2	0
sories Co., Ltd. .. ..	2	2	0
J. R. Nisbet, Esq. .. ..	2	2	0
Messrs. Rotherham and Sons	2	2	0
Rover Co., Ltd. .. ..	2	2	0
Sphinx Manfg. Co. .. ..	2	2	0
Zenith Motors, Ltd. .. ..	2	2	0
Lt. C. B. Barry .. ..	1	1	0
Rev. E. P. Greenhill .. ..	1	1	0
H. P. E. Harding, Esq. ..	1	1	0
L. Francis Jones, Esq. ..	1	1	0
R. T. Lang, Esq. .. ..	1	1	0
Newcastle and District M.C.	1	1	0
North Wales Motor Exchange	1	1	0
J. W. Orde, Esq. .. ..	1	1	0
Dr. H. Trenchard Rossiter	1	1	0
J. Simmonds, Esq. .. ..	1	1	0
Otto Thomas, Esq. .. ..	1	1	0
A. W. Torkington, Esq. ..	1	1	0
W. H. Wells, Esq. .. ..	1	1	0
E. M. P. Boileau, Esq. ..	10	6	
M. C. Breesse, Esq., R.F.C. ..	10	6	
Capt. A. M. Low, R.F.C. ..	10	6	
Geoffrey Smith, Esq. .. ..	10	6	
County Cycle Co. .. ..	10	0	
Anonymous .. ..	5	0	
C. Furlonger, Esq., R.F.C. ..	5	0	
H. Johnson, Esq. .. ..	5	0	
H. A. Howse, Esq. .. ..	2	6	

£131 11 6

**The Removal of Toll-bars.**

The municipal authorities of Middlesbrough have, after obtaining Parliamentary powers, purchased five toll-bars within the borough, and freed the roads for good. This is certainly a commendable action.

**Supply of Petrol.**

Many wild rumours regarding the limitation of petrol supplies have been circulated for many months. For instance, one of the wildest, and one for which there is not the slightest justification, spread in the Wolverhampton district last week-end, it being to the effect that the prohibition of petrol for char-à-bancs joy rides, to come into force to-morrow, was to be extended so as to include motor cycles and private cars.

**Italian Machine Gun Sidecars.**

We are enabled to present our readers this week with a series of illustrations of the Italian counterpart of the British motor machine guns. A glance at the pictures on the centre pages will show that the Italian machines differ from ours in some points, such as protecting plates for rider and gun operator. But the main point is that the Italian Government has adopted the sidecar machine gun outfit, its choice doubtless being influenced by the numbers in use by the British War Office. In this connection, we may remind our readers that the originator of the sidecar machine gun outfits is Mr. Alfred Scott, designer of the Scott Sociable, who designed a Scott machine gun outfit immediately upon the outbreak of war.

**Road Warn'ngs.**

The following roads are bad and should be avoided: Basingstoke to Camberley, Guildford to Hindhead and to Haslemere, and Winchester to Romsey.

**New Indian Chief.**

Mr. John F. Alvord, head of the Splitdorf Electrical Co., has been elected president and general manager of the Hendee Manufacturing Co., Ltd., in succession to Mr. George M. Hendee.

**Petrol or Paraffin.**

A neat and effective method of using petrol or paraffin, or a combination of the two, has been invented and patented by Mr. Gordon C. Huffam, of 21, Meadway Court, Golder's Green, N.W. The device can be fitted to most carburettors, and is arranged to take the place of the usual jet attachment. In the main tank can be placed the paraffin or any petrol-paraffin mixture which is found suitable to the engine. A small subsidiary tank contains petrol for starting purposes; both fuels are turned on at the tanks, and the supply to the jet is then controlled by a tap below the jet. When pointing downwards this supplies petrol straight to the jet (not to the float chamber) for starting purposes. This makes it quite unnecessary to drain the float chamber before a start can be made—obviously a great convenience. A movement of 90° cuts off the petrol and connects the float chamber containing the heavy fuel with the jet. Another movement of 90° supplies a mixture of pure petrol and heavy fuel, which may be advantageous at times, and the fourth position can drain the float chamber, the petrol pipe having previously been disconnected.



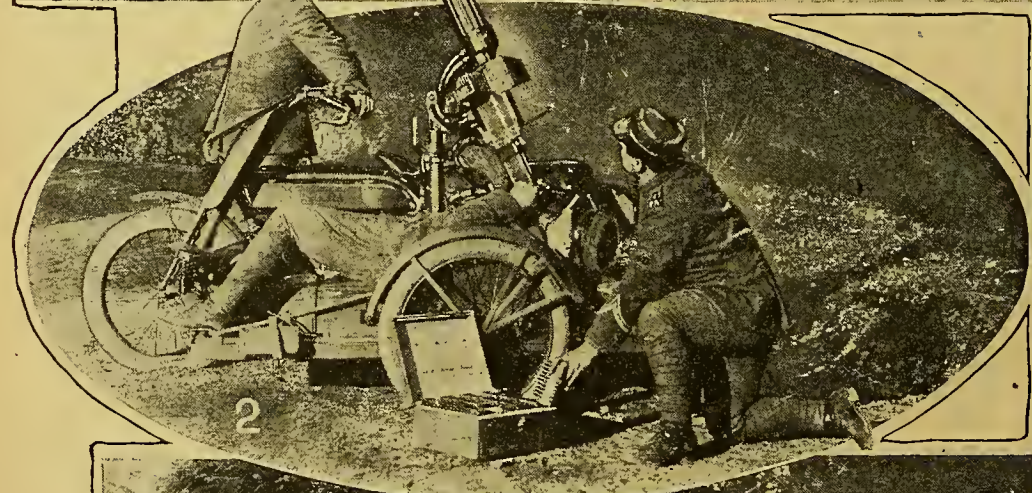
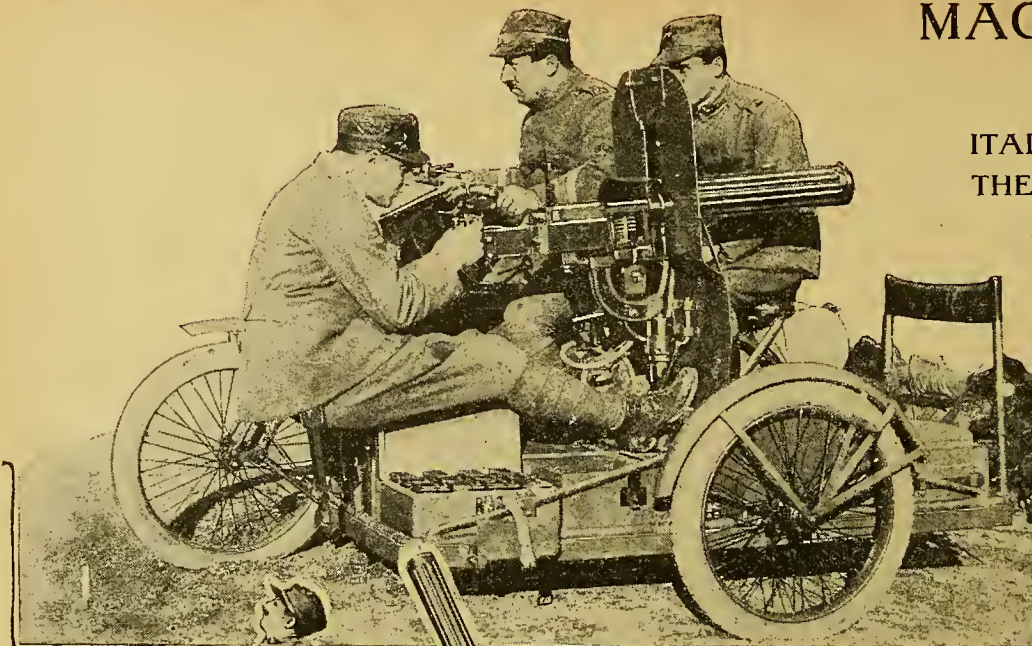
Some members of a Motor Machine Gun Battery now in India, where the photograph was taken. Many of the men shown were formerly employed in Coventry motor cycle works. The photograph has been sent home by Pte. T. Collins, sixth man, standing, second row, reading from the left.



# MACHINE GUN THE ITALIAN

ITALY FOLLOWS GREAT  
THE THREE-WHEELER  
FAST, AND EASILY

(Photographs passed)



1. Gun in action
2. Anti-aircraft view
3. Crew of two gun and three riflemen in illustration No. 7
4. Front shields gunner.
5. Firing forward round with the gun.
6. Travelling to are carried on each
7. Crew in action

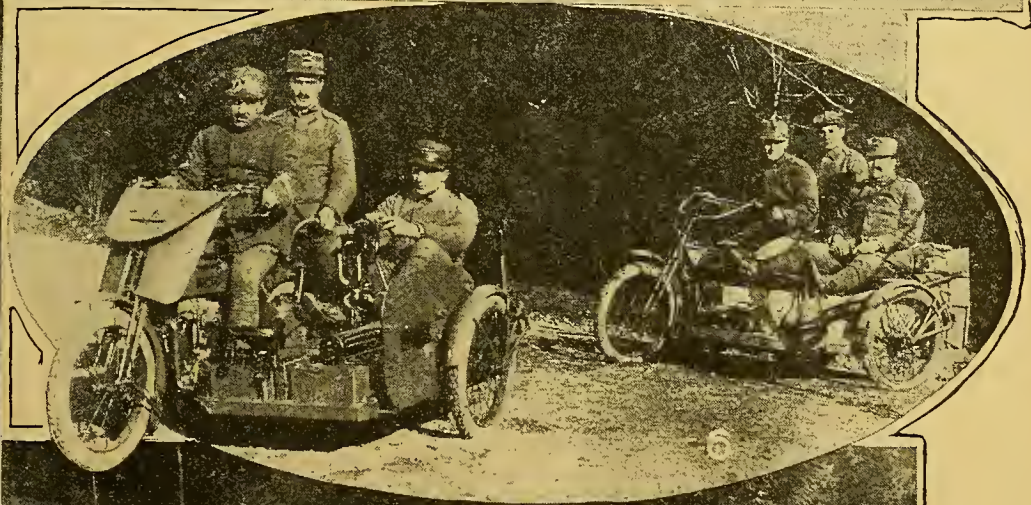
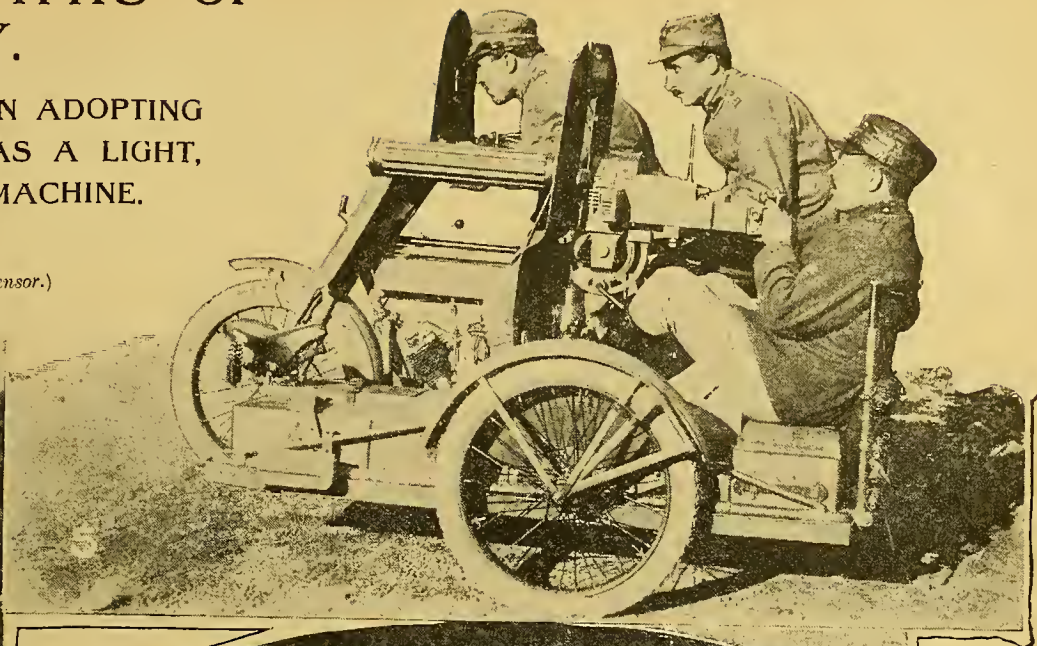
The Frera Comp cycle part. The transmission is by cl a countershaft three have a third seat be



# DECAR OUTFITS OF AN ARMY.

AIN'S EXAMPLE IN ADOPTING  
WITH A GUN AS A LIGHT,  
OLED FIGHTING MACHINE.

(Illustration by the Italian Press Censor.)



is.  
ising one machine  
up position shown  
both driver and  
the shield moves  
tion. Three men  
o the rear.  
ders of the motor  
o twin, and the  
conjunction with  
All the machines



# "THE MOTOR CYCLE" RECRUITING SECTION.

## IMPORTANT WAR OFFICE DECISION.

Central Office for Motor Machine Gun  
Service:

Mr. Geoffrey Smith,  
19, Hertford Street, Coventry.

It was announced on this page last week that recruiting had been closed temporarily for the Motor Machine Gun Service. On Wednesday, August 23rd, an inspection of recruits was held at *The Motor Cycle* Offices in Deansgate, Manchester, when the following men were accepted, to report as accommodation becomes available.

G. W. Arthur, Walsall.  
H. Ashworth, Castleton, Lancs.  
G. H. Bradshaw, Manchester.  
C. Clarke, Salford.  
W. H. Cobbett, Woking.  
A. G. Dowding, Fulham.  
H. C. East, Coventry.  
F. Evans, Chorley.  
R. E. Graham, Padstow, Lancs.  
O. W. McIlraith, Bedford.  
R. G. Paine, Woking.  
R. Stewart, Ormskirk.  
G. Taylor, Oldham.

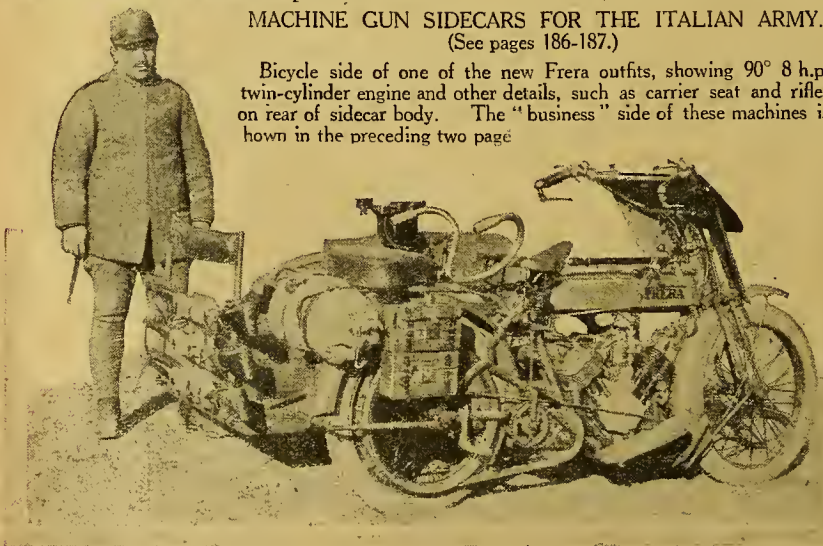
On Tuesday of this week another examination was held at the Coventry Recruiting Offices, and the names of those men enrolled will be announced in our next issue. At both inspections motor cyclists desirous of joining the Royal Engineers Signal Service as despatch riders attended, but the Training Centre of the R.E. is full up for the present.

On Saturday Mr. Geoffrey Smith, Editor of *The Motor Cycle*, received an important letter (reproduced on this page) from the War Office notifying a change in the system of recruiting motor cyclists, which all prospective recruits should carefully note. The official announcement means that the work of the various Motor Cyclist Reserve Committees will now come to an end in the matter of recruiting. The first step towards the change, it will be recalled, was the alteration of the Central Office for R.E. despatch riders

### MACHINE GUN SIDECARS FOR THE ITALIAN ARMY.

(See pages 186-187.)

Bicycle side of one of the new Frera outfits, showing 90° 8 h.p. twin-cylinder engine and other details, such as carrier seat and rifles on rear of sidecar body. The "business" side of these machines is shown in the preceding two pages.



War Office,  
London, S.W.

22nd August, 1916.

Sir,

I am commanded by the Army Council to inform you that consequent on the introduction of the Military Service Act, the method of obtaining motor cyclists for Military Service will be arranged by the Commands as men are called up, and it will therefore not be necessary to make any further calls on your valued services in this direction.

The Council desire me to tender to you an expression of their thanks and appreciation for the most patriotic and cordial assistance which you have rendered, and to say that in view of the good work you have performed, they feel that if ever in the future they have need of your advice and help they may rest assured of your co-operation.

I am,

Sir,

Your obedient Servant,

*H. H. Currie*

Geoffrey Smith, Esq.,  
Editor "Motor Cycle",  
19, Hertford Street,  
Coventry.

some months ago from the A.C.U. offices in Pall Mall, where the secretary, Mr. T. W. Loughborough, was in charge, to the R.E. Signal Service Training Centre, Woburn, Beds. It would appear that henceforward motorists reporting for service will be allotted to any section which happens to be in want of recruits at that time.

Thus the Motor Cyclist Sections have been brought into line with Army Order 259 recently issued, in which it was announced that *all* recruits (line regiments, etc.), will be put into a general reserve, which will be drawn upon from time to time.

The number of applications from motor cycle and car driver recruits dealt with in *The Motor Cycle* Offices totalled 10,586 on Saturday last.

The Empire petrol economiser, described in our issue of August 17th, is sold by the New Motor Speciality Co., 43, Oxford Street, London, W.



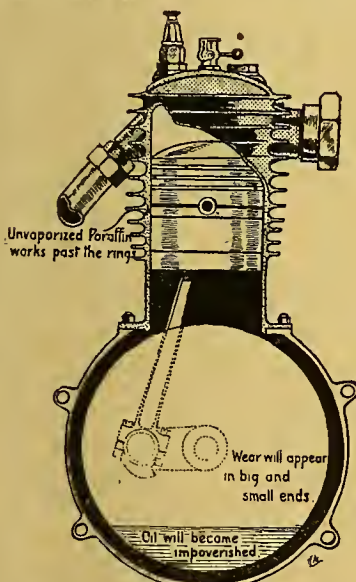
## LUBRICATING DANGERS WITH PARAFFIN.

OWNERS who are seriously thinking of using either paraffin or one of the numerous substitutes as a fuel, whether neat or in a mixture of half and half, should bear in mind that their present oil is a great deal too thin for the work.

It must be remembered that this heavy fuel is found to take a great deal more vaporising than petrol, and some of it will undoubtedly get past the rings and thin the lubricating oil, when excessive wear will take place. The accompanying illustration clearly shows where the engine will be affected.

Our advice is to employ an oil of greater viscosity than is necessary with pure petrol. The excess paraffin mixing with this will thin it down to the right consistency, and the engine should not show undue wear.

H.M.



Showing where wear will appear if unvaporized paraffin impoverishes the lubricating oil.

## PETROL-PARAFFIN REGULATING DEVICE.

IN view of the small number, complication, and difficulty of fitting special paraffin vaporisers, Messrs. Bramco, Ltd., of Coventry, are introducing a very novel three-way adapter valve, to enable petrol and paraffin, or any other low grade fuel, to be mixed while running to the best advantage. For economy, of course, the greater proportion of paraffin or heavy fuel that can be used the better, but all who have tried know that an engine will run properly with a much greater proportion of heavy fuel when hot than when cold. Thus, unless some device is fitted which enables the proportion to be altered after a start has been made the greatest degree of economy, or the easiest possible starting from cold, is not obtained. This new device, which hails from America, where it has been used, we are told, with great success for

a considerable time, consists of a cross-shaped hollow casting, comprising three fuel unions with a control cock in the centre; the upper union is connected to the carburettor. The two horizontal unions are taken respectively to the petrol and heavy fuel tanks, while the arm on the right-hand side forms a drain cock enabling the supply pipes and carburettor to be drained of fuel. This is specially useful when it is desired to start on pure petrol.

The control cock enables the supply of either fuel to be regulated gradually from all of one fuel to all of the other, the two thus being perfectly mixed in any desired proportion before reaching the carburettor. Thus, a start can be made on pure petrol, and when the engine is warmed up the heavy fuel can be gradually turned on and the quantity of petrol reduced, and, according to the atmospheric conditions, the heavy fuel can be reduced or increased at will to enable the best results combined with economy to be obtained. This regulating cock is controlled from the handle-bar by means of a Bowden control which is marked with a graduated scale. This fitting, which sells at 55s., should certainly enable the best possible results to be obtained with fuel mixtures in conjunction with the ordinary carburettor.

## HIGH SPEEDS IN THE ARGENTINE.

A TWO days' race meeting was held by Buenos Ayres motor cyclists last month, the first half of the programme being held on the 16th, and the second half a week later. There were four classes, and the distance over which competitors were timed was, in all cases, a flying kilometre. The meeting is known as the "flying kilometre championship of South America," and this is the fourth year on which the gathering has taken place.

The racing was held on a paved road, with excellent surface, running from Buenos Ayres towards La Plata. Competitors, we understand, were allowed a flying start of the unusual length of two kilometres, and the timing of the measured kilometre was electrically controlled. Results:

### 3½ H.P. SOLOS.

1. G. Taron (Bat) .. ..	67.10	m.p.h.
2. D. Campanella (Indian) .. ..	65.55	
3. P. Sabbatini (Triumph) .. ..	61.20	

### SIDECARS.

1. P. Comino (8 J.A.P. sc.) .. ..	67.60
2. A. Bernasconi (8 Harley-Davidson sc.) .. ..	66.60
3. J. Schiorone (7 Indian sc.) .. ..	62.00

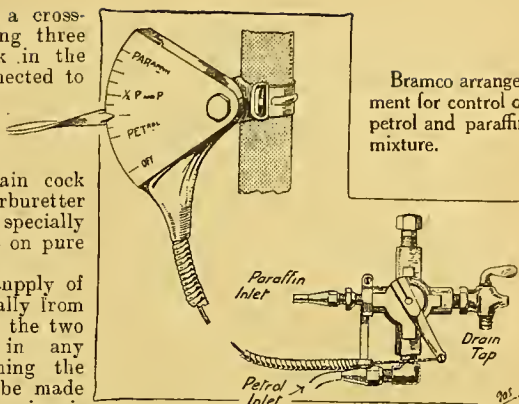
### UNLIMITED TOURING.

1. A. Bernasconi (8 Harley-Davidson) .. ..	75.00
2. A. Maubert (7 Dayton) .. ..	68.65
3. R. J. Osinde (8 Harley-Davidson) .. ..	65.80

### OPEN.

1. C. Santiago (7 8-valve Indian) .. ..	99.00
2. A. Selmo (7 Excelsior) .. ..	85.00
3. R. Reganti (7 Indian) .. ..	75.00

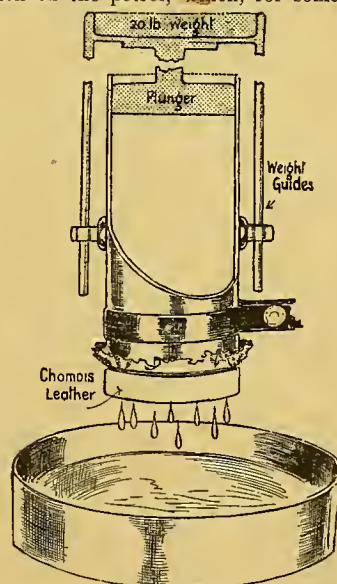
Santiago, winner of the open class, has now held the championship for three years in succession. He also improved considerably on his last year's time, which was 75.5 m.p.h. A very strong side wind blew on the day the two last classes were run. The highest speed made at Brooklands on a motor cycle is 83 m.p.h., also an Indian.



Bramco arrangement for control of petrol and paraffin mixture.

## STRAINING PARAFFIN.

A CONTRIBUTOR in referring to the use of heavy fuels makes the following suggestion for improving paraffin for use as a fuel. The idea, if not sound from the point of view of making the fuel more explosive, would certainly have the advantage of removing any dirt or impurities which are very likely to be present in common paraffin. He states that "Chamois leather strainers were largely used in America a year or so ago for petrol. The practice was, however, given up owing to a large number of accidents, due, it was said, to the fact that the leather had a certain chemical action on the petrol, which, for some un-



Apparatus suggested for straining paraffin through chamois leather.

known reason, caused it to become excessively explosive, and it is suggested that straining paraffin in a similar manner might have somewhat the same effect.

As paraffin is rather a dense fluid there is a difficulty in getting it to pass through the leather, so he has devised a simple apparatus for overcoming this difficulty. A large tin is obtained from which the bottom is removed or perforated with holes. Next a plunger must be made and weighted to the extent of about 20 lb., which should be sufficient to force the paraffin through the leather.





The Editor does not hold himself responsible for the opinions of his correspondents.  
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Petrol Allowances.

Sir,—Here is a point *re* the new petrol regulations that occurred to-day. I am allowed two gallons a month; I have had half a gallon; on going into a garage to ask for one gallon I am refused, because the management will *not* open a tin for anyone. They say it is impossible to get four separate half gallons out of one tin! I could not take the tin because I am half a gallon on the wrong side! In any case my tank only holds one and a half gallons. If this standpoint is taken up by the garage people, I am afraid many motor cyclists will find themselves in the cart.

SMITH WHITING.

#### Cultivating Overseas Trade.

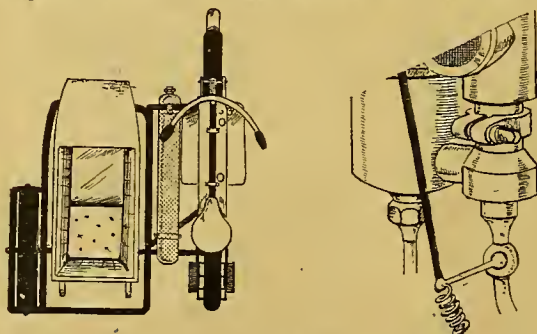
Sir,—Referring to the article on the Colonial motor cycle market and Mr. Clarkson's views, on page 155 (August 24th), it seems to me, as a motor cycle rider, that the only way to secure the Overseas market is for English manufacturers to agree to put some of their best ideas in a common pool, in the same way as has been done in other trades.

How would a motor cycle combining the following do: 6 h.p. A.B.C. engine, Sunbeam oil bath gear cases, Enfield spring handle-bars and lubrication, leaf springs front and rear, four-speed A.B.C. gear box, Coventry Silent chains, Lucas electric lighting set, automatic carburettor, two tanks for petrol and paraffin, combined rubber and steel-studded tyres, valve springs enclosed, spring-up stand under engine, etc.?

A. FEIRON.

#### Petrol Waste.

Sir,—We have noticed references at times in the press as to whether it would be possible to run motors on ordinary coal gas. We submit rough sketches of the ideas of a



member of this firm, which were about to be tried out when he was called up. It is obvious that motor cycles can either run on petrol or coal gas independently, or a mixture of both at the same time; or the motor cycle can be run on the coal gas until the engine is hot, and then ordinary lamp oil used.

There is a little screw under the jet in most carburetters that can be taken out and a union for the gas supply screwed in. The tap necessitates an extra control from the handle-bars. When running on gas only, the throttle can be left wide open and the running controlled by the air and gas tap controls. The compressed gas cylinders can usually be obtained by any dealer in magic lanterns. A larger jet should be used in the carburettor.

No patents have been, or are being, applied for any application of this.

GREEN TAXIS.

#### Steering Head Design.

Sir,—With reference to recent articles on the above subject, I would suggest that the ideal bearing for the motor cycle steering head is the Timken adjustable taper roller bearing. These bearings, standing up as they are in everyday use in commercial and other vehicles, are infinitely preferable to non-adjustable ball bearings, and much preferable even to adjustable ball bearings; for both these bearings are working under almost impossible conditions for small oscillations, when both races have only a very small part of their surface and one or two balls at most under stress, reducing the proverbial line contact to a point contact *till* they dig a little hole.

PIECAN.

#### 520 Miles on Four Gallons.

Sir,—I notice that "Ixion" has a short comment on my ride from the Midlands to the West and back. I may say that I was myself surprised at the excellence of the consumption figures in view of the large amount of low gear work necessary, although this was to some extent neutralised by being able to run down most of the long Dartmoor hills in "free engine." I have heard of a similar machine doing 140 m.p.g., but cannot vouch for this. Will "Ixion" please note that I am not under the impression that a petrol can holds a gallon?—a misapprehension which has been in the past responsible for some rather extravagant claims. I cannot get the same consumption on short runs, but my last tin of petrol carried me 232 miles, daily distance about eleven miles; two starts, sometimes three.

When "Ixion" says that he suspects me of being "a member of that small majority who retains some respect for the legal limit," I do not know whether he speaks with approbation or a veiled contempt. I should like to believe that it was the former, but I fear that the latter is more likely. My favourite speed in the country is from 30 to 35 m.p.h. This does not mean driving all out, which I dislike, and the engine runs very nicely at these speeds. In towns my speed is moderate. There is, I think, no excuse for lurid cornering in crowded streets.

AURIGA.

#### American Motor Cycles.

Sir,—With reference to "H.E.R.'s" letter on twins and Mr. Brocklebank's letter on the same subject, I think your editorial comment about hits the mark. To compare these over-engined crudities with the average clean designed and sweet running English machine is absurd. With Mr. Brocklebank's dictum, that the three most popular singles are the worst, I, guessing well the culprits, agree. I would point out that people who follow the crowd and are content with "the three most popular singles" deserve all they get.

1. Twist grip controls. A system of control that means contorting one's wrists into the position of least muscular efficiency whenever the inevitable emergency crops up.

2. Crude kick starters or even dangling pedals, abandoned in England a few years ago. Where are the much boomed electrical engine starters? I would ask.

3. Constant attention is necessary to the average American engine, if used daily.

4. These carburetters are automatic mostly in name.

All these factors will prevent my ever purchasing anything from across the herring pond. When America can produce a Levis or Connaught, a 2½ h.p. A.J.S. or Douglas, a Norton, Sunbeam, or A.B.C., an A.J.S., Scott, Enfield, or Matchless, then I will possibly change my mind.

B.E.F.

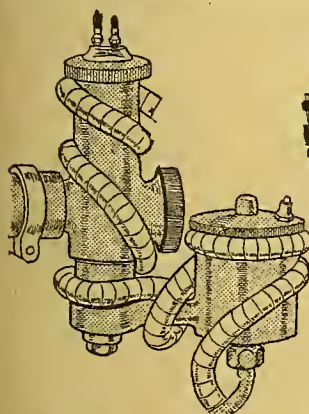
A. LINDSAY (CAPT. R.G.A.)



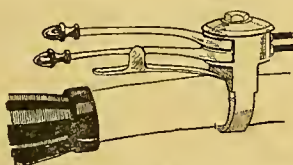
### Petrol and Paraffin Tests.

Sir,—As the question of paraffin as a substitute for petrol is being widely discussed by the motor cycle community at the present time, the following results of tests made with cheap fuel may prove of interest.

Paraffin-petrol mixtures (Parapet—why not?) having been used successfully for some months by the writer but no record made of their efficiency, it was decided that an accurate test should be made with an 8 h.p. Zenith and sidecar and



Warming a carburettor by means of a flexible tube from the exhaust.



a 2½ h.p. French Zedel lightweight. Both machines were fitted with B. and B. carburetters, the large one having a simple heating device which could be cut out at will. This merely consisted of a flexible metal tube wound several times round the petrol feed pipe, carburettor, and induction pipe, and connected to the exhaust.

To obtain equal throttle setting in each test a stop made of brass strip was attached to the handle-bar control. A three to four-mile stretch of country road in Essex was selected, having, with the exception of one hill (gradient 1 in 9), a practically level and good surface, and which, being a by-road, was devoid of traffic.

The test was then carried out in the following manner: Two gills of Pratt's No. 2 were poured into the empty tank of the Zenith, a running start made, and the throttle opened as far as the stop would permit. The road being level a constant speed of 31 m.p.h. was maintained until the pre-arranged accelerator mark was reached, when the throttle was opened fully and the maximum speed logged.

The position of the necessary gear change was marked by the passenger dropping a large white stone overboard at the moment of changing.

Upon reaching the summit of the hill the original setting was reverted to until all the petrol was consumed, which consumption worked out at 62 m.p.g.

Similar tests were made with the other fuels as shown, the engine being allowed to cool down between each. The heating attachment was next brought into operation and the test repeated. Tests were then made with the lightweight machine, but with standard carburettor adjustment.

It was noticed, when using paraffin mixtures with the standard carburettor, that starting was difficult, acceleration poor, and a choking effect apparent at full throttle.

With "Spots" treated petrol no difference was noticeable, but with "Spots" and paraffin the choking completely disappeared, but no increase in mileage was shown.

For those wishing to retain the same degree of liveliness, etc., as obtained from petrol, with a saving of 10½d. a gallon, a 50% "parapet" mixture used in conjunction with a simple heating device, as shown, is recommended.

A liberal injection of petrol will ensure easy starting, and once the engine is thoroughly warmed up the acceleration will be as good as can be desired.

With regard to carbon deposit, the writer's 8 h.p. J.A.P. engine was dismantled after running 3,000 miles on this mixture and the usual amount of deposit was found, whilst the piston and rings were by no means lacking in oil.

A. WARD.

### Paraffin as a Fuel.

Sir,—I have watched with much interest the alarm amongst motor cyclists re reduction of petrol, and herewith enclose a diagram showing how I get over the difficulty.

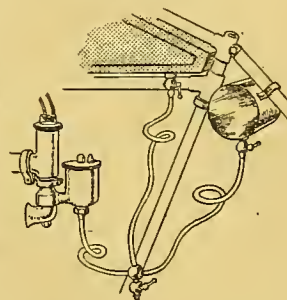
I run entirely on paraffin, and find starting and running quite easy and no depreciation in power in hot weather.

On early mornings and late nights I find I occasionally require to start on petrol, and so have fitted up my Sunbeam, as shown in the diagram, with a cylindrical tank (clipped beneath the frame and holding three pints of petrol), a four-way union having a tap in the bottom, a petrol pipe from the small tank, a pipe from the main paraffin tank, and a pipe feeding the carburettor.

In cold weather, when starting is a little difficult, I drain the carburettor of paraffin from the tap, replacing fuel in the main tank. Flood with petrol, then turn off petrol and turn on paraffin. Starting is then easy, and change of fuel is gradual.

I have tested this method for some time on Triumph, Bradbury, and Sunbeam bicycles, and find it acts splendidly. I fitted the device myself, and the cost of tank, pipe, and fittings amounted to 11s. 6d., and I soon saved this in the difference in the cost of fuel.

T. BURBIDGE.



Sir,—May I just give the following hint for the benefit of readers who may be using paraffin or paraffin mixtures. I met a novice the other day on a 1915 3½ h.p. Quadrant outfit, on which there was absolutely no sign of compression. After trying valves, I removed cylinder and found that both piston rings had seized in the slots. Apparently, the carbon had recently been cleaned off the piston top, but the rings had been left untouched, as is very often done, with the result that, although the machine had only done fifty miles on a mixture of three parts paraffin, the rings had seized owing to excessive carbon in the slots. On removing carbon from slots the machine ran perfectly. Although there was absolutely no compression, the machine would take top gear on the road, which I think is a tribute to the Quadrant.

J. V. WRAIGHT, R.N.A.S.

### SUMMARY OF CORRESPONDENCE.

Yank Denton, now riding a Douglas in the B.E.F., is willing to take up the challenge issued to "J.H." on August 10th by "H.F.M.," "L.M.P.," and "J.A.M.," one of whom claims to hold the world's record of 104 m.p.h. He will purchase a T.T. model direct from an agent, and guarantees to ride them to a standstill on a give-and-take road if they ride machines purchased in the same manner.

Fuel	8 h.p. ZENITH COMBINATION.								2½ h.p. LIGHTWEIGHT (Single Gear).			
	Mileage.		Speed on Level at given Setting.		Hill-climb, Standard Adjustment only.		All Out on Level.		Mileage.	Speed on Level at given setting.	Hill-climb Standard Adjustment only.	All Out on Level.
	Standard Adjustm't	Heating Device.	Standard Adjustm't	Heating Device.	Maximum Speed.	Position of Change.	Standard Adjustm't	Heating Device.				
Petrol .....	62	62.2	m.p.h. 31	m.p.h. 32	m.p.h. 42	X	m.p.h. 59	m.p.h. 59	96	m.p.h. 3	m.p.h. 23	m.p.h. 45
Petrol and "Spots" .....	61.7	62	31.5	32	42.5	approx. X	58.5	59	95	30.5	23	48
50% paraffin .....	58.6	62	29	31.5	39	X —10yds.	52	54	95	23.5	35	44
Pure paraffin .....	53.5	58	25	28.5	34	X —35yds.	49	52.5	91.7	25	30	39
Pure paraffin and "Spots" ..	54	57.5	27	29	36	X —30yds.	50	53	91.9	26	30.5	39.5



### Obtaining Petrol when Touring.

Sir,—The difficulties of obtaining petrol will prevent many motor cyclists from touring. Although they may have a few tins in stock, it is impossible to carry more than one tin on the carrier. I would suggest that the difficulty might be overcome if motor cyclists in different parts of the country could get into touch with one another through your advertisement columns. For example, I wish to go from Bristol to North Wales, and if some good, kind Samaritan in North Wales, who has intentions of touring and passing through Bristol, will promise me a tin of petrol, I will promise him a tin when he passes through Bristol. A.E.D.

### The Silver Paraffin Vaporiser.

Sir,—In reply to Mr. Silver's letter in *The Motor Cycle* of August 24th, allow me to state a few facts. In the first place, I have been connected with the motor trade since its commencement, and, moreover, I rode a Butler motor tricycle, the first motor ever introduced into this country, in the opening run to Brighton with a paraffin vaporiser fitted, and I ran all the way on paraffin, picking it up at cottages en route, as petrol was almost unprocurable on the road in the early days. The device is really a very old one used on ordinary stationary oil engines, with a cup underneath for warming-up purposes, and used extensively in the States. We started fitting the device commercially over two years ago. Re the last part of his letter about it being protected. If this was done in 1903 the patent would have expired. I have seen Mr. Silver's apparatus, and there are no protection numbers stamped on it such as the Patent Office requires. Perhaps Mr. Silver can tell us when and how it is protected, as really no novelty exists. In conclusion, I would point out that during the last six months we have had even a simpler device under test, where no petrol need be carried at all when once the engine has been run to start, and we hope shortly to put in on the market for a few shillings. A. DURANT.

OAKLEIGH MOTOR CO.

### Three or Four Wheels.

Sir,—Would it be possible for Mr. Scott to give a rough idea of the retail price of his invention? If it is no more than the price of a high-power sidecar outfit, I mean to go for one as soon as it is on the market. The difference in price between a sidecar outfit and a light car makes just all the difference to me, and probably to many others. Taxes, tyres, etc., are a further very real consideration.

Though I drive a 7 h.p. outfit, I am very far from being an expert. It would be a huge joy to me to have the shaft drive and detachable wheels, etc., as a relief from much dirt and anxiety. Altogether I am vastly interested in the new machine, and only wait to know something definite about the price before I put my present outfit up for sale. Mr. Scott's reply to Mr. Burnard is quite convincing so far as I am concerned. SUPER-AMATEUR.

Sir,—I have read with interest the correspondence in *The Motor Cycle* re the Scott Sociable, and wish to state my own opinion of it.

I have just purchased a motor cycle and sidecar, previously owning a car, and must admit I prefer the car for several reasons:

Firstly, the driver is more comfortable in a car.

Secondly, I think in wet weather the sidecar is miserable for the driver.

Therefore, if the Scott Sociable comes out at the same price as the motor cycle and sidecar, and you can easily get at nuts, which need frequent attention on a sidecar, it is a very fine combination. Even if it be expensive, personally I would prefer four wheels for the little extra cost.

P. G. WARNER.

Sir,—After reading Mr. Scott's reply to my criticisms of the Scott sociable in *The Motor Cycle* of August 17th, I feel inclined to remind him that abuse is no argument.

I have criticised his own offspring, and he is naturally indignant.

Mr. Scott has still to learn that in judging the appearance of anything the analytical mind is of no account. If

E20

one wishes to buy a hat and a shopman produces an ugly example, does one buy it on analysing its qualities as expounded by the shopman? Not I, anyhow! It is ugly; 'nuff said! I can get an excellent hat, and smart, for all that I have a fat head! (This is literally true.)

I am in full agreement with Mr. Scott that the sidecar combination is not attractive in appearance, but why in heaven's name produce a machine like the Scott Sociable, which, in my opinion, is far worse!

Mr. Scott says that my type of man is of minor importance; but there he is all at sea. I am his own very man. I am the sidecar man. Tried cars—can't afford 'em. Sidecars—wife doesn't like being all comfy and poor me out in the elements. I ride the humble motor bicycle now, and am just pining for a clever engineer like Mr. Scott to produce for me a nice, clean, comfy sociable—and then he produces a machine like that! It's horrible; I am a disappointed man.—I am in tears. S. L. BURNARD.

### Paraffin as a Fuel.

Sir,—In *The Motor Cycle* for August 24th I noticed in "Current Chat" you refer to bad running on paraffin under the heading of "Paraffin in the Cold."

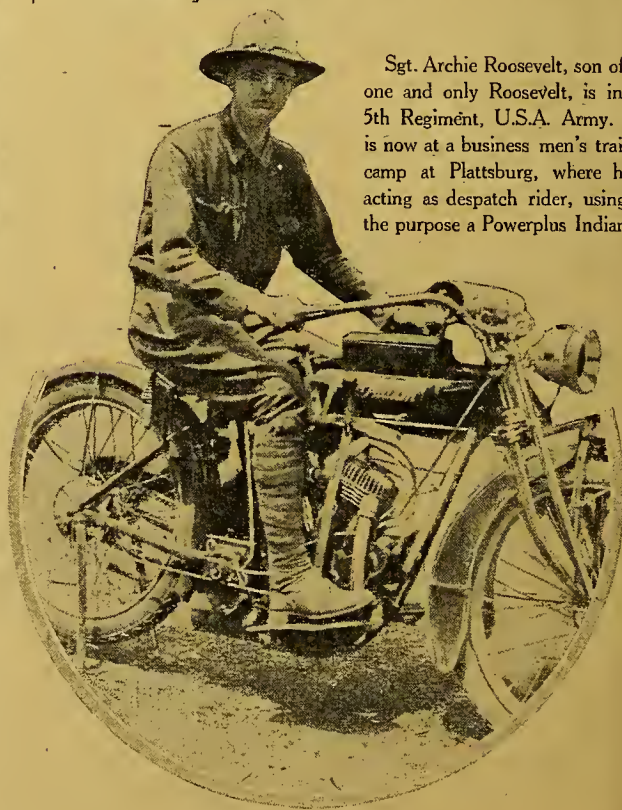
May I, as one of the enthusiastic experimenters referred to, state my experience. For some time past I have been running my 1916 B.S.A. with coachbuilt sidecar on pure paraffin, starting up on petrol from an auxiliary tank. Just recently, owing to considerable tyre trouble, I was forced to undertake the run up from Somerset by night, starting before lighting up time, and arriving in London about 5 a.m. This run was accomplished on pure paraffin, and, moreover, the carburetter was loose, just being bound on with insulating tape. I had several longish stops, but after starting each time on petrol my engine ran perfectly on paraffin.

I am not writing this doubting in any way the correctness of your statement, but just to prove that it need not apply in every case.

The only alteration I have made is to put a conical shape piece of gauze in the induction pipe.

P. G. WHITTON.

[A number of interesting letters are unavoidably held over.—Ed.]



Sgt. Archie Roosevelt, son of the one and only Roosevelt, is in the 5th Regiment, U.S.A. Army. He is now at a business men's training camp at Plattsburg, where he is acting as despatch rider, using for the purpose a Powerplus Indian.



# QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## The Delivery of Petrol.

**Q** Last June I paid for eight gallons of petrol, and as I had not got my machine with me at the time I left them to be called for, but, owing to being laid up with neuritis in the leg, have never had the chance, and now I have, with the rest of motor cyclists, been allotted six gallons for three months. Can I get possession of the four cans of petrol which were paid for so long ago from my dealer, and if the dealer cannot give me delivery have I a claim on him for money paid (22s.)?—R.L.

This distinctly interesting problem has not been at present, we believe, definitely decided in the courts. Upon the whole, we are inclined to think that you have not a good case for compelling the petrol dealer to deliver the eight gallons you ordered and paid for in June. Undoubtedly a contract was entered into, but your normal right to have delivery made as and when required is, we fear, prejudiced by a clause in the existing Finance Act, and also by an Order in Council issued recently. The Finance Act states: "A person shall not supply motor spirit to a person unless he is the holder of a licence for the time being in force under this section, or in excess of the amount authorised to be supplied by the licence"; whereas the Order in Council says, "If any person who is under a contract to supply motor spirit refrains on the request of the Board of Trade, or any person authorised for that purpose by the Board of Trade, from delivering motor spirit in accordance with his contract, that person shall not be liable to any action or proceedings taken against him in respect of the non-fulfilment of his contract so far as it is due to compliance with that request." It must be understood that we are not able to state authoritatively the legal position, but, assuming that the result of the two passages quoted is to render it impossible for you to secure delivery of the petrol, you undoubtedly can recover the money paid for the four cans.

## Gear for Sidecaring.

**Q** I at present ride a  $3\frac{1}{2}$  h.p. single, to which I recently attached a cane sidecar. It is a three-speed machine. For solo work I found it had a sufficient reserve of power, but for passenger work I have to change down rather frequently in a rather hilly district. (1.) What do you consider the lowest power I can use consistent with a confident ascent of hills? (2.) If the power you indicate necessitates a twin-cylinder machine, are twin-cylinders much more complicated than singles? (3.) Do you consider the present time an advantageous one for buying second-hand machines in view of the shortage of new machines? Are second-hand prices higher than they used to be? (4.) Am I right in assuming that there has been little improvement in design during the last two years owing to the war, and that a 1914 machine would be almost as up-to-date as a 1916 machine?—H.V.O.R.

(1.) Suitably geared, you should find a  $3\frac{1}{2}$  h.p. quite sufficient for almost any district with a light sidecar. Your top gear should not be higher than 5-1. (2.) A twin is, of course, to be preferred to a single for sidecar work. It is very little more complicated than a single. (3.) No; second-hand machines are fetching good prices now—in many instances higher than in pre-war days. (4.) Some machines have altered very little; others have greatly improved in detail.

## Local Taxation Licence.

**Q** Will you kindly inform me whether I am entitled or not to use my motor cycle without a local taxation licence? It is used solely for business purposes. The motor cycle is a  $3\frac{1}{2}$  h.p. New Hudson standard pattern. I do not use a sidecar. If there are any alterations needed, perhaps you will be able to tell me what to alter.—J.J.M.

You will not have to pay a local taxation licence if you use a sidecarrier properly constructed for the transportation of merchandise, and which has your name and address painted on the side. Your motor cycle alone is liable to the licence, as it is not constructed in such a way as to make it suitable for carrying goods.

## Piston Tap.

**Q** I have recently purchased a 1914  $3\frac{1}{2}$  h.p. single in splendid condition, but I cannot trace the cause of a metallic rattle or knock which is very noticeable when the engine is running at slow speeds. There is no up and down play in either the big or the little end. The two rings fitted at the top of the piston are a good fit all round, with little or no play whatever. I have reduced the jet, and get at least 90 m.p.g., and the engine does not get too hot. The knock or rattle starts after the engine has been running for about five minutes, and does not alter on any of the three gears, and yet if I open the gas the power is considerable, and will take me up almost any hill on top gear. Whether I ride the machine solo or with the sidecar the noise is just the same, but when climbing hills it almost disappears. I have checked the timing, adjusted the valves and tappets correctly, oiled carefully, removed all carbon deposit, and have done everything I can think of without the slightest result. The strange part of the whole affair is that after purchasing the machine I rode some forty miles to my home, and certainly never noticed any unusual noise until I had taken the engine down and removed a quantity of carbon from rings, piston, and cylinder head.—S.F.

Your trouble is undoubtedly a piston tap, due to the piston being a rather sloppy fit. Unless very pronounced it will be quite harmless, and may disappear when the piston and rings have attained a slightly carboned state, such as they were probably in when you first purchased the machine. If the sound is very noticeable it will probably mean a new piston, and possibly a new cylinder to stop it. Use a thick lubricating oil.



A COUNTRY GROCER'S SIDECARRIER.

A  $3\frac{1}{2}$  h.p. Rover outfit owned by Mr. F. Hunt, of West Wickham, Kent. The large capacity body will be noted.



**Two-stroke Overheats.**

**Q.** Will you kindly give me a few reasons why my  $2\frac{1}{2}$  h.p. two-stroke overheats in a journey of six miles—up very ordinary hills? I give it any amount of oil, so I do not think that can be the reason.

—D.G.

The usual cause of overheating is incorrect carburation. You most probably have too large a jet fitted. An engine will also overheat if not clean inside. You should make sure there is not excessive carbon deposit on the piston top, and that the rings are free in their grooves. You should give enough oil to cause the engine to be on the point of smoking without actually doing so.

**Magneto Timing.**

**Q.** I have a  $3\frac{1}{2}$  h.p. single, fitted with a Bosch magneto, which, when timed correctly, works splendidly, but within a month the magneto has slipped twice, causing it to spark too late. I find that travelling over rough ground caused the trouble—at least, I presume it was that, as the trouble started after going over a bad surface. Could you tell me how to time it myself, as it may land me miles from a garage? It is a 1914 model, and I think the magneto is in good condition, as I can get a splendid spark from it.—S.G.S.

The magneto should be timed in the following manner: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break and the ignition lever two-thirds retarded. This will mean that the explosion when the ignition is fully retarded will take place when the piston has travelled about 1.5 mm. down the firing stroke. The magneto ought not to slip if the cone fitting of the sprocket is an accurate fit and the holding nut is screwed up sufficiently tightly.

**Popping in Carburettor.**

**Q.** I have a  $2\frac{1}{2}$  h.p. two-stroke which has been running very satisfactorily up till lately, when it has developed an annoying habit of blowing back through the carburettor. At the same time it takes very little air indeed, and if accelerated stops altogether. It is fitted with a Senspray (30 jet), and all the joints are free from air leaks. The petrol pipe is quite clear. The petrol consumption has hitherto been far greater than it should be for a machine of this power (about 70-80 m.p.g.). Would a warm air intake improve this?—J.W.

Your trouble is undoubtedly due to too weak a mixture, caused by a stopped-up jet or petrol pipe or an air leak either between the carburettor and engine or somewhere in the crank case. Make sure that joints such as oil unions, pipes, etc., are in perfect condition. Yes, a warm air intake would probably make an improvement in the consumption. To obtain the best consumption you should make sure all adjustments are quite correct—exhaust pipe free, and ignition sufficiently far advanced, and so on. Use as small a jet as possible consistent with satisfactory running.

**Four-stroking.**

**Q.** I have purchased a second-hand 1915  $2\frac{1}{2}$  h.p. two-stroke, two-speed motor cycle. The engine four-stroked and back-fires badly, and on taking cylinder down I find the piston has only one ring—the top one—the bottom one being missing. Does the missing ring account for the machine four-stroking and back-firing?—L.C.

We do not think the missing ring would cause the trouble, though it would undoubtedly be as well to have this replaced. The four-stroking is probably due to faulty carburation—possibly too large a jet. Also try a new plug of good manufacture with stout electrodes.

**READERS' REPLIES.****Heated Crank Case.**

I was worried in the same way as "C.G.J." by the crank case of my 1913 Triumph getting excessively hot. The remedy in my case was Price's A.—E. ORTON.

**Does Motor Cycling cause Neuritis?**

With reference to "R.L.'s" question, may I, with all deference, point out that the word "neuritis" is, by us medical people at least, used to express disease of nerves, most usually of an inflammatory nature? When we wish to describe joint troubles of a similar type, we use the term "arthritis." I am quite aware that many people use the term "neuritis" to express almost any pain in a limb, and often elsewhere. But, after all, we may as well be accurate in our use of technical terms. I may say, as an old motor cyclist, that I think the use of a motor cycle is far more likely to ward off than to produce either arthritis, neuritis, or fibrositis in an otherwise healthy rider, provided he has a well-built machine and a good saddle, and rides reasonably.—PHYSICIAN.

**Refusal to Fire after Overhaul.**

In your answers to "C.J.P." on August 17th you do not give one possible solution of trouble which has occurred to me, namely, not realising which cam in the magneto should fire which cylinder. On one occasion I rewired the high-tension leads from the magneto on my machine (6 h.p. twin Bradbury), leaving them of equal length, and, testing through with a test battery, joined the one worked off the rear cam to the back cylinder and the one off the front cam to the front cylinder. I then timed in the usual manner by the back cylinder, and found that the front cylinder was firing half-way up the compression stroke. Of

course, as the engine is not symmetrical, the cams are not symmetrically placed, and there is a short gap from the front cam to the back cam, and a long gap from the back cam to the front cam. Of course, also, the remedy was to cross the leads and time the back cylinder to the front one. This seems very obvious; but if one does not notice the number stamped on the cam and the magneto terminal it is quite an excusable mistake. —W. G. H. MILES, Capt. R.M.L.I.

**RECOMMENDED ROUTES.****LEAMINGTON TO TORQUAY.—J.A.B.**

Leamington, Warwick, Barford, Wellesbourne Hastings, Ettington, Halford, Moreton-in-the-Marsh, Stow-in-the-Wold, Foss Bridge, Cirencester, Malmesbury, Chippenham, Melksham, Trowbridge, Frome, Bruton, Sparkford, Ilchester, Ilminster, Honiton, Exeter, Chudleigh, Newton Abbot, Kingskerswell, Torquay. Return Exeter, Cullompton, Taunton, Glastonbury, Wells, Bath, Stroud, Cheltenham, Broadway, Stratford-on-Avon, Warwick, Leamington.

**BISLEY TO NORTHAMPTON.—A.J.B.**

Bisley, Bagshot, Ascot, Windsor, Slough, Beaconsfield, Amersham, Wendover, Aylesbury, Winslow, Buckingham, Towcester, Northampton. Approximately 75 miles.

**BIRMINGHAM TO SCARBOROUGH.—A.S.W.**

Birmingham, Sutton Coldfield, Lichfield, Burton-on-Trent, Derby, Mansfield, Worksop, Doncaster, Selby, York, Malton, Scarborough.

**HINCKLEY AND GLOUCESTER TO EXETER.—J.T.H.**

Hinckley, Coventry, Warwick, Stratford-on-Avon, Bidford, Evesham, Tewkesbury, Gloucester, Bristol, Cross, Bridgewater, Taunton, Wellington, Cullompton, Exeter. Approximately 190 miles.

**LIVERPOOL TO BRAINTREE.—H.G.**

Liverpool, Birkenhead, Chester, Tarporley, Nantwich, Pipe Gate, Stone, Rugeley, Lichfield, Weeford, Atherstone, Lutterworth, Market Harborough, Kettering, Thrapston, Huntingdon, Cambridge, Great Chesterford, Saffron Walden, Thaxted, Great Dunmow, Braintree.

**BALHAM TO EASTBOURNE.—J.G.W.**

Balham, Croydon, Godstone, East Grinstead, Witch Cross, Uckfield, Horsebridge, Hailsham, Eastbourne.

**BIRMINGHAM TO BLACKPOOL.—J.S.**

Birmingham, Walsall, Cannock, Stafford, Stone, Newcastle-under-Lyme, Holmes Chapel, Northwich, Warrington, Wigan, Preston, Lytham, Blackpool.

**PORTSMOUTH TO HARWICH (AVOIDING LONDON).—J.P.S.**

Portsmouth, Petersfield, Farnham, Farnborough, Bagshot, Staines, Uxbridge, Rickmansworth, Watford, St. Albans, Hatfield, Hertford, Ware, Bishops Cleeve, Great Dunmow, Braintree, Colchester, Harwich.

**IMPORTANT NOTICE.****GOODS MADE IN GERMANY.**

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.







# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS.** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C., 1915, 4 speeds, spring frame, racing engine, recently overhauled by makers, perfect condition; what offers?—Phillips, 77, Lansdowne Rd., Handsworth, Birmingham. [X6561]

### A.J.S.

A.J.S., 1916, 2½ h.p., 3-speed; immediate delivery.—Sanders, Garage, Kidderminster. [X6585]

1916 A.J.S. 6 h.p. Combination in stock, ready to ride away; £102/18.—Cross, Agent, Rotherham. [X6567]

A.J.S., 1912, 5-6 h.p., 2-speed, just overhauled, 26×2½ tyres; £50.—Dr. Heslam, 218, Wigan Rd., Bolton. [X6301]

1915 A.J.S. Combination, 6 h.p., complete lamps, horn, and numbers; £86.—Cross, Jeweller, Rotherham. [X6596]

A.J.S., 6 h.p., 1913 (September), excellent condition, lamps, horn, speedometer, watch, mirror; £35.—Belsey, Puckle Lane, Canterbury. [X6531]

6 h.p. A.J.S. Combination, complete with lamp, horn, and spare wheel, has not done more than 500 miles; £95.—H. E. Steel, Ltd., Cheltenham. [X1043]

A.J.S. 1915 6 h.p. Combination, hood, screen, side curtains, interchangeable wheels, enclosed chain drive, 3-speed, Binks Pilot carburettor, good order; £85.—Hewitt, 167, High St., Hemerton, London, N.E. [X151]



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10402.	4½	1915 GRANDEX	£37 10
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10323.	2½	1909 F.B. TRIUMPH	£25 0
10070.	6	1914 2-sp. ENFIELD Combination	£65 0
10068.	3½	1912 QUADRANT, variable gear	£20 0
10021.	3½	1912 SWIFT	£20 0
9867.	2½	1911 2-sp. ENFIELD	£22 10
9847.	4½	1915 3-sp. QUADRANT	£42 10
9830.	3½	1907 TRIUMPH and Sidecar	£22 10
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## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1914, 6 h.p., and coachbuilt sidecar, 3 speeds, excellent condition; £60.—Case's Motor Mart, only address 5, Warren St., Euston Rd., W. Museum 623. [X1183]

A.J.S., 6 h.p., 1914 model, and Gloria coachbuilt sidecar de luxe, complete with hood and screen, Lucas lamps, Cowey speedometer, horn, engine recently thoroughly overhauled, whole machine (including tyres) in splendid condition, done under 5,000 miles, runs equally well on Petrofin; £65.—Waterfield, 16, Holman St., W. [X1137]

### Alldays.

ALLON, 2½ h.p., 1916, quite new, hardly used; 30 gns.—Perry, 391, High Rd., Ilford, Essex. [X1141]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [X0796]

ALLONS, new 1916 2-stroke 2-speed models; £42; an exchange or easy terms arranged.—Wauchope's, 9, Shoe Lane, London. [X1217]

1916 Allon, 2 speeds, clutch, lamps, mechanical horn, etc., new; unable to take delivery; £42.—276, Central Market, E.C. [X1119]

ALLDAYS Allon, 2-speed, new; special bargain, £38/17 cash; gradual payments 2½.—Referee Cycle Co., 332, High Holborn. [X0763]

ALLDAYS Allon, 1915½, 2½ h.p., 2-speed, 2-stroke, 1916 cylinder, perfect; £28, bargain.—112, Stoneleigh Rd., Birchfields, Birmingham. [X6579]

ALLDAYS Allon, 2-speed, June, 1916, lamps, horn, tools, special mudguards, very reliable mount; £36.—Murphy, Blenheim Mess, Farnborough. [X1178]

ALLDAYS Combination, 1914, 4½ h.p. Precision engine, Canoelet sidecar, 3-speed, clutch, very fine condition, do anything; £48.—Capt. J., 7, North Parade, Llandudno. [X6606]

### Anzac.

ANZAC, 1916½, 2½ h.p., 2-stroke, fitted for paraffin, new condition; nearest £20/10.—Sanders, 29, Denmark Rd., Gloucester. [X1085]

### Ariel.

ARIEL Combination, coach, 3 speeds, clutch, nice turaout; £28/10.—11, Luna Rd., Thornton Heath, S.E. [X1123]

3½ h.p. 1915 Ariel, decompressor, new tyres, lamps, 2-horn, and usual accessories; £30.—Lloyd, Well and House, Spalding. [X1059]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [X0797]

### Auto-Wheels.

AUTO-WHEEL, latest design, condition like new; £9; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X1218]

THREE Late Model Wall Auto-Wheels, little used, single lever control; £7, £8, and £9.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X6587]

### Bat.

BAT, May, 1916, 4-5 h.p., 2-speed model, all grey finish, mileage 1,170; condition perfect; £50.—2nd Lt. Jolly, Gt. Brook St. Barracks, Birmingham. [X6530]

BAT-J.A.P., sidecar, coachbuilt, kick starter, 3 speeds, Stewart speedometer, excellent condition; £45; joining up.—Howard, 7, Coleherne Terrace, Earl's Court, London. [X1118]

6 h.p. Twin Bat-Jap, 3-speed, T.T., special competition model, picked engine, overhauled, good tyres and belt, lamps and horn, powerful and reliable; £36, or offer.—Day, Okehampton. [X1082]

### Blumfield.

BLUMFIELD 1915 5-6 h.p. Twin, 2-speed, kick start, countershaft gear, Mark II., Druids, Bosch, Binks, 650×65, F.R.S. electrics, large comfortable coach sidecar, Pillion seat, tools, spares, perfect; go anywhere; £48, no offers.—Beeston House, Williams Av., Wyke, Weymouth. [X6639]

### Bradbury.

BRADBURY, 1912, 3½ h.p., 16 gns.—Burr, St. Andrews Villa, Station Rd., Blythe. [X1181]

BRADBURY, 4 h.p., 2-speed, sidecar, all accessories; £28.—Kennedy, St. Thomas's Hill, Canterbury. [X1166]

1913 Bradbury, 4 h.p., 2-speed, just overhauled; £22; on approval; near offer.—Clark, Section, Tyne-mouth. [X6553]

LATE 1912 Bradbury Combination, 3½ h.p., new tyres, belt; £25.—Maddermott, 971, Middleton Rd., Oldham. [X6633]

1914 3½ h.p. Bradbury, 3 speeds, wicker sidecar; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [X0822]

1912 2-speed Bradbury, coachbuilt sidecar, been thoroughly overhauled; price £26.—95, Tufnell Park Rd., Holloway, N. [X1028]



## MOTOR CYCLES FOR SALE.

## Bradbury.

1914 (early) Bradbury, 3-speed, new belt, tyres, P. and H. head lamps and generator, Lucas tail, horn, tools, etc., perfect condition; any trial; £26, or offer.—Day, Okehampton. [1081]

BRADBURY 4h.p. Combination, countershaft 2-speed gear and clutch, all chain drive, kick starter, C.B. sidecar, late 1913, with Jones speedometer, P. and H. lamps, horn, tools, fine condition, a grand climber, and reliable; best offers.—89, Barking Rd., East Ham, E. [1111]

BRADBURY, 4h.p., late 1913, and coachbuilt sidecar (Canoelet), just been re-bushed, in perfect running order, 3-speed gear, clutch, plating as new, well cared for, lamps, horn, mirror, spares, etc., complete, on bargain, £40.—Box 738, c/o The Motor Cycle. (Advertiser please send address.) [X6681]

## Brough.

PETROL Free with Brough, 1915, horizontally-opposed twin, countershaft, 2-speed gear; 39 gns.—Troward, 78, High St., Hampstead. \*Phone: 5392. [1190]

## B.S.A.

B.S.A., 1916 K, £58, new; also sidecar.—Digby, Mersea, Essex. [1117]

B.S.A. New 1916 Models H and K actually in stock, no waiting.—Moss, Wem. [X6654]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [10798]

B.S.A., late 1912, clutch model, lamps, horn, etc.; bargain, £25.—224, Belgrave Gate, Leicester. [1243]

B.S.A., 1913, 3½h.p., free engine, brand new tyre, speedometer, in perfect condition, like new; must sell: £28.—35, Mile End Rd., E. [1071]

1912 3½h.p. Free Engine B.S.A., all accessories, perfect condition; £24, or nearest; officer abroad.—Box 735, c/o The Motor Cycle. (D) [X6617]

B.S.A., 1916, chain-cum-belt model, 4½h.p., 3-speed countershaft gear, with coachbuilt sidecar, lamp set, rear light, horn, etc.; £68.—Below. [1092]

B.S.A., 1916 models, in stock ready for immediate delivery; 4½h.p. 3-speed countershaft gear, chain-cum-belt drive, £62; all-chain drive, £64; exchange or extended terms quoted.—Elce and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [10492]

B.S.A., 1916, 4½h.p., chain drive model H, 3-speed countershaft gear, kick starter, etc., only run 700 miles, quite equal to new, guaranteed, with accessories; £58, bargain.—Moss, Wem. [X6656]

4h.p. B.S.A., with special Canoelet sidecar, late 1915 model, speedometer, Lucas horn, 3 P. and H. lamps; this machine is in perfect condition, and is very smart; mileage driven is under 2,000; bargain at £75.—Apply, Beadle, Motors, Dartford. [1014]

B.S.A.—Models H and K actually delivered from stock with Canoelet B.S.A. sidecars, models B3, C3, and C4, also a 1912 free engine machine, £29/10, with accessories; deferred payments by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1094]

4h.p. New 1916 B.S.A. Models, chain drive £64, 4 chain-cum-belt £62; these famous motor cycles are fitted with the countershaft 3-speed gear box; the all-chain drive is recommended for sidecar work, and the chain-cum-belt for solo; cash, exchange, or easy terms.—Wauchope's, 9, Shoe Lane, Fleet St., London. [1208]

## Buck.

4h.p. Buck, Multi Grado gear, free engine, coachbuilt sidecar, all accessories, splendid condition; £30.—T. O. Burch, 36, Belmont Rd., Ilford, Essex. [1044]

## Calcott.

CALCOTT, 2½h.p., 1914, in good condition; must sell; £16, or offer.—Burton, 13, Gelderd Rd., Leeds. [1149]

## Calthorpe.

CALTHORPE-J.A.P., 2½h.p., 2-speed Enfield gear, free engine, brand new, unused; £34.—Moss, Wem. [X6657]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [10799]

1915 Calthorpe-Jap, Enfield 2-speed gear, lamp, etc., in good condition; £22, or near.—Wiffen, 48, Nelson St., St. Peter's St., Hackney Rd., N.E. [1156]

CALTHORPE-J.A.P.'s with Enfield gears, 36 gns.; 4 models actually in stock; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1091]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [10815]

CALTHORPE-J.A.P., Ang., 1915, 2½h.p., 2-speed Enfield gear, only ridden 400 miles, runs perfectly, special saddle and horn, lighting set, practically unused, every accessory; cost £40, price £28.—Johnson, 70, Lancaster Gate, London. [1136]

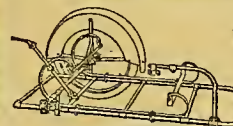
CALTHORPES, J.A.P. 2½h.p. engines, 1916 models, £37/16, with Enfield 2-speed gear; also single-speed models, £32; and 2-strokes; we have several good second-hand machines of this make to offer from £17/10.—Wauchope's, 9, Shoe Lane, London. [1209]

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4 h.p. ZENITH, 1911, Gradua variable gear .....	£19 15
2½ h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc. ....	£32 10
7-9h.p. PREMIER, 1914, 2-speed countershaft, with £13 ros. new coach Sidecar .....	£49 15
6 h.p. REX, 2-speed, magneto .....	£11 15
2½ h.p. DOUGLAS, 1910 .....	£13 15
2½ h.p. MINERVA, magnet, variable gear .....	£9 15
7-9h.p. INDIAN, 1915, 3-speed, electrical model, and £10 Montgomery Sidecar .....	£69 15
1916 7-9 h.p. HARLEY-DAVIDSON .....	£80 15
1916 ditto, electrical model .....	£89 0
1914 FORD Touring Car, detachable wheels .....	£85 0
2½ h.p. WOLF, 1916, 2-stroke, 2-speed .....	£33 10
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3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn .....	£25 15
2½ h.p. PREMIER, 1912, 3-speed model .....	£16 15
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar .....	£69 15
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2½ h.p. MATCHLESS-J.A.P., 1910 .....	£10 15
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New £5 weatherproof Magneto, £3 10s.; 1911 Rex Spring Forks, 30/-; ditto Tank, 17/6; Long Lengths Steel Tubing, 1½ x 12g., 14g., 16g.; Bosch Magneto, 50/-; B. and B. Carburettor, 12/6; Amac Carburettor, 12/6; New 20/- Brass Electric Sidecar Lamps, 6/6; Ditto Tail Lamps, 5/6, approval; New Spare Valves for Harley-Davidsons, 4/9; 1911 Twin Rex, frame only, 20/-; Douglas Carburettor, 10/6; New 26x24 or 24 Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); £16 16s. Gloria Coach Sidecar, just repainted, £7 15s.; Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburettor taken in exchange).

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HALIFAX.

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## MOTOR CYCLES FOR SALE.

## Calthorpe.

CALTHORPE-J.A.P., latest 1916 models, in stock; 2½h.p., 2-speed, 36 gns.; 4h.p. twin 2-speed lightweight combination, 67 gns.; lady's 2-stroke 2-speed, 34 gns.; extended terms quoted.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

## Camplon.

CAMPION, 1914½, 3-speed countershaft Jardine gears, 6h.p. J.A.P., Klaxon, hood, screen, the Luxe sidecar, with carrier, not done 2,000, like new, gears guaranteed perfect, take 3 anywhere, £19 lowest; with sidecar complete, £22/10; wonderful opportunity for securing reliable combination.—Bon Marche, Chesterfield. [X6565]

## Chater-Lea-Jap.

NO. 7 Chater-Lea Combination, with latest 8h.p. J.A.P. engine, thoroughly overhauled and re-enamelled, all accessories; £59.—24, Gwendolen Av., Putney, S.W. [1034]

## Clyno.

CLYNO 6h.p. Combination, 2-speed, electric light, speedometer, hood, screen, powerful; £55; evenings only.—5, Thirk Rd., Tooting Junction, S.W. [1148]

CLYNO 1914 Conversion, 6h.p., coach combination, 3-speed, kick starter, all accessories; £35, absolute war bargain.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1097]

CLYNO Combination, 1915, 5-6h.p., 3 speeds, kick start, sidecar fitted with hood, screen, interchangeable wheels, spare, excellent condition; £80.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480]

CLYNO and Sidecar, late 1914, interchangeable wheels, spare, 3-speed, Avon Sunstones all round, 3 lamps, speedometer, spares, excellent order, climb anything; trial by appointment; £57/10.—H. Walside, Kenley, Surrey. [1049]

LATE 1913 5-6h.p. Clyno, 3-speed countershaft gear, interchangeable wheels, Bosch mag., special Gloria sidecar, new tyres, speedometer, fully equipped, splendid condition; nearest £52, a bargain.—37, Deans Walk, Gloucester. [X6559]

## Connaught.

1914 Connaught, 2-stroke, 3 speeds, complete lamps, etc.; £25.—Cross, Jeweller, Rotherham. [X6568]

1916 Connaught, 800 miles, run paraffin; immense bargain, £20.—54, Seymour Rd., Leyton. [1073]

## Dalm.

DALM 2-stroke, 1915, 3 speeds, clutch, lamps, etc.; £24.—11, Luna Rd., Thornton Heath, S.E. [1125]

## Douglas.

DOUGLAS, 1914, T.T., excellent condition, tyres new; £36.—91, Pimlico Rd., S.W. [1113]

1911 2½h.p. Douglas, in excellent condition; £18.—Houghton, Forchill, Ely, Cambs. [1160]

DOUGLAS, 1913, 2½h.p., good condition; £30.—F.W., 18, Woolstone Rd., Catford. [1036]

DOUGLAS, 1912, excellent condition, not used since 1914; £18.—104, Casewick Rd., West Norwood. [X6299]

DOUGLAS, 2½h.p., 2-speed, clutch, lamps, spares; 36 gns.—Mitchell, Woodland Cottage, Wallington. [1250]

DOUGLAS, late 1913, T.T., 2 speeds, new Hutchings, in good order; £35.—120, St. Ann's Rd., London, N. [X6312]

DOUGLAS Motor Cycle, 2½h.p., 2-speed gear, recently overhauled; bargain, £38.—Neill Bros., Ltd., Daventry. [X6494]

1913 2½h.p. Douglas, grand condition, all accessories; must sell; best offer secures.—Henly, 7, Woburn Place, W.C. [9870]

DOUGLAS, 2½h.p., 1912, 2-speed, just spent £10 overhauling, etc.; £30.—H. Wareing, 182, Portland St., Southport. [X6673]

DOUGLAS, 1914, 2-speed, new tyres, lamp, horn, tools, footboards, fine order; £36.—Batchelor, Clarence St., Kingston. [X6637]

2½h.p. Douglas, 1911 model, single speed, very powerful and fast; £17/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [1210]

DOUGLAS, late 1914, 2½h.p., 2-speed, perfect condition; £35; owner going overseas.—Paternus, Grosvenor House, Sandgate. [X6516]

LATE 1914 3½h.p. Douglas, clutch, kick starter, 2-speed, beautiful condition; £45.—W. S. Stuart, Photographer, North Finchley. [9770]

2½h.p. Model W Douglas, 3-speed, clutch, kick start, in stock for immediate delivery.—Robinson's Garage, Green St., Cambridge. [9857]

DOUGLAS, 1912, mechanical valves, chain-cum-belt; first cash offer for £16/10 secures.—Waller, Hillside, Eynsford Rd., Farningham. [X6520]

1915 Douglas Model W De Luxe, clutch, kick starter, etc., including spares; bargain, 44 gns.—Address, Coles, Radway, Kington, Warwick. [X6599]



## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

WAR Office Douglas, brand new, latest pattern, 2-speed, semi T.T. bars, in stock; immediate delivery.—Robinson's Garage, Green St., Cambridge. [9856]

DOUGLAS, 1911, 2½ h.p., 2 speeds, clutch, lamps, horn, new tyres, just overhauled; £20, first cheque secures.—Harrison, 27, Regent Parade, Harrogate. [1072]

PETROL Free with 1913 T.T. Douglas, 23 gns.; 1912 2-speed Douglas, 22 gns.; 1911 Douglas, 18 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [1193]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

1915 (Oct.) 2½ h.p. 3-speed Douglas, Colonial, semi T.T. bars, lamps, speedometer, etc. 50 m.p.h. guaranteed, as new; £45, no offers.—Box 732, c/o The Motor Cycle. (D) [X6614]

EXCEPTIONAL Bargain.—Genuine late 1914 Douglas, all black model, fitted with dynamo lighting set, 2 electric lamps, electric and mechanical horns, fast, powerful; £42 secures this bargain.—Brown, Gloucester Rd., Chesterfield. [X6564]

1916 4 h.p. Douglas, 3-speed, kick start, latest model, used for demonstration only, complete with coach-built sidecar, Lucas dynamo lighting set, 3 lamps and accumulators, electric horn, Cowey speedometer, complete set tools, ridden under 2,000 miles, condition as new throughout guaranteed; £95/10.—Robinson's Garage, Green St., Cambridge. [9854]

## Enfield.

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ROYAL Enfield Lightweight Twin, mag.; must sell; £12/15.—1, Ebner St., Wandsworth. [X6574]

ENFIELD Combination, 6 h.p., late 1915; any severe trial; 65 gns.—280, Camberwell Rd., S.E. [1224]

1916 3 h.p. 2-speed Enfield, only 2 weeks old, perfect; £50.—Stacey, 12, Ecclesall Rd., Sheffield. [X6592]

ENFIELD Combination, 1915, a beautiful machine, hardly used; £66.—11, Luna Rd., Thornton Heath. [1124]

ENFIELD 6 h.p. Combination, late 1914 model, splendid order, Lucas equipped; £63.—Moss, Wem. [X6655]

ENFIELD Combination, 1915, spare chain, tube, cover; £65.—Joseph, 15, Cornwall Gardens, Preston, Brighton. [1177]

1914 2½ h.p. Twin 2-speed Royal Enfield, lamp, horn, etc.; £24, or offer; officer going abroad.—Box 734, c/o The Motor Cycle. (D) [X6616]

ENFIELD 1914 6 h.p. Combination, lamps, speedometer, excellent condition; £55.—Townend, Garage, Foots Cray Rd., Eltham, S.E. [1061]

ENFIELD Combination, 1915, splendid condition, all black Lucas lamp, all spares, little need; £55, lowest.—Channer, 3, Week St., Maidstone. [1055]

1916 Enfield Combination, lovely condition, tyres perfect, done 3,500; £73; exchange 1915 4 h.p. Triumph and cash.—35, Bishop St., Shrewsbury. [X6451]

1916 Enfield Combination, complete with lamps (unused), Klaxon, tools, etc.; 75 gns., cost £100 May; ride any distance.—14, Branksome Rd., Norwich. [X6456]

ENFIELD 1916 6 h.p. Combination, run 1,000 miles only and good as new, complete with lamps, horn, numbers, etc.; £80.—Wallace, 36, Clarence St., Kingston. [X6636]

1916 Enfield Combination, new July, not done 1,000 miles, complete with lamps; seen by appointment; 70 gns.—Earley House, Lower Earley, Reading. [1251]

1914 Enfield 6 h.p. Combination, speedometer, lamps, Pillion seat, spare cover, run 4,000 miles, good condition; £60.—Pollard, St. John's Av., Bridlington. [X6538]

1916 6 h.p. Enfield Combination, 90 gns.; 1916 3 h.p. twin, 55 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0838]

ENFIELD Combination, 1916, 6 h.p., 2-speed, delivery from stock; 90 gns.; exchanges or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

NEW 6 h.p. Enfield Combinations from stock, 90 gns.; also a good 1916 second-hand combination, nearly new, with all accessories, 80 gns.—Wauchope's, 9, Shoe Lane, London. [1211]

6 h.p. Enfield Combination, in splendid condition, engine, gears, and tyres as new, speedometer, screen, lamps, complete; £55, no offers.—246, Northumberland Park, Tottenham. [1121]

ENFIELD 6 h.p. Combination, coach sidecar, November, 1913, speedometer, lamps, horn, spares, perfect condition, little used; £49, no offers.—7, Hencroft St., Slough, Bucks. [1064]

6 h.p. Enfield Combination, late 1914, 700×80 cover on back wheel, all lamps, tools, etc., in fine condition, only wants seeing; £62.—Harvey, Hudson and Co., South Woodford. [X6512]

# FOR 1916.

ROYAL RUBY, SUN, ALLDAYS ALLOM, J.H., B.S.A., CALTHORPE, LEVIS, COVENTRY EAGLE, etc.

HARLEY-DAVIDSON, EXCELSIORS, INDIANS, and ENFIELDS.

You cannot beat us on either Cash or Exchange Terms.

## WE WANT YOUR BUSINESS,

And if price and quality count for anything, we bid fair to obtain it.

## EX-STOCK DELIVERIES.

### LIST OF SECOND-HANDS

carrying our full and comprehensive Guarantee.

### SIDECAR OUTFITS.

ZENITH, 1914 (late), 8 h.p., countershaft and clutch, lamps and speedometer, Verona coachbuilt Sidecar, like new ..... £68  
 REX, 1914, 6 h.p., 2-speed, modele de luxe, handle starting, coach-built Sidecar, just been overhauled ..... £40  
 TRIUMPH, 1914, 6 h.p., 2-speed countershaft, Sidecar, ..... £32  
 HARLEY, 1914, 7 h.p., 2-speed, and coach-built 'Scar INDIAN, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar. .... £44  
 INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame. .... £62  
 ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ..... £42  
 A.J.S., 1915, 6 h.p., 3-speed, and Sidecar, like new ..... £60  
 REX, 1913, 6 h.p., 2-speed, cane Sidecar ..... £85  
 RUDGE, 1913, 5-6 h.p. Multi, with Rudge Sidecar ..... £28

### SOLO MODELS.

DOUGLAS, 1911, 2½ b.p., 2-speed, spring forks ..... £20  
 CALTHORPE, 1914, 2 h.p., 2-speed ..... £19  
 RUDGE 1913 3½ h.p. Multi, T.T. bars ..... £33  
 IVY, 1915, 2-stroke, single-speed ..... £18  
 KERRY-ABINGDON, 3½ h.p., magneto, 2-speed ..... £22  
 TRIUMPH, 1912, 3½ h.p. clutch model ..... £34  
 NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine ..... £30  
 TRIUMPH, 1912, 3½ h.p., clutch model ..... £33  
 ROYAL RUBY, 1914, 8 h.p., clutch, Philipson pulley ..... £26  
 TRIUMPH, 1912, 8 h.p., 2-speed, spring frame ..... £23  
 BAT-J.A.P., 1912, 8 h.p., multi, large tank ..... £35  
 REX, 1913, 3½ h.p., 2-speed, and clutch ..... £29  
 BROUGH, 1914, 8 h.p., T.T. model ..... £45  
 NEW RYDER, 1916, 2-stroke, dropped frame ..... £22  
 HARLEY, 1915, 7-9 h.p., 3-speed, T.T. bars ..... £56  
 RUDGE, 1915, 3½ h.p., Philipson pulley ..... £42  
 INDIAN, 1915, 3½ h.p., 3-speed, T.T. model ..... £43  
 RUDGE, 3½ h.p. special T.T., Philipson pulley ..... £42  
 NORTON, 1915, 79×100, T.T., as new ..... £54

### CARS AND LIGHT CARS.

N.A.G., 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set ..... £275  
 SUNBEAM, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled ..... £295  
 KNIGHT JUNIOR, 1914, 12 h.p., 2-seater, sporting body ..... £155  
 TALBOT, 1913, 15 h.p., Coupé body by Mulliner, in Bedford cord, dynamo lighting ..... £375  
 MINERVA, 26 h.p., 5-seater, make an excellent 25 cwt. van. Perfect mechanical order ..... £80  
 MORRIS-OXFORD, 1913, 10 h.p., all lamps and accessories (including speedometer) ..... £135  
 G.W.K., 1914, 9 h.p., just re-painted and new hood fitted ..... £100  
 G.W.K., 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £160  
 DEEMSTER, 1914, 9.5 h.p., 2-seater, all accessories; a bargain at ..... £110

### 1914 and 1915

## DOUGLAS MACHINES

bought for cash.

**MAUDES**  
**MOTOR MART**  
 100 & 136 Gt Portland St. London W.  
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## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD 1916 6 h.p. Combination, new 3 months ago, everything as new, tyres unpunctured, with accessories and wind screen; 76 gns., cost £98.—Scales, 391, High Rd., Ilford, Essex. [1140]

ENFIELD 8 h.p., 6 h.p. combinations, and 3 h.p. light-weights actually in stock; also electric 1915 model, with hood, screen, and speedometer; £89/10; generous deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1093]

1915 Enfield Combination, mechanically perfect, 75 m.p.g., appearance as new, fitted with Blundells triple wind screen, speedometer and watch combination, Miller lamps and generator, not used, new spare tyre and tube, and spares; £80.—Collier, Undertaker, Strury, Kent. [9788]

1916 5 h.p. Enfield Twin, 2-speed gear, as new, not done 500 miles; anyone getting this machine friends would think it had been bought as new and just ridden a few miles; with Lucas lamp, generator, and horn; rear light and generator; accept one price only, no offer, £43.—Moore, 26, Forsyth Rd., Newcastle-on-Tyne. [X6668]

## Excelsior.

EXCELSIOR with sidecar, 3½-4 h.p., Matchless 2 speeds; trial; £16/16.—1, Ebner St., Wandsworth. [X6573]

## Fafnir.

3½ h.p. Fafnir, with Roe 2-speed gear and coachbuilt sidecar; £15.—Wauchope's, 9, Shoe Lane, London. [1212]

## F.N.

5-6 h.p. F.N., 4-cyl., T.T. 2-speed model; £30.—Wauchope's, 9, Shoe Lane, London. [1213]

F.N., 1913, 5-6 h.p., 2-speed, clutch, kick starter, excellent condition throughout; £27, or part exchange for Henderson, Rudge B.S.A.—Box L2,034, c/o The Motor Cycle. [1240]

## Grandex.

1914 Grandex-Precision, 2½ h.p., 2 speeds, good condition; £13/10; exchange higher power, cash.—20, Clifford Rd., Fishponds, Bristol. [1065]

LATE 1914 2½ h.p. Grandex-Jap, 2-speed, lamps, accessories, splendid condition, new tyres; bargain, £16.—436, Whitehorse Rd., Thornton Heath. [1078]

## Harley-Davidson.

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

1916 Harley-Davidson Combination, as new; cost £96, offers, or lower power and cash.—Write, Builder, 37a, Elm Grove, Peckham. [1153]

1916 Model J Harley-Davidson, electrically equipped, not done 200 miles; owner in France; £80.—Whitehorse Rd., Thornton Heath. [1078]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0800]

HARLEY-DAVIDSON, late 1915, mileage about 1,200, with dynamo lighting set, ready for the road; £54, bargain.—Chapman, 52, Gt. Eastern St., E.C. [1047]

HARLEY-DAVIDSON 1915, new last November, and sidecar new last month, electric light and horn, perfect, running now on neat Petrol; price £60, or nearest offer.—Green, 6, Union St., Maidstone. [1056]

1915 Harley-Davidson, 7-9 h.p., electric equipment, and Swan sporting sidecar, with disc wheel, dropped handle-bars, 3-speed countershaft gear, and chain drive; £75; guaranteed.—Wauchope's, 9, Shoe Lane, London. [1216]

HARLEY-DAVIDSONS Combinations actually in stock £101/15, and £110, or solo £80/15; deferred payments if desired; liberal exchanges; also sidecars to suit from £13/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1098]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

HARLEY-DAVIDSON (1915 model 11F), with very handsome Mills-Fairford coachbuilt sidecar, painted green, in splendid running order and appearance, almost equal to new; cash price £75, or on deferred payments 2% extra; deposit £16/10, and 12 monthly payments of £5.—William Whiteley, Ltd., Queen's Rd., London, W. [1226]

HARLEY-DAVIDSON Combination, 1916, 3-speed twin, model 16F, mag., model A sidecar, just bought, and unused, Lucas lamps and horn, Stewart speedometer, luggage carrier, Dunlop tubes, and third seat, complete set of spares and tools, together with transferable insurance policy; price £100.—Apply, Lieut. Col. Perry, 142, Manchester Rd., Burnley, Lancs. [1064]

## Hazelwood.

4-5 h.p. 1915 Hazelwood, 3-speed, and free engine model, complete with Lucas accessories; £37/10.—Wauchope's, 9, Shoe Lane, London. [1205]

## Henderson.

HENDERSON, 10 h.p., 4-cyl., 1914 (does 70 m.p.g.) and specially sprung coachbuilt sidecar, all in excellent condition, will do 6 or 60 m.p.h. on top gear; cost £109, price now £55.—Dr. Fox, Brook War Hospital, Woolwich. [1138]



# Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone—766.

Telegrams—"Perfection."

## NEW MODELS.

MORGAN de luxe, M.A.G. engine, hood, etc.	£127 0
WILLIAMSON Cy-cl-car, w.c. Douglas engine	£126 0
RITZ 4-cylinder Light Car.	£145 0
OVERLAND 4-seater, 12 h.p. (tax £4 4s.).	£225 0
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed	£39 10
ROYAL RUBY, 6 h.p., 2-speed, shop-soiled	£63 10
U.S.A. EXCELSIOR, 3-speed countershaft	£75 0
REX, 6 h.p., kick-start, and Rex Sidecar	£71 0

## 1916 (U.S.A.) EXCELSIOR,

7 h.p., 3-speed model, 84×89 countershaft gear, chain drive, mechanical and hand lubrication, high-tension magneto, multiple-disc clutch with dual control, kick starter, 2 gallons petrol capacity; £75. Or with electrical equipment; £85.

A few late 1915 new 7 h.p. 3-speed twin Excelsiors, with electrical equipment, at pre-tax price; £71 10s. Exchanges quoted. Easy Payments 2½ p.c. extra.

Sole Yorkshire Distributors.

Trade Supplied.

## PERFECTION SIDECARS

to suit B.S.A., SUNBEAM, and other machines, Dunlop tyre, body finished black and gold; £12.

## SOLO MACHINES.

1914 2-speed CALTHORPE - PRECISION	
Lightweight	£16 10
1914 2½ h.p. 2-speed DOUGLAS	£37 10
1914 2½ h.p. single-speed DOUGLAS	£26 10
1912 2½ h.p. 2-speed DOUGLAS	£34 10
1912 4 h.p. 2-speed INDIAN	£27 10
1912 3½ h.p. ZENITH-GRADUA	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£26 10
1912 3½ h.p. 2-speed ALLDAYS MATCHLESS	£25 10
1912 3½ h.p. T.T. BRADBURY	£19 10
1912 2½ h.p. PREMIER, wants repairs	£11 15
1912 HUMBER Magneto, Lightweight	£16 10
1911 3½ h.p. TORPEDO-PRECISION	£17 10
1911 3½ h.p. 3-speed TRIUMPH	£26 10
EXCELSIOR, 3½ h.p., 3-speed, Druid forks	£16 10
N.S.U., 3½ h.p., 2-speed, free engine	£18 10
F.N., 2-speed, magneto, lightweight	£17 10
TRIUMPH, magneto, new tyres	£24 10
S.P.K., 3½ h.p., 3-speed countershaft	£18 10
REX, 3½ h.p., magneto, spring forks	£11 15
DOUGLAS, 2½ h.p. Twin Lightweight	£15 10
TRIUMPH, 3½ h.p., clutch model	£21 10

## SIDECAR COMBINATIONS.

1916 5-6 h.p. 3-speed COVENTRY EAGLE, with high coach Sidecar and accessories	£72 10
1914-15 (new) REX 2-speed Sidette	£71 0
1914 7-9 h.p. 2-speed (red) INDIAN Combin.	£53 10
1913 6 h.p. REX Sidette, very smart	£43 10
1913 7-9 h.p. QUADRANT and Sidecar	£42 10
1913 3-speed countershaft Twin HAZLEWOOD, coach sidecar, screen, and apron	£42 0
1913 6 h.p. ARIEL, chain drive, and Sidecar	£42 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1911 3½ h.p. 3-speed TRIUMPH and Sidecar	£28 10
1909 3½ h.p. 2-speed TRIUMPH and Sidecar	£26 10

## MISCELLANEOUS.

RITZ 4-cyl. 2-seater Light Car, shop-soiled	£130 0
MORGAN, 1913, lamps, horn, screen, etc.	£57 10
RENO 15 h.p. 4-cylinder Touring Car	£65 0
PREMIER, 7-9 h.p. 2-seater Light Car	£57 10
1915 FORD 20 h.p. 2-seater Car	£89 10
1913 FORD 5-seater Touring Car	£65 0
New Mechanical Horns	17/6
New Acetylene Tail Lamp, post free	1/6
At Mudscreen, cost 21/-, take	10/6
P. & H. Separate Generator Lamp	17/6
Miller's late type Lamp Set	£1 4
Lucas Kings Own Lamp set	£1 5
REX, 6 h.p., twin engine, magneto and carb.	£7 10
M.M.C. 8 h.p. W.C. Engine, fine condition	£4 0
5½ h.p. W.C. Engine, 2-speed, clutch	£5 0
Brooks B150 large size Pan Seat	18/6
Bosch Twin Magneto	£2 10
New Wicker Sidecar Bodies	16/6
New Cane Sidecar Bodies, large size	£1 17 6
Sidecar Chassis, with wheel	£1 5

Cash Offers Solicited.

WANTED.—Second-hand MORGAN RUNABOUT, and 1916 8 h.p. SUNBEAM Combination.

## MOTOR CYCLES FOR SALE.

### Hobart.

HOBART 3-speed 4 h.p. Twin, and 9 gn. Gloria sidecar, all accessories; any trial; £39.—Enst Kent Motor Co., Station Rd., Canterbury. [0832]

### Humber.

HUMBER, 3 h.p., chain drive, excellent condition; £14.—Webb, 2, Sylvan Rd., Forest Gate, Essex. [1163]

HUMBER, 2½ h.p. twin, 3-speed, new condition; £24, or exchange and cash.—W., 18, Wood St., Walthamstow, Essex. [1154]

1915 3½ h.p. 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]

HUMBER, 2½ h.p., 1913, Armstrong 3-speed, Stewart speedometer, splendid condition; £22.—H. Pearce, Woodfield, Durham Rd., Sidcup. [1107]

1912 3½ h.p. 2-speed Humber, with coachbuilt sidecar, in good order; £32/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

1914 Humber, 3½ h.p., 3-speed, clutch, kick start, smart cane sidecar, Lucas head lamp, machine in new condition; exceptional bargain, £40.—Newham, 223, Hammersmith Rd., W. [1187]

HUMBER for sale, 1912, 3½ h.p., Brampton variable gear, free engine, etc., in good condition, just been overhauled and re-bushed throughout; £22, or nearest offer; would exchange with cash balance for new lightweight of good make.—Haines, 28, Woodlands Av., Wanstead, N.E. [1029]

### Indian.

5-6 h.p. Twin Indian, little used, mag., etc.; £18.—10, Norwood Crescent, Southport. [X6648]

7 h.p. Indian and sidecar, good condition; £30.—Horsham, Stortford Villa, Sturry. [1108]

1913 T.T. Red Indian, 7-9 h.p., clutch, lamp, etc.; £30.—80, Bispham Rd., Southport. [X6646n]

1916 5 h.p. Indian, new June, unscratched; bargain, £58.—A. Holmes, Vicker's Canteen, Weybridge. [1223]

1914 7-9 h.p. Red Indian, with Mills-Fulford sidecar, complete; £40.—Stacey, 12, Ecclesall Rd., Sheffield. [X6594]

INDIAN, 5 h.p., 1911, free engine, English controls, good running order, will ride 30 miles; £18/18.—77, Mayfield Av., Dover. [1019]

LATE 1915 Indian, 7-9 h.p., 3-speed, coachbuilt sidecar, tyres, engine, appearance good; £68.—Rees, 7, Burwash Rd., Plumstead. [X6515]

7 h.p. 1914 Indian, 2-speed and free engine model, very powerful and fast, spring frame; £35; guaranteed.—Wauchope's, 9, Shoe Lane, London. [1215]

7-9 h.p. Indian, rigid frame, 1913, 2-speed, clutch, tyres good, splendid condition; a bargain, £33/10, or nearest offer.—C. Brigenshaw, 30, North St., Strood, Kent. [1167]

INDIAN 1916 Powerplus Model, with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £80.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]

INDIAN Combination, 3½ h.p., late 1914, 2 speeds, kick starter, electric equipment, speedometer, only ridden 4,000 miles; unprecedented bargain, £42; view after 5.—83, Woodstock Rd., Chiswick. [1045]

1915 7-9 h.p. Indian, spring frame, 3 speeds, electric head and tail lights, horn, speedometer, splendid condition, fitted with coach sidecar, sporting model, to match; £66.—Apply, Box 731, c/o The Motor Cycle. [X6632]

1915 3½ h.p. Twin-cyl. Indians, 3-speed, full equipped, done 1,600, and brand new 16 gn. Millford Indian, coachbuilt sidecar, n fast and economical combination; £56.—Empson, Gillingay, Sandy, Beds. [1158]

INDIAN 1913 7-9 h.p. Combination, 2-speed, hand clutch, new chains, countershaft, splendid order, appearance; genuine snip, £37/10, or exchange 4½, 5-6 h.p., cash either way.—Lee, 30, Cholmeley Rd., Reading. [1237]

FOR Sale, Indian, 1914 model, 7-9 h.p., exceptionally good order, only done 3,500 miles; officer home from France after 17 months service, is unable to ride any longer owing to wounds; price £55.—C. S. Richardson, Malling Deanery, Lewes. [1020]

LATE 1915 Indian Combination de Luxe, electrically equipped, mileage 1,600; cost £118, price £78; equal to new throughout, and you save £40; operation causes sale; expert examination with pleasure.—24, Midland Terrace, Willesden Junction. [1128]

INDIAN Combination, 1916 Power Plus, 7-9 h.p., electrical model, only few months old, all in splendid condition, with large hood and triple wind screen; a bargain, £89/10; runs well on kerosene and petrol.—E.I.C., 54, Broadway, Wimbledon. 'Phone: 133. [X6455]

NEVER Again.—Guaranteed 1914 2-speed spring frame Indian, with 235 Glorin coachbuilt sidecar, luggage grid, spare petrol tin holder, electric lighting and horn, very fast and powerful, extra tank for running on paraffin; £52/10, rock bottom.—H. Millard, Esq., Chesterfield. [X6613]

### Ivy.

IVY 1915 2-stroke, perfect condition; £19, or nearest offer.—53, Ayres Rd., Brooks Bar, Manchester. [X6578]

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We have a few new but showroom-soiled FARLOW Sidecars, which we offer as follows:

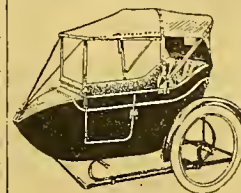
Model No. 1. Usual price £11. SALE PRICE £8.  
Model No. 2. Usual price £19. SALE PRICE £7.

All carrying our usual guarantee.

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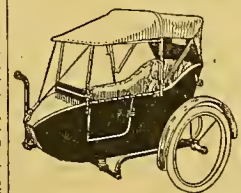
Built throughout in our own factory.

Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyers' ideal.



Model 1.  
Underslung Chassis, with Luggage Carrier combined.

Splendidly made and built for hard work.  
£11 0 0  
Hood ..... £2 4  
Screen ..... £1 0



This is Model No. 2.

A BEAUTIFUL LIGHT SIDECAR.

PRICE ..... £10 0  
Hood ..... £2 4  
Screen ..... £1 0

Delivery from Stock.  
Your Agent will supply

## NEW STOCK FOR IMMEDIATE DELIVERY.

1916 Grand Prix MORGAN, all on	£130 8
1916 6 h.p. ENFIELD Combination, c/built 90 gns.	
1916 6 h.p. J.H. Combination, M.A.G. eng. 90 gns.	
1916 3 h.p. ENFIELD, 2-speed, kick starter 55 gns.	
1916 5-6 h.p. ENGLISH EXCELSIOR Big Single, 3-speed 68 gns.	
1916 2½ h.p. OMEGA-J.A.P., c/shaft gear	38 gns.
1916 FORD Ambulance, 20 h.p.	£135 0
1915 11 h.p. TRUMBULL Light Car, new	£120 0

## SECOND-HAND BARGAINS.

1911 3½ h.p. P. & M., 2-speed, chain drive, M.O.V.	£22 0
1915 2½ h.p. WOLF, 3-speed, done 900 only	£25 0
1914 3 h.p. OMEGA, 2-stroke	£16 0
1909 3½ h.p. REX de Luxe, 2-speed, handle starting	£17 0
1913 6 h.p. A.C. Sociable, fine condition	£44 0
1915 6 h.p. NEW HUDSON, 3-sp. countershaft gear, kick starter, Farlow Sidecar	£59 10
18-22 h.p. SIDDELEY Lorry, 4 speeds, chain drive, 2 ignitions	£50 0
to h.p. HUMBER Lorry, 3 speeds, two ignitions	£40 0



## NEW MOTOR CYCLE FRAMES.

Fully Guaranteed.

25/- each.

## ODD BARGAINS.

Pair 1915 A.J.S. 6 h.p. spring forks	39/-
Rigid Sidecar, no tyre	17/6
Cane Sidecar, side door model	£3 10
New Splittorf-Dixie Magneto, single, anti	£4 0
Latest Mechanical Horns, black and nickel	£1 0
Canole Sidecar, very fine	£28 0
5 h.p. Twin Antoine Engine, water-cooled	£6 0
F.R.S. Lamp Set, 50cft. beam, shop-soiled	35/-
F.R.S. Lamp Set, 1,000ft. beam, shop-soiled	45/-

## FARRAR'S MOTORS

(Telephone 919)

Hopwood Lane, HALIFAX.



## MOTOR CYCLES FOR SALE.

## Ivy.

**IVY**, 1915, 2½ h.p. model, new last September, not run 1,000 miles, ns new, guaranteed; £25.—Moss, Wem. [X6658]

**IVY**, 1913, 3½ h.p., 3-speed hub gear, semi T.T. horns, everything in perfect condition, fast machine; £22/10.—Dr. Haslam, 218, Wigan Rd., Bolton. [X6302]

**1914 Ivy-Precision** 4 h.p. Combination, Godiva C.B. sidescar, Grando Multi gear, speedometer, watch, and accessories, low and sporty, very powerful, perfect; £34, or near offer.—J. E. Doughty, Teller, 198, Michau Rd., Tooting, S.W. [1033]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES**, 4½ h.p., 3-speed, new condition, with accessories; £35. Phone: P.G. 471.—Leighton's, Wood Green Station. [1015]

**JAMES**, late 1914, twin, 3 speeds, clutch, recently overhauled, all accessories; £26; trial given.—Taylor, 37, Lovelace Gardens, Surbiton. [X6682]

**PETROL** Free with 1914 James, 18 gn. Canoelet sidescar, countershaft all-chain drive; 41 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [1192]

**2½ h.p. James**, 2-stroke, 2-speed model, 1915, complete with all accessories and speedometer; £37/10, guaranteed.—Wanchope's, 9, Shoe Lane, London. [1204]

**JAMES** 1916 4½ h.p. Combination, 3-speed, clutch, and kickstarter, delivery from stock; £80/15; cash, exchange, or extended terms.—Blce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

**4½ h.p. James** Combination, with lamps, horn, and all accessories, 700x80 tyre on back wheel, spare can carrier, all tools, etc., exceptional condition; £45.—Fisher, Brunswick House, Melmsbury Rd., S. Woodford. [X6511]

**2½ h.p. James**, 2-stroke, 26in. wheels, new November, 1915, only run 1,800 miles, not ridden since April, absolutely perfect order and condition, excellent machine, big lamp set; owner bought car; any reasonable trial; to be inspected in Wolverhampton; £30.—Huet, Ledwyche Orchard, Tenbury. [X6310]

**JAMES** 1916 4½ h.p. Countershaft 3-speed Combination, kick starter, Lucas dynamo lighting set, Watford speedometer, Canoelet sidescar with hood, etc., all in splendid condition, purchased in May last; value £97/7, will accept £80, or nearest offer.—Henderson, Somerville, Vicarage Rd., Hounslow, Middlesex. [1066]

## Kerry.

**KERRY-ABINGDON**, 3½ h.p., 2 speeds, clutch, perfect; £19.—229, London Rd., Croydon. [1017]

**3½ h.p. Kerry**, 2 speeds, free engine, good order, Binks carburettor; 19 gns.—30, Talbot St., Burnley. [X6676]

**BARGAIN**—Kerry-Abingdon, less accumulator, new tyres, etc.; £4/10.—80, Bispham Rd., Southport. [X6647]

**1912 3½ h.p. 2-speed Kerry-Abingdon**, in good order; £21/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0843]

## Lea-Francis.

**1914 3½ h.p. Lea-Francis**, 2-speed, kick starter, clutch, detachable rear wheel, perfect condition; £38.—Wilkie, Hunters Bar, Sheffield. [X6619]

## Levis.

**1916 Popular** and model E Levises, delivery from stock.—Wilkin, Hunters Bar, Sheffield. [X6624]

**LEVIS**, Dec., 1916, 2½ h.p. Popular, new belt and plug; £20.—Wilson, 139, Freshfield Rd., Brighton. [X6532]

**LEVIS**, late 1914 model, grand condition; £17/10, guaranteed.—Wanchope's, 9, Shoe Lane, London. [1205]

**3½ h.p. Levis**, 1914, Watford speedometer; £25.—24 Shackle, opposite White Hart, Harlington, Middlesex. [X6547]

**1916 2½ h.p. Popular Levis**, 3 weeks old, done 100 miles; bargain, £26.—Wilkin, Hunters Bar, Sheffield. [X6623]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**2-STROKE** Levis, 3-speed, large Lucas head lamp set, Jones speedometer, etc.; £26.—Batten Bros., Chilton. [X6671]

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**LEVIS** Popular, new; special bargain; cannot repeat; £28 cash; gradual payments 2%—Referee Cycle Co., 332, High Holborn. [X6764]

**LEVIS**, No. 1 model, 1914, 2½ h.p., splendid order, 80 gallon, 35 hour two up, lamps and horn; cost £39, bargain, £20.—Boulter, 108, City Rd., E.C. [1173]

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**LEVISES**, Populars £32, model E with 2-speed gear, rustless rims, £47/10; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1092]

**LEVIS**, gent's 1915 Popular model, 2-speed, Chatter-Lea, aluminium footboards, speedometer, lamps, horn, and all accessories, in perfect condition; £35.—A. A. Smith, 229, Broadway, Bexley Heath, Kent. Phone: 139. [1129]

## Lincoln-Elk.

**LINCOLN-ELK**, 1914, 4½ h.p., 2-speed, free, and sidecar, new tyres, good condition; £28.—Colville, High St., Marlow. [1024]

## Lugton.

**4 h.p. Lugton-Precision**, coachbuilt combination, hood, screen, speedometer, lamps, Sturmer-Archer 3-speed, Whittle belt, new April, 1915; 30 gns., no offers.—7, Wilton Mews, Upper Belgrave St., London. [1122]

## Martin.

**1914 2½ h.p. Racing Martin-Jap**, overhead valves, 3-speed gear, very fast; £28.—Wilkin, Hunters Bar, Sheffield. [X6621]

## Matchless.

**MATCHLESS** Combination, 2 speeds, accessories, as new; £55.—John Main, Lefenwyne, Maybole. [X6684]

**MATCHLESS** 1913 8h.p. Combination, 2-speed, pedal starter; £30.—29, St. Leonard's St., Brw. [1146]

**1915 8B Matchless** Combination, F.R.S. lamps; bargain at £70; any trial.—Stacey, 12, Ecclesall Rd., Sheffield. [X6591]

**MATCHLESS**, 1913, 8h.p., and Canoelet sidescar, all accessories; bargain, 45 gns.; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1095]

**MATCHLESS**, 1915, 7-9h.p. M.A.G. engine, 3-speed gear, kick starter, and Matchless coachbuilt sidescar, complete with Lucas dynamo lighting set, including lamps and Cowey speedometer; cost over £115, accept £87, bargain.—Head, 112, Wellesley Rd., Croydon. Phone: 273. [9729]

**MATCHLESS** Combination, 1914-15, 8B model, M.A.G. engine, 7h.p., 3-speed countershaft, lamps, electric horn, screen, etc., 700x80 Palmer cover tyres; the Bulls-Royce of motor cycles, perfect condition throughout; 3½ h.p. twin Zenith or 4-5h.p. considered in part; £65.—1, King St., Acton. [9927]

**MATCHLESS** Collier's 1913 twin belt drive, 7h.p., 2-speed and kick starter, Lucas head and rear lamps, Cowey speedometer, coachbuilt sidescar and apron, in very good going order and splendid appearance; cash price £45, or on deferred payments 2% extra; deposit £11/18, and 12 monthly payments of £2/16/8.—William Whiteley, Ltd., Queen's Rd., London, W. [1225]

## Minerva.

**2½ h.p. Minerva**, in perfect running order; £6.—Matthews, Poplar Pavilion, Poplar, E. [1114]

**FOR SALE**, 3½ h.p. Minerva and sidescar, free engine; £10.—Norsworthy, Thames View, Chertsey Rd., Addlestone. [X6595]

**MINERVA**, 2½ h.p., mag., B.B. carburettor, belt and tyres new, perfect running; 12 gns.—Mr. Morris, West Claddon, Surrey. [1057]

**MINERVA**, 3½ h.p., B. and B. carburettor, C.A.V. mag., splendid condition; £16/10; wanted, good combination.—4, Criterion Buildings, Windows Bridge, Thames Ditton. [1157]

## Moto-Reve.

**MOTO-REVE**, 1912, 2½ h.p. twin, mag., fully equipped, sound tyres, good running order; £16.—Box L2,035, c/o The Motor Cycle. [1247]

## New Hudson.

**NEW HUDSON** 2-stroke, T.T., overhauled; bargain, 18 gns.—W. Jennings Bozant, Wellingborough. [1069]

**1914 New Hudson**, 6h.p., coach sidescar, 3-speed, clutch, perfect; cheap.—49, Chestnut St., Southport. [X6672]

**NEW HUDSON**, new 1916, 4h.p., 3 speeds, kick start, in stock; £63.—Tilley and Son, The Esplanade, Weymouth. [1144]

**PETROL** Free with 1913 New Hudson, 2½ h.p., 3-speed, 19 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [1194]

**1915 6h.p. New Hudson** Combination, in excellent order, very little used; £65.—Turpin, 22-29, Preston Rd., Brighton. [0716]

**NEW HUDSON**, 2½ h.p. J.A.P. engine, 3-speed, clutch, in perfect condition; £25.—Mitchelmore, 13, Poplars Av., Willesden Green. [X6469]

**NEW HUDSON**, 2½ h.p., 2-stroke, 2-speed, late 1915, Lucas, Thompson-Bennett horn, etc., over 100 m.p.g.; £25, or nearest.—Box L2,002, c/o The Motor Cycle. [1007]

**NEW HUDSON**, 2½ h.p., 2-stroke, 2-speed gear; £38; several of these machines in stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

**1915 2½ h.p. 2-stroke 2-speed New Hudson**, in excellent running order, as new, all accessories; £26, or near offer.—Lce-Cpl. Coines, Binclaves Bank, Weymouth. [X6450]



## MOTOR CYCLES FOR SALE.

## New Hudson.

NEW Hudson, 1915, 4h.p. combination, 3 lamps, accumulator, spares, perfect condition, 80 m.p.g., wicker seat for back; £66.—Clements, Charles St., Easton, Bristol. [X6580]

NEW Hudson, 4h.p., 1916 model 6B, 3-speed countershaft, little used, Lucas lamp, Watford speedometer, bargain, £65; deferred payments if desired. Also new 9B combination just arrived, £92/10.—Lamb's, 50, High Rd., Wood Green, and 151, High St., Walthamstow. [1099]

## New Imperial.

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [1080]

NEW Imperial, 2-speed, new; special bargain, £36/15 cash; gradual payments 2%—Referee Cycle Co., 332, High Holborn. [10765]

2 1/2 h.p. New Imperial-Japs from stock; 2-speed gear 2 1/2 models, £38; cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [1206]

NEW Imperial, 1916, 2-speed, kick starter, ridden 70 miles; £38/10, real war bargain; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1096]

NEW Imperial, 1916 models, in stock; 2 1/2 h.p., light tourist model, £38; lady's model, 2-speed, clutch, and kick-starter, £46/8.—E.C. and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [10491]

NEW Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool districts, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deans Gate, Manchester. [10814]

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NEW Ryder, 2-stroke, lovely condition, very fast and powerful; £22/10. Phone: Palmer's Green 471.—Leighton's, Wood Green Station. [1016]

## Norton

1913 3 1/2 h.p. T.T. Norton, exceptionally fast, in perfect condition; £26.—Wilkin, Hunters Bar, Sheffield. [X6618]

NORTON Combination, as new, Lucas lamps, not done 1,000 miles; £70, a bargain.—Stacey, 12, Ecclesall Rd., Sheffield. [X6590]

## N.S.U.

N.S.U. 6h.p. Twin and sidecar, 2-speed, free, Bosch; £17.—Wood, 99, Granville Buildings, Luke St., Shoreditch. [11102]

1914 2 1/2 h.p. N.S.U. Lightweight, 2 speeds, free engine, good condition; cost over £40, accept 18 gns.—30, Talbot St., Burnley. [X6674]

## O.K.

O.K., 1914, 2-speed, splendid lightweight, 120 m.p.g.; £19.—Bridger, 18, Beaumont Av., Richmond. [1022]

1915 O.K., 2 1/2 h.p., 4-stroke, overhead valve, Bate and Dunlop tyres, perfect condition, engine just overhauled; £22/10.—Robinson's Garage, Green St., Cam bridge. [19856]

## P. and M.

1914 3 1/2 h.p. P. and M., 2-speed, wicker sidecar, in perfect condition; cash or easy terms; £45.—R. E. Jones (Garages), Ltd., Swansea. [10721]

P. and M. 1914 1/2 Combination, 2 speeds, and free engine, P. and M. coachbuilt sidecar, Stewart speedometer, full equipment; £48/10, or exchange for cycle car.—495, Garratt Lane, Earlsfield, S.W. [1171]

## Peco.

2 1/2 h.p. 2-stroke 1916 Peco, never used; £33, genuine bargain.—Reynolds, Budebury Rd., Staines. [1021]

## Premier.

PREMIER, 1913, 4h.p., 2-speed, handle-start, new coach sidecar; £26.—29, St. Leonard's St., Bow. [1147]

PREMIER, 1914, 3 speeds, and sidecar; best offer over £50.—Wright, 65a, Rosendale Rd., West Dulwich. [1135]

PREMIER, new 1916, 3 1/2 h.p., 3-speed, kick start, in stock; £63.—Tilley and Son, The Daplane, Weymouth. [1145]

1914 3 1/2 h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [10823]

PREMIER, 3 1/2 h.p., 1913 1/2, 3 speeds, sidecar, excellent condition, economical; offers.—251, Westbourne Grove, W. [1135]

PREMIER, 1913 1/2, 3 1/2 h.p., 3-speed, clutch, Phoenix coach sidecar, perfect condition; trial; £40.—217, Well St., Hackney. [X6577]

PREMIER, 2 1/2 h.p., late 1915, 3 speeds; cost £44 net! take £25, or offer.—Lillies, Frenchwood Av., Preston. Owner enlisted. [X6452]

1914 3 1/2 h.p. 3-speed Premier and Millford sidecar, not done 1,000 miles; £43, as new.—Wilkin, Hunters Bar, Sheffield. [X6622]

PREMIER, 1915, 2 1/2 h.p., Grade Multi pulley, good tyres and accessories; must sell; accept £24.—Cossam, Shipham, Wincoburne. [1041]

1915 3 1/2 h.p. Premier, T.T. engine, good tyres, belt, Binks carburetter; must sell; £20.—101, Tooting Bec Rd., Tooting, S.W. [1249]

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## Premier.

LATEST Model 1916 3 1/2 h.p. 3-speed Premier; £64; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

PREMIER, 3 1/2 h.p., 1913, new 1914 Millford sidecar, speedometer, lamps, excellent condition, spares; £40 net, bargain.—Richards, 43, South Bar, Banbury. [1050]

LATE 1914 Premier, 7-9 h.p., 2-speed countershaft, and coachbuilt sidecar, all in new condition, accessories; £53.—Heary Cox, Charlton Rd., Wantage, Berks. (D) [X6679]

PREMIER, 1912, 3 1/2 h.p., Bosch, B. and B., lamps, etc., B.S.A. 1915 2-speed, sound order, gears wants slight adjustment; offers.—10, Graham St., Loxell's, Birmingham. [X6544]

## Quadrant.

QUADRANT 4h.p. Motor Cycle, Bosch, Amac, runs on paraffin; £18; joined army.—Roberts, 65a, Rosendale Rd., West Dulwich. [1134]

## Revere.

1916 2 1/2 h.p. 2-speed Revere, scarcely soiled; £32.—Wilkin, Hunters Bar, Sheffield. [X6620]

## Rex.

REX, 3 1/2 h.p., free engine, Mabon clutch, B. and B., new Pedley, very good tyres, and sidecar; £12.—121, Loughborough Rd., Brixton. [1025]

REX 5-6 h.p. Twin, mag., Binks carburetter, Mabon clutch, good tyres, one new, Dunlop belt new; £14, or offer.—43, Bedford Rd., Dartford, Kent. [11127]

REX, 1913, 6 h.p., 2-speed, free engine, coachbuilt combination, good condition, powerful and reliable, lamps, and horn; £38 cash; part exchange.—A. Holland, Clarendon St., Coventry. [X6667]

1914 Rex 6h.p. Twin, 3-speed combination, with 2-seater sidecar, complete with accessories, in first-rate order; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [19749]

## Rex-Jap.

6 h.p. Rex-Jap and coachbuilt sidecar; £27/10.—Wauchope's, 9, Shoe Lane, London. [1207]

REX-J.A.P. and Sidecar, 6 h.p., good condition; £30.—Waterhouse, 115, Broomspring Lane, Sheffield. [X6634]

## Rover.

1912 Rover, clutch, coachbuilt sidecar; £27, cycle separately.—Post Office, Fenny Compton. [X6589]

ROVER 1916 New Combination for immediate delivery, with 3-speed countershaft gear, etc.—Moss, Wern. [X6659]

ROVER, 1916, 3 1/2 h.p., 3-speed countershaft; cost £66/10; not yet ridden; owner joined up; offers.—Glenarthy, Wells, Som. [X6535]

ROVER Combination, 1915, 3 1/2 h.p., 3-speed countershaft gear, complete, perfect; £55.—Lloyd, 7, St. Mary's Crescent, Leamington Spa. [X6555]

ROVER, 1913, 3-speed, free clutch, engine overhauled, all new bearings, new tyres and belt; any trial; £28.—Highfield, 2, Dalwich Rd., Brixton. [1018]

NEW 1916 Rover countershaft model, B.S.A. model K, and Enfield combination, in stock; cash, terms, or exchanges.—Batchelor, Clarence St., Kingston-on-Thames. [X6638]

ROVER Combination, 3 1/2 h.p., 1914, 3 speeds and clutch, speedometer, and head lamp, and tools; must sell; owner abroad; £30.—Seen Lacey's Garage, Streatham. [1058]

1912 Rover, 3 1/2 h.p., free engine, B. and B. carburetter, Bosch mag., excellent condition, with good tyres and engine; £20.—Robinson's Garage, Green St., Cambridge. [19855]

1914 1/2 Rover, 3 1/2 h.p., 3-speed, clutch, and Canoelet coach sidecar, Lucas lamp set and horn, tyres unpunctured, combination in new and perfect condition; £40.—47, Mossford St., Bardett Rd., Bow, E. [1155]

## Rudge.

1912 3 1/2 h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

1914 3 1/2 h.p. Rudge, splendid condition; inspection invited; £29.—Stanley, 91, Larkhill, Blackburn. [X6612]

I.O.M. Rudge Multi, 3 1/2 h.p., late 1915, excellent condition, very fast; £50.—Evans, Clare Rd., Wyke, Bradford. (D) [X6610]

1915 Rudge Multi, 3 1/2 h.p., splendid order; full particulars given; bargain, £35.—Owen, Dolewrt, Whitland, S. Wales. [X6608]

RUDGE Multi, 3 1/2 h.p., 1916, done about 1,500 miles, just overhauled, perfect condition, over 100 to the gallon; £50, no offers; or exchange 1915 6h.p. twin.—Wilson, 101, Hatton Gardea, E.C. [1060]

## Scott.

COLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

SCOTT Coachbuilt Combination, late 1915; exchange solo bike and cash, or sell £65.—O.L., 497, Old Ford Rd., Bow. [X6487]

1915 1/2 Scott, and Scott coachbuilt sidecar (standard models), little used, condition new, under 900 miles; £65; owner in France.—Gaskin, Trelawney, Northam, N. Devon. [1106]



## MOTOR CYCLES FOR SALE.

## Scott.

THE Pick of the week.—Genuine late 1913 Scott, No. 1980, fitted 1915 cylinders, 1916 3-jet Binks, with hot air muffler, 1916 drip feed lubrication to each cylinder, best quality Bramble sidcar, coachbuilt, engine, gears, kick starter, perfect order; £34 secures, no offers.—Millards, Chesterfield. [X6566]

## Seal.

SEAL 2-seater Sidecar, wheel steering, 8 h.p. J.A.P. engine, 3-speed, handle starting, hood and screen, in first-class condition.—Austin, 18, Newgate St., Chester. [X6605]

## Singer.

SINGER, 2½ h.p., 2-speed, clutch, just overhauled, good condition; £20.—Allen, Stores, Bordon, Hants. [1063]

SINGER, 1914, 2-speed countershaft, Gloria cane sidecar, in good condition; £40.—Seen at 59, The Mall, Ealing [1086]

SINGER, 3½ h.p., nearly new, 100 m.p.g.; called up; £25, complete; seen any time; payments taken.—Miller, 62, Hampstead Rd., N.W. [1104]

1912½ 3½ h.p. Singer, free engine, clutch, variable gear, Bosch mag., engine overhauled and perfect, new Dunlop belt, good condition throughout; £22/10.—Bell, 19, Washington St., Worthington. [X6572]

## Sparkbrook.

SPARKBROOK, 1916, 2-stroke, 2-speed, month old; £34.—Digby, Mersea, Essex. [9735]

BARGAINS.—Two 2½ h.p. 2-speed Sparkbrook lightweights, new and unused; to clear £35 each.—Stamford Garage, Stamford, Lincs. [9535]

SPARKBROOK, New Oct. 1915, 2-stroke, 2-speed, complete, splendid condition, Dunlop tyres; must sell; owner joined; £30.—Ackers, 1, Gordon Terrace, Mundesley. [1250]

## Sun.

SUN, 2-strokes; all models from stock from 29/10.—Colmore Depot, 261, Deansgate, Manchester. [0828]

COLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [0807]

SUN-VILLIERS, 1915½, 2½ h.p., 2-stroke, perfect, done 600; £22; what offers.—J.S.T., 20, Queensdown Rd., Clapton. [1131]

1916 Sun, 2½ h.p., 2-stroke, 2 speeds, Dunlop tyres, really soiled only, under 50 miles; exceptional bargain, £30.—Robinson's Garage, Green St., Cambridge. [9859]

1913 4½ h.p. Sun-Precision, Sturmer-Archer gears, coachbuilt sidcar, hood, wind screen, fitted up for substitute fuels; £37/10; would separate.—Droske, Westbrook, West Lane, Middlesbrough. [X6298]

## Sunbeam.

1914 3½ h.p. Sunbeam, countershaft gear, with Gloria sidcar, complete; £39.—Batten Bros., Callopington. [X6670]

1914 Sunbeam, 3½ h.p., 3-speed, sporting Canoelet sidcar, speedometer, perfect condition; £58.—Smith, Bohem, Dowsbury Rd., Leeds. [X6304]

SUNBEAM 1916 3½ h.p. Combination, 2 months old only, complete with lamps, horn, and numbers, perfect order; £75.—Gorleston, St. Albans Rd., Kingston-on-Thames. [X6635]

1916 3½ h.p. War Office Model Sunbeam, speed indicator and lamps, in perfect condition, belonging to officer at Front; £60, or nearest offer.—J. Crawley and Sons, St. Mary's Garage, Bedford. [X6488]

PETROL for 2,000 miles free with 1915 Sunbeam 3½ h.p. combination, brand new 1916 sporting coach sidcar, luxuriously equipped; 69 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [1191]

1914 6 h.p. Sunbeam Combination, nice firm condition everywhere, fitted with luxurious Sunbeam sidcar, 3-speed countershaft gear and chain drive, h.c. clutch from handle-bar, Lucas lighting set, speedometer, and tools to complete; price 75 gns.; guaranteed; any severe trial given.—Wanchope's, 9, Shoe Lane, London. [1201]

SUNBEAM 1916 8 h.p. Twin Combination, new condition, unused spare wheel with tyre, Low generator, Lucas horn and lamps, Watford speedometer; cost all on at Easter 1914; 4 gallons oil, lot of tools and various spares included; any trial; price 115, or near offer; war stock accepted.—169, Hemingford Rd., London, N. [X6458]

## T.D.C.

T.D.C. De Luxe, 1916, 2½ h.p., 2-stroke, new condition; 18 gns.—Fitzgerald, 16, Moulsham St., Chelmsford. [1142]

## Triumph.

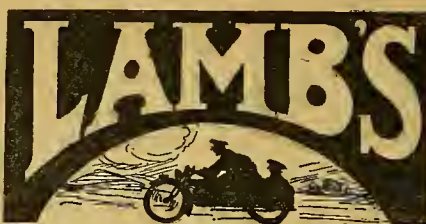
1913 3-speed Triumph, complete lamps, etc.; £35.—Cross, Jeweller, Rotherham. [X6597]

1912 Triumph, 3-speed, just overhauled.—Brown, The Gables, Walkden, Manchester. [X6537]

T.T. Triumph, 3½ h.p., special engine, 150 m.p.g.; £29.—11, Clifton Rd., Paddington. [1162]

TRIUMPH, 3½ h.p., clutch model, good condition; £18.—Hicks, 67a, High St., Maldon. [X6305]

1911 3½ h.p. Triumph, powerful, very fast, splendid condition; £18; trial.—Sidney Clark, Arlesey, Beds. [X6640]



## ACTUALLY IN STOCK.

4½ h.p. B.S.A., chain drive	£64 0
4½ h.p. B.S.A., belt-cum-chain	£62 0
6 h.p. ENFIELD Standard Combination	90 gns.
8 h.p. ENFIELD Combination	92 gns.
3 h.p. ENFIELD, 2-speed, kick-starter	55 gns.
7-gp. h.p. HARLEY-DAVIDSON, and bulbous back Sidecar model 16E	£101 15
7-gp. h.p. HARLEY-DAVIDSON, elec. equip.	£110 0
2½ h.p. LEVIS Popular (3 models in stock)	£32 0
2½ h.p. LEVIS, Model E, 2-speed	£47 10
2½ h.p. GALTHORPE-J.A.P., 2-speed, Enfield gear (3 in stock)	£37 16
2½ h.p. ALLDAYS ALLON, single-speed	£36 0
2½ h.p. ALLDAYS ALLON, 2-speed	£42 0
2½ h.p. ALLDAYS ALLON, 2-sp. & clutch	£45 0
2½ h.p. NEW IMPERIAL, 2-speed, light tourist	£38 0

## SECOND-HAND BARGAINS.

## Open to Offers.

REX and S/car, 5-6 h.p., 2-sp., h/start	£27 10
1913-4 REX, de Luxe, 6 h.p., 2-sp., S/car	£47 10
1913-4 REX, 6 h.p., 2-sp., Sidecar, access.	£47 10
1913 REX, 6 h.p., 2-sp., S/car, access.	£45 0
1916 NEW HUDSON, 4 h.p., model 6B	£65 0
1916 JUNO-VILLIERS, 2½ h.p., 2-sp., & Watsonian Sidecar, ridden 100 miles	£39 10
1915 JAMES, 2½ h.p., 2-sp., 2-stroke, new tyres and accessories	£34 10
1916 NEW IMPERIAL, 2½ h.p., 2-sp., only shop-soiled, kick-start	£38 10
1912 BRADBURY, 4 h.p., 2-sp., & coach Sidecar, many accessories	£34 10
1916 GOVENTRY EAGLE, 2½ h.p., 2-sp.	£39 10
1916 ENFIELD, 6 h.p., elec., hood, access.	£89 10
1915 ALLDAYS ALLON, 2½ h.p., clutch model, 2-speed and accessories	£38 10
1912 NEW HUDSON-J.A.P., 2½ h.p., 3-sp. pedal starter	£21 0
1913 P. & M., 3½ h.p., 2-sp.	£39 10
1915 ALLDAYS ALLON, 2½ h.p., 2-sp. clutch, kick-starter, and accessories	£42 0
1915 SUN-VILLIERS, 2½ h.p., 2-sp., 2-str.	£27 10
1915 WOLF, 2½ h.p., 2-str., single-speed	£21 0
1913-4 ROVER, 3½ h.p., coach Com.	£38 10
1913 MATCHLESS, 3-sp., S/c., lamps	£47 5
1913 CHATER-STEVENS, 4½ h.p., S/c.	£16 10
1915 BABY TRIUMPH, 2½ h.p., 2-sp., acc.	£36 10
1915 TYLER-PRECISION, 2½ h.p., acc.	£21 0
1912 B.S.A., 3½ h.p., clutch, S/car, access.	£34 10
1913-4 DOUGLAS, 2-sp., k/start & horn, Hutchinsonian tyres	£45 0
1914 BRADBURY, 6 h.p., 2-sp., access.	£63 0
1913-4 GLYNO, 6 h.p., 3-sp., coach	£38 10
1913 ROVER, 3½ h.p., T.T. mod., P. & H. lamp, Stewart Warner horn	£32 10
1915 2½ h.p. CONNAUGHT, quite new	£32 0
1913 2½ h.p. HOBART, 2-sp., 2-str., quite new	£33 10
1914 AUTO-WHEEL good condition	£8 10
1915 FORD, 18-20 h.p., Standard touring car, carefully used	£105 0

TO CONVINCE YOU BEFORE YOU DECIDE TO BUY, we are prepared to demonstrate and put through test in your presence any machine at your request.

## DEFERRED PAYMENTS by mutual arrangement.

WANTED.—1914, '15' & '16 Second-hand Combinations. Spot cash on acceptance. Carriage paid on goods sent at our request. Call with machines, if possible.  
SIDE-CARS.—Watsonian, all models, from £6 10s. to £11. Several Sidecars from 14 gns. for Indians and Harley-Davidsons.

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151, HIGH ST., WALTHAMSTOW, N.E.

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50, HIGH RD., WOOD GREEN, N.

Phone: Hornsey 1956.  
Hours—9 to 8-30.  
Thursdays, 1 o'clock.

## MOTOR CYCLES FOR SALE.

## Triumph.

NOV. (1915), Baby Triumph, run 1,700 miles, lamps, horn; £36.—Dunce, 14, Avondale Rd., Barking, Coventry. [X6680]

TRIUMPH Junior, 1915, 2-stroke model, 2-speed gear, little used, guaranteed perfect, suit lady or gent; £35.—Moss, Wem. [X6660]

3½ h.p. Triumph, 1912 T.T. model, complete with all accessories; £25, guaranteed.—Wanchope's, 9, Shoe Lane, London. [1200]

TRIUMPH, 3½ h.p., N.S.U. 2-speed, coachbuilt sidecar, lamp set, luggage and petrol carrier, perfect order; £26.—L, 55, Poplar Walk Rd., Hemic Hill. [1120]

4 h.p. Triumph, 3-speed, clutch, speedometer, lamps, tools, spares, little used, just overhauled; £45; called up.—29, St. James's St., Walthamstow. [1027]

1916 Triumph, 4 h.p., countershaft 3-speed, kick start, new 2 months ago, lamps, horn, spares, guaranteed perfect; £65.—Kelham, Nassington, Peterborough. [X6576]

TRIUMPH, late 1913, 3½ h.p., 3-speed combination, 2 new Kempshalls, and Paddy belt, excellent condition; any trial; £35.—Apply, Biggs, 86a, Lillie Rd., Fulham. [1182]

1915 Junior Triumph, 2-stroke, 2-speed, Dunlops, Brooks saddle in excellent order throughout, engine perfect; £36.—Robinson's Garage, Green St., Cambridge. [9860]

1913 3½ h.p. Free Engine Triumph, 3-speed, new back tyre, overhauled, lamps, perfect running condition, also coachbuilt sidcar, nearly new; £40.—Paris House, Cardigan. [X6543]

3½ h.p. Triumph, 2 speeds, free engine, clutch, speedometer, new belt and back tyre, all complete, and in excellent condition; £25.—Baxter, 42, Elm Dale Rd., Palmer's Green, N. [1035]

1914 Triumph, 4 h.p., with Millford's coachbuilt sidcar, 1915, luggage carrier, 3-speed, clutch, new tyres and belt, accessories, perfect condition; £50.—Goodwin, Colchester Rd., Coggeshall. [1143]

30 Gns.—3½ h.p. Triumph combination, 1914, Sturmer-Archer 3 speed, adapted for paraffin. Pilot jet, spring seat pillar, lamps, spare cover, tube, belt, valve, etc.—174, Sussex Rd., Southport. [X6513]

TRIUMPH, 1911, free engine, adjustable pulley (new), Dunlop heavy and butt-end tube (new), running on Binks, lamps, horn, fast, sound condition; £25, ex change.—Frobisher, 413, Wellington St., Grimsby. [X6621]

1916 4 h.p. Triumph, 3-speed countershaft gear, been very little used, and in new condition, complete with Millers lamp set and mechanical horn, unsaturated; £63.—The Welbro Cycle and Motor Co., Saffron Walden, Essex. [X6553]

TRIUMPH, 3½ h.p., 1912, bought April 1913, clutch model, adjustable pulley, mileage under 4,000, splendid condition, written warranty given, large quantity spares, accessories, practically unused during war; immediate sale, nearest 27 gns.—Surveyor, 48, Balfour Rd., Ilford. [X6503]

## Velocette.

VELOCETTE, 2-stroke, 2-speed, chain drive, new 6 weeks ago, only done 550 miles, complete with head lamp, tail lamp, horn, etc.; £34/10, cost over £40.—Ellis, The Haven, Wivenhoe, Essex. [1180]

## Williamson.

WILLIAMSON, 8 h.p. (Douglas engine), sidcar, runs on paraffin; £52, near offer.—12, Myddleton Rd., Bowes Park. [1067]

## Wolf.

1914 Wolf, 2½ h.p., splendid condition, running order; bargain, £11.—Taylor, Gladwyn, City Rd., Chester. [X6611]

WOLF, late 1914, fitted with 4 h.p. J.A.P. engine and accessories, perfect order; £29.—Moss, Wem. [X6661]

WOLF, 4 h.p., 3-speed, all chain, new Easter, in splendid condition; £50.—Johnson, Middle St., Boleover, Derby. [X6604]

1916 Wolf, 2-stroke, 2-speed, hand clutch, kick starter, mechanical horn, 120 m.p.g. paraffin mixture; £33.—2, Wellington Park, Bristol. [X6455]

## Wooler.

WOOLER, 2½ h.p., 2-stroke; cannot take delivery from makers; sacred deposit; immediate delivery.—Fridham Cottage, Sudbury, near Harrow. [1037]

## Zenith.

PETROL Free with Zenith-Gradua 3½ h.p.; 19 gns.—Troward, 78, High St., Hampstead. [1189]

3½ h.p. Twin-cyl. Zenith, countershaft, free engine and kick-start model; price £45, guaranteed.—Wanchope's, 9, Shoe Lane, London. [1202]

1913 4 h.p. Zenith (semi T.T.), Sturmer-Archer 3-speed, splendid condition, Lucas lamp, etc.; £25.—Box 753, c/o The Motor Cycle. (D) [X6615]

## Ladies' Motor Cycles.

1916 New Lady's Calthorpe, 2-speed, clutch, 32 gns.; Hobart, 1913, 3-speed, clutch, 24 gns.—Troward, 78, High St., Hampstead. Phone: 5392. [1195]

LEVIS Lady's, 1915, Enfield 2-speed, speedometer, lamps, horn, and all accessories, good as new; £42.—A. A. Smith, 229, Broadway, Bexley Heath, Kent. Phone: 139. [1130]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## The Standardisation of Controls.

THE question of standardising the method of controlling a motor cycle is a subject we have dealt with on many occasions in the past. The desirability of uniformity of control is kept fresh in one's mind by the evidence occasionally given in connection with accidents. It was mainly with the object of reducing the possibility of accident that *The Motor Cycle* interested itself in this important subject. Leading articles focussing attention upon the matter appeared in our issues of April 2nd and October 8th, 1914, and we also took the opportunity of drawing the special attention of the Cycle and Motor Cycle Manufacturers' and Traders' Union, as well as the Auto Cycle Union, to the urgent necessity of manufacturers meeting and coming to a decision on the question of desirable standards of control. Following upon our issue of Oct. 8th, 1914, a letter appeared in our Correspondence columns from Mr. Basil H. Joy, secretary of the Institution of Automobile Engineers, expressing his agreement with our recommendation. He pointed out that the Engineering Standards Committee had at that time—October, 1914—a sub-committee at work on the subject of standardisation of controls of motor cars, and it appeared to him that the standardisation of controls of motor cycles would be a simpler matter than that of cars. Since that date nothing, so far as the motor cycling public is aware, has been done, for the very obvious reason that manufacturers are too much occupied in the production of munitions of war to give their attention to such topics. Though from enquiries we found that manufacturers generally took only a lukewarm interest in the subject, our efforts were accorded a certain amount of support which promised to develop.

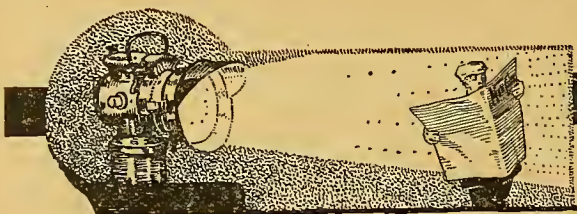
The secretary of the Motor Cycle Manufacturers' Union brought the matter to the notice of his management committee. That body duly considered, and, indeed, had not disposed of the recommendation when meetings ceased in order to

enable the representatives to concentrate their whole efforts upon munitions. The secretary recently assured us that the matter was still on the tapis, though it certainly stood in the background till happier times, so that but for the war motor cyclists interested in the subject would now have known whether in the view of manufacturers it was possible to arrange that instead of some makers fitting (1) carburetter levers which opened outwards and others inwards, (2) the exhaust valve lifter or clutch on the left or right side of the handle-bar, (3) brakes operated by the left or right foot—all could be made to see eye to eye and settle upon a definite position for each particular fitting. The subject, simple as it appears on first thoughts, is in reality complex, and it will require very strong support from the riding public to cause manufacturers to change their patterns and possibly adopt somebody else's ideas.

During the last week or so a contemporary has revived this question, and has announced that the Society of Motor Manufacturers and Traders, Ltd., is about to make a definite move with regard to the standardisation of control of British machines. Obviously the reference to the S.M.M.T. is a mistake, as this body of car manufacturers would be no more likely to adopt any scheme applying to motor cycles than the representative body of motor cycle manufacturers would settle upon any important change applying to motor cars. No! When the time is ripe it will be for the Motor Cycle Manufacturers' Union to act, and, if that body concurs, the Engineering Standards Committee will be requested to consider and settle the details.

It will be gathered, therefore, that though the matter is in the background owing to the war, it has by no means been overlooked. Much as one may regret that all such important problems should remain in abeyance, seeing that with a comparatively small expenditure of time a unanimous decision might be reached, it is recognised that the whole skill of engineers should at this juncture be devoted to crushing the common enemy.





## Occasional Comments

By Ixion

### Overheated Sparking Plugs.

I want to press that little matter of sparking plugs overheating on four-stroke engines, which I mentioned the other week. I have a pair of brand new British plugs of decent make; two of my machines stick every time on two hills near my house when these plugs are in use; but make comfortable ascents every time with a pair of Hun plugs installed. Further, I can run one of the two machines to a standstill in a very few miles on the level with the British plugs in action; but it does not dry up on the enemy-made igniters. Are British makers aware of this contrast? If so, seeing that the Hun plugs are available for analysis, why don't they produce a cooler plug?

### Slow Speed on Top Gear.

One of my correspondents enquires how slowly the 1916 A.B.C. will run on top gear. I drove mine a mile to-day with the Watford speedometer at 9 m.p.h. on the fourth speed of  $4\frac{1}{2}$  to 1. Mr. Bradshaw would, however, be the first to dislike this point being treated as a criterion of the machine; and, as a matter of fact, no owner would drive it in this fashion, as the acceleration on such a high gear is bad. The design aims at attaining flexibility and acceleration by the combination of (a) easy gear changing, (b) immense r.p.m. possibilities, and (c) an unusual number of gear ratios. It is therefore senseless to drive slowly on the high ratios. For example, the engine balance is so good that there is no objection whatever to doing the slow work in traffic on second speed ( $9\frac{1}{2}$  to 1), and so retaining the power of a ferocious acceleration up to 45 m.p.h. in a very brief distance. Speaking offhand, I should say that I usually drop to second gear in heavy traffic, though the acceleration on third gear is good.

### Back to a One-lunger.

My readers may realise that for quite a long time I have been riding two-strokes and twins almost exclusively. The other day I went out again on a rigid-framed single-cylinder, and the experience was electrifying. My readers may have taken my enthusiasm for multi-cylinders (especially of the "flat" type) and for spring frames with a pinch of salt; but let any doubters repeat my own experiments. Confine your riding for a few months to spring frames, horizontal twins, and baby two-strokes. Then make a long trip over war roads on a powerful single of the highest class obtainable, and that with a rigid frame, and see how you like it. I will go so far as to say that, for fastidious riders, the rigid-framed single-cylinder is doomed; and I say that in full consideration of my many friends in the trade, whose past laurels are mostly achieved on the type of machine which I now decry. They will find that their keenest rivals are out to kill road vibration and engine vibration; and the firm which sticks over long to a type of machine that is the limit in respect of both forms of vibration will soon get left. So it is

really kindness that prompts me to make my language balance the strength of my feelings. The rigid-framed single of which I write belongs to a famous make, and probably very many riders up and down the country would give their eyes to get delivery of its latest model; but the difference between the two types in respect of the character of the locomotion they afford reminds me of the contrast between a growler on setts and a yacht cleaving a smooth sea with a steady breeze behind her.

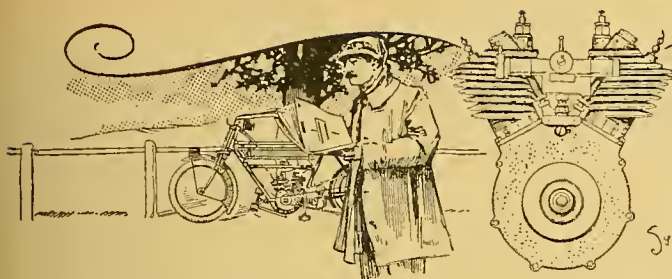
### A Red Herring.

Many side issues will be dragged into this controversy before the trade and the public learn their inevitable lesson. For example, a well-known enthusiast chips me with a reminder that his favourite single has done fractionally better time over a flying mile at Brooklands than my pet twin can boast of. What of it? That machine A can do a mile in 40s. as against the  $40\frac{1}{5}$ s. of machine B is a matter of no interest except to racing men and advertising specialists. The main issue is simply stated. If it is possible to reduce road and engine vibration by only 25% by adopting a certain type of frame and a certain pattern of engine, the machines which effect this reduction will ultimately master our markets unless immense sacrifices in weight and cost are entailed. This last caveat need not be reckoned with. Machines of the newer design are already in existence which weigh less than several famous rigid-framed singles, and which cost no more than the average amount, or considerably less (say, 15% to 20% less) than the most expensive samples of the dominant type. The actual possibilities in the way of reducing vibration are probably much higher than 25%.

### A Thoughtless Designer.

In the days when I had a fad for accessories, correspondents used to sigh for a glimpse of what they were pleased to describe as my "pantehnicon," and draw fancy pictures of a kind of two-wheeled gipsy caravan with which I was humorously supposed to travel. They will smile when I confess that of late I have been carrying a pulley drawing tool strapped to my carrier. It was thuswise: I had only one motor bicycle—partly owing to a disappointment in delivery, partly owing to wartime economies. This motor bicycle—I suppose I must call it by that name—had an encased chain, which was known to break on occasions. Before I could uncover it for repairs, I had to take off the countershaft pulley. This pulley was, as all well-fitted pulleys should be, very tight on its key and taper. You could not use wedges to shift the pulley, because there was a second light sheet metal chain case behind the pulley, which naturally buckled when used as a fulcrum for levers or wedges. So, until another machine became available, there was nothing for it but to carry a pulley drawer. I only hope the responsible designer's munitions are more carefully planned.





## 300 Miles between Sunrise and Sunset

Sydney Jones

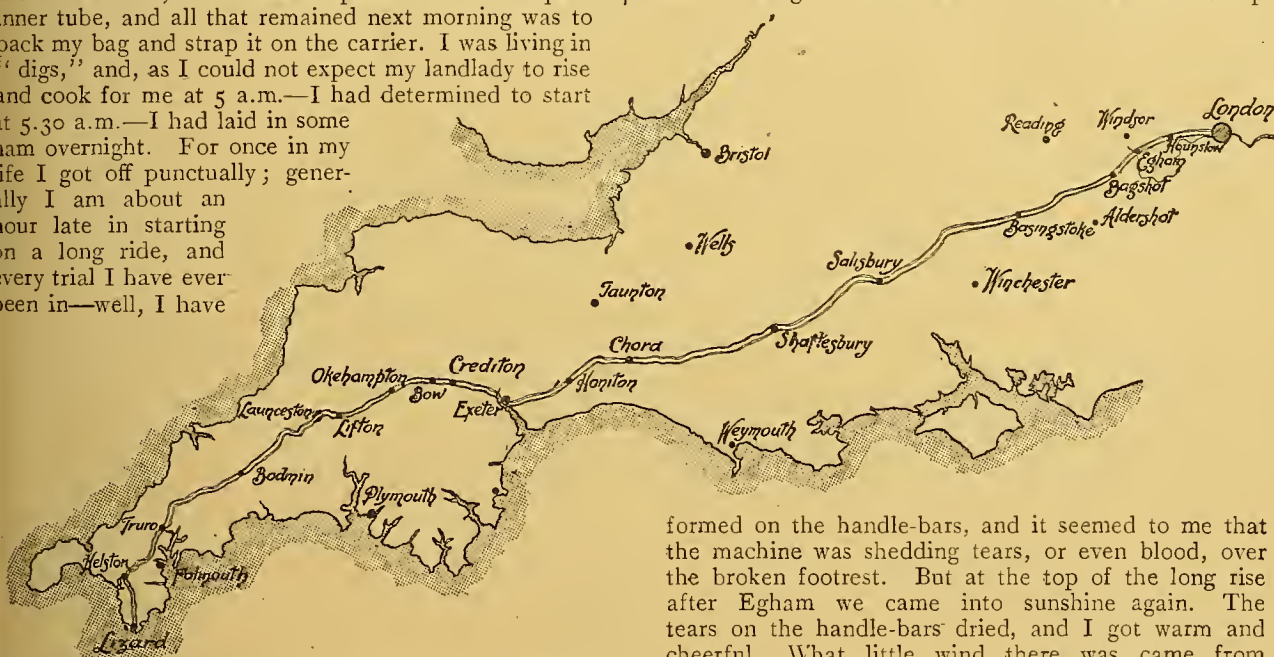
### PLEASANT MEMORIES OF A TRIP FROM LONDON TO THE LIZARD.

I WAS looking through an old diary the other day, and I came upon an account of this ride. It is just an ordinary account of a big ride—from London to the Lizard. There's nothing wonderful in it—either in regard to distance or adventures—but it is, excepting for trials, the longest ride I have ever done. The machine was a Douglas, 1914 two-speed  $3\frac{1}{2}$  h.p. T.T. model, and had only been two hundred miles before this ride. The time of the ride was July, 1914, just before the outbreak of war.

The bicycle was got ready the night before. The tanks were full, there was a spare belt and a spare inner tube, and all that remained next morning was to pack my bag and strap it on the carrier. I was living in "digs," and, as I could not expect my landlady to rise and cook for me at 5 a.m.—I had determined to start at 5.30 a.m.—I had laid in some ham overnight. For once in my life I got off punctually; generally I am about an hour late in starting on a long ride, and every trial I have ever been in—well, I have

coffee. Here a misfortune happened. My machine, which was on the slant at the side of the road, toppled over and smashed a footrest. Those footrests—they were the only fault I ever had to find with the Douglas. They cost me about £3 in repairs, and then I had footboards fitted—but more of that anon, for I had not yet finished with footrests for that day. The next half-hour passed sadly—who does not grieve over the first scratch or blemish on his new machine?

Through Staines and Egham I went, where low mist wreaths hung over the land, obscuring the sun, and making me chill and cold. Beads of damp



kept many a timekeeper and marshal busy cursing me at the start.

My way led through Hammersmith, Brentford, and Hounslow to the main Salisbury Road. Hardly a thing was stirring in London. At Hammersmith a few people were hurrying about, seemingly ashamed at being up so early—or perhaps so late! After passing Hammersmith I met a long line of market carts coming from the outskirts of London laden with fruit and vegetables for Covent Garden.

#### My Second and Third Breakfasts.

The air was cool and brisk, and, although I had breakfasted half an hour before, I was hungry again. At Kew Bridge I spied a coffee stall, and made an excellent second breakfast of hard-boiled eggs and

formed on the handle-bars, and it seemed to me that the machine was shedding tears, or even blood, over the broken footrest. But at the top of the long rise after Egham we came into sunshine again. The tears on the handle-bars dried, and I got warm and cheerful. What little wind there was came from behind, so that as I went along I seemed hardly to be moving, so placid was the air. Anyhow, I did move, for even after a rest and a smoke on Salisbury Plain—boiling hot even at that time in the morning—I arrived in Salisbury in time to make a third—and incidentally an excellent and substantial—breakfast in the County Hotel at 9 a.m. After a fill-up for the machine I left Salisbury at 10 a.m., and an uneventful ride brought me to Honiton in time for lunch at 12.30 p.m.

#### The One Involuntary Stop.

The smooth purr of the Douglas delighted me as I sped along. Here, just outside Salisbury, I passed a spot where I had once spent two hours with water in the magneto, and here at Shaftesbury was the hill where my old T.T. single speed had conked out after



## 300 Miles between Sunrise and Sunset.—

running all the way up from Penzance. Here was Chard, where a former mount had once caught fire, but had been put out without even getting charred (will this pass the censor?). Chard Hill was surmounted with ease—only the last fifty yards or so necessitating bottom gear. Yarcombe Hill was conquered on top gear, including the hairpin.

I felt glad indeed as I sped along and recounted all my old troubles on other mounts, and thought that they were gone for ever! At lunch time I began to feel the effects of the sun, and my face was red.

At lunch I met the rider of a baby Triumph proceeding to Exmouth, and we started off together. I set the pace, a pretty stiff one, on the fine main road to Exeter, but the little two-stroke purred along quite comfortably at my side at about 35 m.p.h., until my new friend branched off to the left for Exmouth.

The heat was excessive, and at one place I got tar squirted in my face. After this I bathed my face in a stream which made matters worse. My face hurt quite badly, and there seemed not a breath of wind.

Beyond Exeter, the detour through Crediton and Bow to Okehampton was taken to avoid the bad main road. Here I had to clean an oily plug—my only involuntary stop of the day. Tea was very welcome at that excellent little A.A. hostelry at Lifton, about four miles on the Exeter side of Launceston. I always try to stop there for a meal when going West, and advise others to do the same.

At tea I used most of the milk to bathe my face, and very little of it for its legitimate purpose. This, combined with the fact that the wind veered round to the west after tea, made matters more pleasant, but

still my face was black with sunburn when I arrived at my destination. Just before reaching Launceston, I caught fire—those footrests again! The front ones could only be reached by a man 6ft. tall, and the left back one was perilously near the exhaust pipe. My Hutchinsons had got on the pipe and smouldered, as had also my trousers. Fortunately my leg was not burnt, but trousers and Hutchinsons were about done for. It was after this had happened twice more that I had footboards fitted, and after that there was no more trouble. Nothing of interest arose during the rest of my journey. The twenty-two miles between Launceston and Bodmin were covered in threequarters of an hour—the moor looking beautiful in the evening light. A stop was made at Bodmin for petrol and oil—the first fill-up with oil since leaving London—and then a non-stop run right through to the Lizard followed. There was a fine view of the sinking sun just after climbing the steep hill out of Truro.

By the way, I think almost every town and village of any size in Cornwall is on the slope of a hill. I can count up twelve Cornish towns on hills of more or less severity—in the case of six the main street is a single-figure gradient. To follow the narrative once more, the road from Truro to Helston—a succession of long winding hills—was quickly traversed, and the Lizard was eventually reached just as things were assuming a queer shape in the dusk and in time to avoid using a lamp.

To sum up, the total distance was covered in 15½ hours, including 2½ hours for meals, etc. The petrol consumption averaged over 80 m.p.g.

The journey was a great contrast to other journeys I have made on a single-cylinder machine over the same country.

E.R.T.

## SHAPE OF PETROL PIPES.

RECENTLY a friend of the writer, the owner of a new twin-cylinder machine, has experienced a good deal of trouble due to water in the petrol—so he imagined. The trouble usually took place when on the way home after fall of darkness, and particularly after a day's hard riding, the first symptoms being a quick falling off of power, then sudden acceleration, till presently the engine would stop, the float chamber empty. After flooding the carburetter the machine would go ahead another half-mile, then stop again, and on reaching home the rider would carefully drain off the petrol, generally to find a few blobs of water at the bottom of the tank.

Removing the gauze did not remove the fault, which was repeated at least once a week in spite of various "remedies," till one day it dawned upon the bewildered experimentalist that the trouble occurred only when the tank was three parts empty.

The trouble was solely due to the shape of the petrol pipe, as a more experienced rider might have discovered earlier. When the tank was almost empty, air passed into the pipe and caused an air lock.

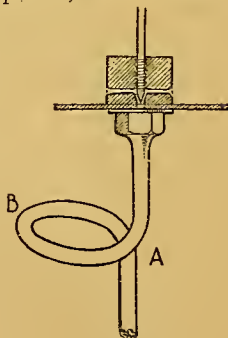


Fig. 1.

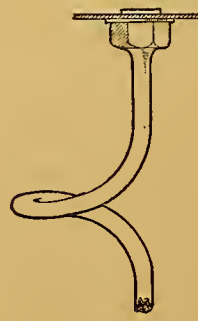


Fig. 2.

This particular pipe was shaped as in fig. 1, the bend B being at a slightly higher level than the bend A, so that any air drawn in with the petrol lodged at the point B and impeded the flow of the spirit.

One can fully conceive that a fault of this kind is not the sort a beginner would quickly locate, but it is by no means unusual for the coil of a petrol pipe to be wrongly arranged to an extent that hampers the running of a machine. Many new mounts the writer has straddled have shown symptoms that the carburetter is periodically starved during the first three or four miles of a run, these symptoms being a sudden slackening of the engine, succeeded by bursts of speed on opening the throttle, and general unsteady running. As a rule, a judicious rearrangement of the feed pipe remedies the trouble.

When it can be arranged, a long, straight petrol pipe tends to a steadier feed than a short curly one, but unless of ample length breakage is liable. But when the curls are necessary they should be arranged with a constant slop downwards, as shown in fig. 2.

H.M.B.





## OVERSEAS OPINIONS.

### A Further Selection of Letters from Readers scattered all over the World.

**B**EING the first issue of the month, we again give a selection of extracts from our correspondence from keen Overseas riders. In making the following selection we had the greatest difficulty in choosing extracts from many of the letters without repeating continually the old grumble, which appears almost without exception in every letter received from practically all of the Dominions, viz., that of exorbitant charges by agents and the difficulty of obtaining spares. In order to give what we hope will be a final airing to this grumble, we will quote a glaring instance of the difficulties and inconvenience our Overseas cousins have to endure in order to indulge in the sport, or, we should now say, that most economical means of travelling, the motor cycle.

Mr. A. M. Cross, of Jzeugloweni, Natal, required spares for his British machine. He applies to the Natal agents; they tell him they have none, but will try and obtain them from Johannesburg. Some weeks later they write and say, "as we have been unable to obtain them, shall we order from home?" They are instructed to do so. Four months later he is informed that the goods have been ordered, but have not arrived. He then writes himself direct to Messrs. —, the makers in England, who reply that they cannot supply direct, and refer him to their agents at Cape Town. These agents upon being approached state that they cannot supply, as they are only agents for the Cape provinces, and not Natal. As a last resource, he writes to a London firm of agents, from whom after considerable delay he receives some of the parts required. Mr. Cross also states that some of the Natal agents refuse to supply parts to riders unless their machines were purchased through them.

This example is quite typical of the complaints we receive almost daily. We rather fancy our correspondents do not realise that at present the conditions at home are in some respects as bad as abroad, and are not likely to improve until after the war. In many instances manufacturers have a difficulty in obtaining machines even for their own use, so busy are they on other more important war work. We fancy that if Overseas riders will only wait with patience until the British motor cycle industry can settle down again they will find their grievances rectified, and machines which will put the best American machine in the shade for rough work and durability will be obtainable in ample quantities at more reasonable prices.

#### Reasonable Prices.

Mr. J. B. VERSFIELD, Simonstown, S. Africa: "The prices of motor cycles in this part of the colony are very reasonable."

#### Heavy Riding.

Mr. F. K. McMASTER, Birriwa, New South Wales: "I now ride a three-speed 9 h.p. Indian with mag-dynamo. A 3½ h.p. machine would not be powerful enough for my work, as I am often obliged to ride over ploughed ground with half a bag of wheat on the carrier; and I also have to follow the sheep tracks up the mountain sides."

#### Larger Tyres.

Mr. C. VERTUE, Young, New South Wales: "I find that at least 26 x 2½ in. wheels should be fitted to any motor cycle for use on the roads out here, as with smaller sized tyres the rims get badly dented. My machine is fitted with screw-down needle valves in the tank instead of petrol taps. These, I find, eventually become loose and allow petrol to splash out. I have fitted a petrol tap and soldered up the opening where the needle valve was fitted."

#### Ground and Mudguard Clearance.

Mr. F. BECKMAN, Grafton, New South Wales: "To overcome the spare difficulty British firms should open depots of their own in place of having agents. If this were done I am sure the British machines would outclass the American altogether, but, while the American machine is the cheapest, it must get a share of the public patronage. Regarding ground clearance, 5½ to 6 in. is about correct. There should be 1½ in. clearance all round the mudguards. The mud on our roads chokes up the wheel, which necessitates a dismount every now and again to clear the wheel with a stick."

#### Desirability of Enclosed Chains.

Mr. G. L. ROSS, Capetown, S. Africa: "I ride a 6-8 h.p. Clyde-Jap, 1912 model, with sidecar. Once a year I go for a 300 or 400 mile tour with my wife and little son. We have never had a mechanical breakdown; our principal trouble has been negotiating sand and awkward bends. I fitted a chain case to my machine, and have not had the slightest trouble with it, neither have several A.J.S. riders of my acquaintance. It is a fitment I consider absolutely necessary, and am astonished at other manufacturers not coming into line. Machines of 4 h.p. are conspicuous by their absence on our roads as passenger machines. No motor cyclists of my acquaintance are insured, as the premium is in the neighbourhood of £7. I have ridden for three years, and if insured I should have spent over £20 with nothing to show for it. The solo rider is a rarity here."

#### Enfields in New Zealand.

Royal Enfields appear to have made some very staunch friends for themselves among motor cyclists in New Zealand. Mr. F. Townshend, of Leeston, Canterbury, New Zealand, who rides a 1915 6 h.p. combination, reports that his machine eats up the hills in a most glorious style. In a recent run out to Christchurch, fifty-five miles, the time taken was 2h. 40m., out of which has to be deducted certain voluntary stops on the various hill summits for admiring the magnificent scenery. What these figures really mean, however, will be better understood by mentioning that the first hill rises 1,700 feet in a distance of four miles, after which comes a series of five of between 400 and 800 feet high, of which "the grades and bends are terrible." What appears to please this motor cyclist most are the excellence of the mudguarding, and the splendid suitability of the spring forks for the road conditions of that colony.



## Overseas Opinions.—

## High Prices.

MR. W. C. MORETON, Walcha, New South Wales: "I am in thorough sympathy with those Australian readers of your useful and interesting paper who indulged in a hearty growl at the way we motor cyclists are put upon by the high prices asked for English machines in this part of the world. I am a loyal Britisher, and shall go for the British machine every time, but it makes one think when £97 10s. is asked for an English machine, while an equally or more powerful American machine can be bought for £80, and the duty on American machines out here is 5% higher than on British goods."

## African Riding Conditions.

MR. A. HOPKIRK, Cape Town, South Africa: "For town riding the standard machines are good enough, save that the mudguarding should be more efficient, and there should be more clearance between the cover and the mudguard to allow for buckled rims and patched covers. The motor cycle for country riding is a different proposition altogether. In the first case it is absolutely essential that the bicycle should have a cradle frame, with large saddle, low riding position, with at least eight inches of clearance from footboards and crank case to the ground, with plenty of clearance between mudguards and wheels to allow for buckled rims and patched covers, with magneto and carburettor as high up on the machine as possible for running through rivers, with chain drive for sandy gulches with steep banks, and a two-gallon tank for petrol, for in most country districts petrol is hard

to get, and then most of the storekeepers will only sell four-gallon cans, and with a two-gallon spare tin on the pillion stand one can fill up from this tin instead of leaving half behind. It is a noteworthy fact that the record time for the Johannesburg to Durban trial (18½ h.) and Johannesburg to Cape Town (6d. 1h. 36m.) is held by Percy Hunt on a spring frame machine from the land of Notes, and when Percy Hunt and Morley finished the 1,000 mile record run they were quite active, while after a 400 mile trial through the Karroo on a rigid frame machine one gets quite exhausted by the constant shocks from the rocks and watercourses which strew the path."

## Durability of British Machines.

MR. FRANK CLARKE, Newcastle, New South Wales: "I am writing on behalf of my two friends. We three own 6 h.p. machines, fitted with J.A.P. engines. One of my friends has a three-speed Sturmey-Archer (countershaft) gear, while the other is a fixed engine model, and my own a standard Zenith. My friends' machines were built in Sydney, of Chater-Lea fittings, and have given satisfaction. Newcastle is connected to Sydney by rail, so we do not have much difficulty in obtaining spare parts, etc.; there are also motor cycle depots in town here. Most riders here choose heavyweight machines of 6 to 8 h.p., because of their durability and stamina. American machines seem on the increase, and compare favourably with English machines as far as running when new, but do not wear half as well as the English. My Zenith, which has completed 8,000 miles by speedometer, does not show any signs of wear yet."

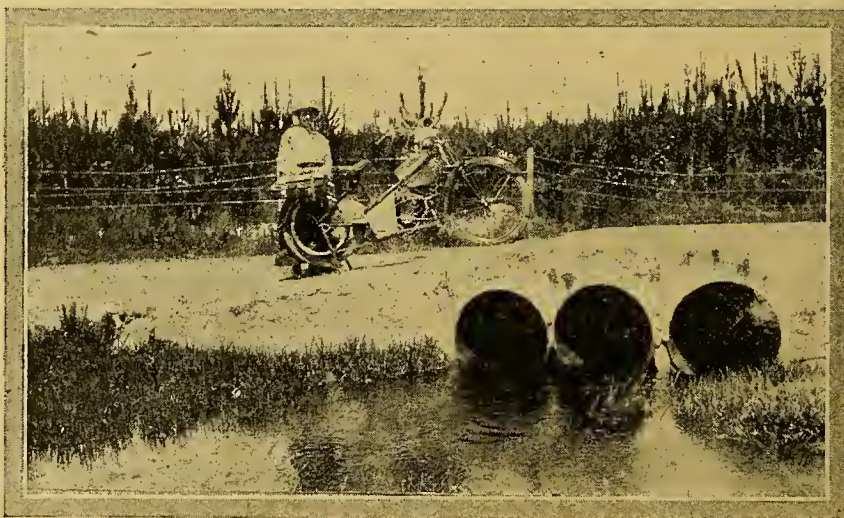
## A New Zealand Motor Cyclist's Experiences.

WE recently had a visit from a young Overseas motor cyclist, Mr. A. B. Thomas, of Henderson, New Zealand, who wrote to us some months ago on the difficulty of obtaining spare parts for British-made machines abroad. We printed his letter, and on the occasion of his visit had quite an interesting conversation with him. He has joined the New Zealand Engineers as a despatch rider, but up to the time of calling on us had not received his machine, which, of course, will either be a Triumph or a Douglas. In his part of N.Z., he told us, the roads were very bad, there being only about two miles of good road in the cities. However, there will be some improvement shortly, since trams will be brought farther out and the roads will consequently be properly made. In the country very little has been done as regards road making.

Mr. Thomas is very indignant about the difficulty of obtaining spare parts. There seems to be an extraordinary shortage of cylinders, for example, and the price one has to pay for the parts is enormous. The usual procedure is to hear that the spare part is not in stock, and then the motor cyclist is charged a high price for having the part specially made. Mr. Thomas was also very strong on the prices of British machines in New Zealand. One costing £60 in England is sold in New Zealand at a cost of between £90 and £95. It has recently been pointed out to us by a trader from the Overseas Dominions that one of the reasons for these high prices is that the purchasers, being often domiciled far from the towns, needed a great deal more attention than the motor cyclist at home. The prices, he told us, included looking after it in a very thorough manner, and, in the case of a breakdown, on receiving a message the dealer would immediately go out, and, if necessary, spend the whole morning tuning the machine up. Mr. Thomas, however, informs us that instances of this nature are very rare. He thought that there would be an enormous increase in the motor cycle trade in New Zealand, and that in a few years more

machines would be sold in that country than at home. He thought there would be every chance of a dealer making a fortune who sold machines at a reasonable price, and he said that dealers, instead of encouraging the trade, were killing it.

Asked about the price of petrol, he said that in normal times it was 2s. to 2s. 4d. a gallon, but when he left a



A SOUTH AFRICAN CULVERT BRIDGE.

The one shown is about forty miles from Cape Town, and was erected by the R.A.C. of South Africa. The lady shown with the Douglas is the sister of Miss L. Hopkirk, a keen Cape Town motor cyclist, a very interesting letter from whom appeared in our Overseas Section of July 6th. Miss L. Hopkirk has covered nearly 10,000 miles in less than three years, and her sister often goes on the carrier.

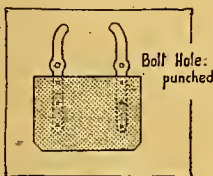
few months ago it was selling at 2s. 8d., but there was no difficulty about getting it. As to the type of machine wanted in New Zealand, Mr. Thomas told us that he, personally, favoured a spring frame horizontal twin of from 2½ h.p. to 3½ h.p. He was most enthusiastic as to the superiority of the twin as against the single, owing to the smoother running.



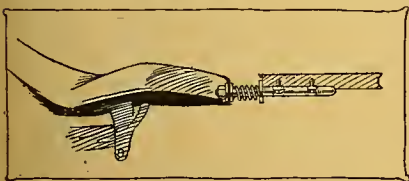
# Spring Carriers.

## How to Improve Luggage Carrying Capacity.

THE ordinary motor cycle carrier leaves much to be desired as a mounting place for luggage, and now that it is often necessary to carry a petrol tin in addition to one's ordinary luggage the spring frame scores immensely in that it affords a sprung position for the load. There are many articles which cannot very well be mounted on a rigid carrier, as, for instance, a camera or a doctor's equipment, as the terrific jolting would speedily ruin such delicate articles. The next best thing to a spring frame then is a spring carrier.

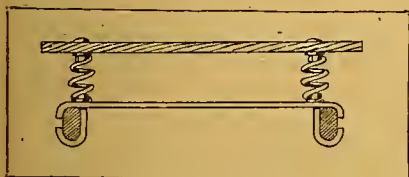


Plan view of saddle carrier.



Saddle attachment of pillion seat carrier.

The accompanying illustrations show three types of spring carrier, which have their individual uses, and with which the writer has experimented. Any one of them can be made at a village cycle shop. The first is perhaps the simplest, and is particularly useful for carrying small and delicate loads, as it is sprung with the rider. Two strips of  $\frac{3}{4}$  in.  $\times$   $\frac{1}{2}$  in. flat iron are shaped to fit under the saddle, and holes are punched so that they can be secured by the nuts holding down the saddle body. These strips are first fixed



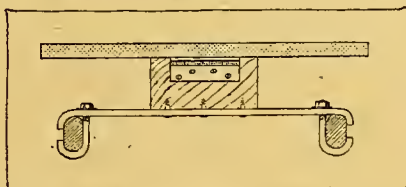
Attachment of back springs for pillion seat carrier.

in position, and the thin wooden platform is then laid on them and marked for the screw holes.

The second is a carrier most suitable for mounting a pillion passenger. The front of the carrier is secured to the saddle, so that it derives the benefit of the saddle springing, while the back is

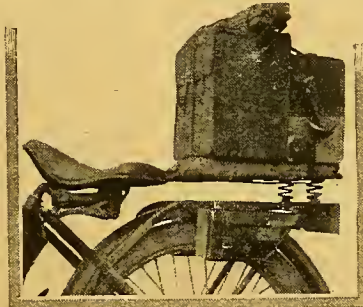
insulated from the frame by means of cycle saddle springs.

The third form of carrier is well sprung and of useful dimensions. In this case, the front is fixed as follows: Screwed



Hinge for double purpose carrier.

to a stiff steel strip running across the rigid carrier is an oblong block of oak, at the top of which is fixed a hinge, one flange of the latter being screwed to the oak block while the other is screwed to the underside of the carrier platform.



Pillion carrier, front end of which is attached to saddle.

The rear portion is supported on springs, the strength and number of these being varied with one's requirements.

We have here three types of carrier: The first for carrying a light packet, such as a doctor's bag; the second for mount-



Rear-sprung carrier

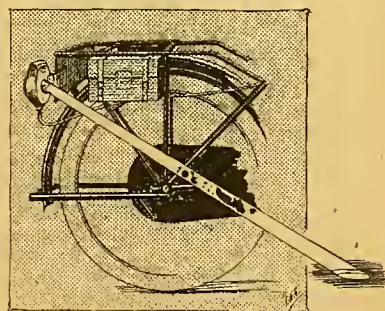
ing a passenger (the front end, which, in this case, carries most weight, being sprung with the rider, this being necessary for good balance); the third is a carrier which, though not so well adapted to passenger work, is the best for those who wish to carry a petrol tin in addition to a well-sprung load.

Another great advantage of these spring carriers is that the articles mounted on them will keep in place without being fettered like Persian slaves. Personally, I think that, in rigid frame motor cycles, the luggage carriers, to be of any real use, should be sprung, preferably with the rider. Is not this a problem for the saddle manufacturers to tackle?

H.M.B.

## A LAMP "TELL-TALE."

HOW often one wonders during a night ride whether one's back light is alight, and to ascertain by turning one's head is generally asking for a bad spill. A simple fitment that can be carried out by anyone is explained in the sketch, which shows a short piece of tubing soldered on to the back of an acetylene back lamp, so that a round spot of light is thrown on the road just in front and a little to one side of the



A simple rear light "tell-tale."

rider's right foot. It is then an easy matter to tell exactly how your back lamp is behaving.

To make a really good job of it, it is best to take a piece of tube and fit a glass to it in the following fashion. After having cut the glass to fit the outside circumference of the tube, lightly cement the inner portion where it fits, and then leave to dry—this, of course, after you have soldered the tube to the lamp itself. Two thin wires then crossed over the face and twisted tight make a secure holding with a spot of solder on the twist to finish it off. Many tail car lamps from the early paraffin days have been fitted with a device somewhat similar to the foregoing.



## Heavy Sidecar Machines as Solo Mounts.

Is the Combination Machine Useless without its Sidecar ?

**A**N article appeared in our issue of June 1st describing and illustrating one of the latest War Office Clyno officers' sidecar outfits, which had then covered some 800 miles test in our hands. Since then we have had the pleasure of continuing the test, which eventually totalled over 2,000 miles; a certain distance of which was covered without the sidecar. As a sidecar our experience on the road during various journeys, amounting to over 1,000 miles, and including the Birmingham Munition Workers' Trial at Easter, was that the machine behaved in a most exemplary manner, and during that distance required no adjustment whatever, except that the petrol feed pipe broke after about 800 miles. As for hills, we have not found an ordinary hill during our trips, which included some of the hilly district in the neighbourhood of the Thames valley in Bucks., for which the low gear was required, in spite of the fact that on several occasions three passengers were carried; while on one run from High Wycombe to Bourne End, taking the rough steep road over the hills from Loudwater, four passengers were carried, yet the Clyno ran merrily over on second without a suggestion of a knock, in spite of its previous 1,000 miles without overhaul or adjustment.

### Solo Riding.

Many people imagine that these machines, being built as permanent sidecar outfits, are quite unsuitable used as solo mounts. However, one day, requiring a fast solo mount, we decided to try the Clyno without the heavy sidecar just to see how it would figure, and incidentally save petrol, so valuable at the present time. Although the sidecar is attached by no fewer than six substantial connections, which gave the impression that the work of detaching would be a somewhat tedious operation, we were pleasantly surprised to find that ten minutes was ample. A substantial kit bag containing a complete change of clothes was strapped on the carrier, and a start was made at 3 p.m. one sunny afternoon for Cardiff. The first hundred yards or so felt somewhat strange, as we had not been astride a really heavy mount for some little time. However, once on the open, but bumpy Birming-

ham Road, the full pleasure of a powerful twin ridden solo came to us, and was enjoyed more fully owing to the fact that a baby two-stroke had formed our usual mount for some time. The eighteen miles to Birmingham, or rather King's Heath, were covered in excellent time, and even the atrocious roads near Meriden, which on previous journeys on the small machine had caused great discomfort, appeared on the heavy mount to be almost smooth, in spite of the fact that the spring forks had been designed for heavy sidecar work, and so were none too resilient.

### A Good Test.

A non-stop run to Worcester ensued, during which we indulged in good turns of speed. Tea was taken here and the journey resumed *via* Malvern, Ross, Monmouth, Usk, and Newport, Cardiff being reached just before lighting-up time after a most enjoyable ride. Next day broke fair, and the morning was spent on short rides through the city, where the easy starting and controllability of the Clyno entirely obviated any discomfort which might have been noticed due to the weight. In the afternoon a start was made for Swansea, but shortly after leaving Cardiff rain commenced to fall, which ultimately turned into one of the heaviest downpours we have had the misfortune to be out in for a very long time.

The long stretch of badly-laid tramlines into Swansea was negotiated without the least discomfort, apart from the unpleasantness of the rain, which was so heavy that at one point the road was flooded to a depth of about a foot, but none of these conditions caused a skid or a misfire. Next day, after repairing a tyre, which had deflated during the night, the accessibility of which was greatly simplified by the detachable wheel, a start for the Midlands commenced at noon. The route selected was *via* Brecon, Hereford, Ledbury, Malvern, Upton, Evesham, etc. Upon arrival at Coventry, after an absolutely uneventful ride during which nothing was touched except the tyre, we were firmly convinced that this type of machine, in spite of the many opinions to the contrary, formed an eminently comfortable and controllable solo mount.



ITALIAN MILITARY SIDECARS.

A fleet of sidecars used for the rapid movement of small numbers of troops from one spot to another. Each machine carries three men



## MILITARY NOTES.

### Despatch Carrying in the Jungle. Road Conditions in the War Zones.

#### ACCESSORY MAN IN THE A.S.C., M.T.

J. F. SPENCER, of the Priory Motor Accessories Co., Coventry, joined the M.T., A.S.C., some few months ago. He is now in France attached to an ammunition park serving Australian troops. Though attached to a workshop section, Spencer is detailed to drive a 4 h.p. Douglas sidecar, so that he gets some runs occasionally. During recent hot weather in France bathing in the canal, about four miles from the camp, has been greatly appreciated.

#### DESPATCH RIDER MEETS A LION.

IN addition to trying road conditions in German East Africa, motor cycle despatch riders attached to General Smuts's forces run the risk of meeting wild beasts. For instance, the following is extracted from a recent message from a Press Association correspondent writing from Kondo-Itangi:

"These despatch riders have performed wonders of endurance, and won through hardships that cannot be put down on paper. Singly they go off for a fifty or 100 miles ride through desolate country, infested with wild beasts. And should they be out when night falls, then all there is to do is to shin up a tree."

"One man had almost a tragic experience. He was riding along very fast in the semi-darkness when suddenly he saw a lion across the road. He managed to swerve a little, but grazed the lion's hindquarters and struck his tail. He then ran 'smack' into a stone, was thrown from his mount, and strained his ankle. The lion had not made off, but had turned round to see what manner of beast it was that had hit it. While it hesitated the despatch rider got up a tree. There had been no time to unship the rifle. The man stayed on his risky perch

all night, without a bite of food or any covering, soaked to the skin by the tropical rain that fell. When morning came the lion had gone, but the road was like a miniature lake, so that riding was out of the question. But the despatch had to be delivered, so on he limped as best he could, every step a pang of pain. A little way along the road he struck a wireless camp, where he found the two men he was seeking.

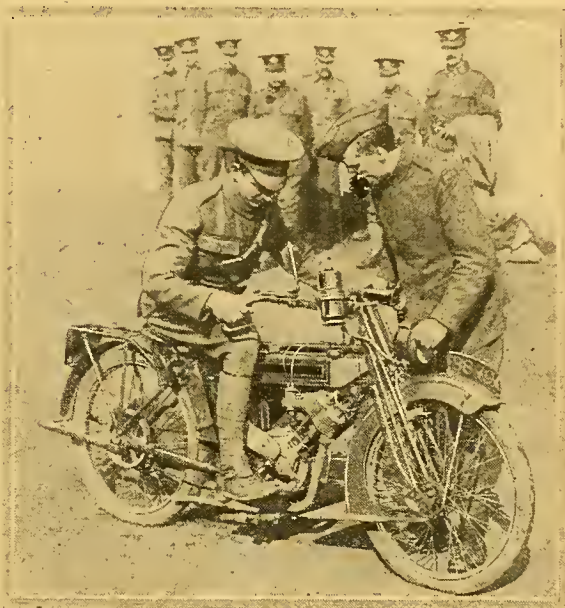
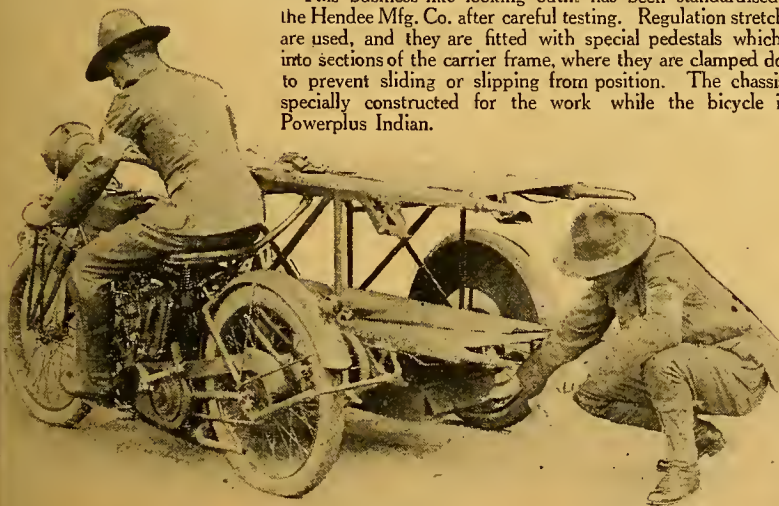
"Another despatch rider was charged by a rhino, which, luckily, stopped short on account of the unearthly yells of a couple of troopers, who were witnesses of the encounter."

#### WHERE ARE THE WORST "ROADS"?

SINCE the early days of the war readers have been made familiar, through the medium of our "Military Notes," with the difficulties encountered by despatch riders in the various war zones. More recently, or within the past nine months or so, we have been able to appreciate to some extent the appalling "road" conditions prevailing in Macedonia, Mesopotamia, and German East Africa, and in reading the experiences of military motor cyclists in these parts of the world one wonders in which country motor cyclists are operating under the worst conditions.

#### A TWO-STRETCHER SIDECAR AMBULANCE.

This business-like looking outfit has been standardised by the Hendee Mfg. Co. after careful testing. Regulation stretchers are used, and they are fitted with special pedestals which fit into sections of the carrier frame, where they are clamped down to prevent sliding or slipping from position. The chassis is specially constructed for the work while the bicycle is a Powerplus Indian.



#### MOTOR CYCLE RECRUITS FROM THE INFANTRY.

The R.F.C. need so many motor cyclists that infantrymen having some knowledge of motor cycles are being transferred. Our picture shows an infantryman starting for a trial run on a R.F.C. P. and M.

Judging by the extracts of letters published, we should say that there is very little to choose between Mesopotamia and German East Africa. In both the countries named motor cyclists have had to contend with a trying, and at times unhealthy, climate, coupled with an entire lack of roads. In German East Africa many riders, according to more than one report, have also had encounters with wild animals, whilst difficulties in the jungle are fairly common. Without actually going to both countries one cannot accurately compare the prevailing conditions; the point is that in all the war zones the combination of hardy, keen riders and good motor cycles are accomplishing work that before the war would have been described as absolutely impossible. Despatch riders and their machines have been buffeted about in France a great deal more than in all the Six Days Trials combined, but, as we have said, the conditions in the war zones further afield are still worse.

#### MOTOR CYCLIST AIRMEN.

WE have often referred to the number of motor cyclists who have joined the Royal Flying Corps, their performances proving what a good training motor cycling is. No better proof could be produced in favour of this contention than the fact that Lt. George McCubbin, D.S.O., the young aviator who brought down the famous Immelman a few weeks ago is a keen motor cyclist. A little less than two years ago, according to the *South African Motorist*, Lt. McCubbin was riding a Triumph in Durban.



## THE HOSPITAL SHIP.

### A BURST TYRE.

**S**HORT is the blissful hour that comes before the sunrise: yet when life is as full of incident as he found it by Cape Helles an hour may be an eternity. There is a limit for tired nerves, worn out with sudden alarms and more sudden death on all sides, and it is in that hour full of shadowy mists that all men's souls sail from the peninsula on the wonderful hospital ship that carries them home and back in an hour, leaving them at the dawn with memories to fight for, and courage to see them through.

He lay in a cramped position at the entrance to the best dug-out on the peninsula; beside any such work in Flanders it would have appeared rather like a bunker on suburban links. Beside him was a new tunic which in the most natural manner he had removed from all that was left of one of his friends the previous night. Its chief merit lay in its low population.

The hospital ship had deposited him on the Portsmouth Road with his Zenith, and looking over his shoulder he was pleased but not surprised to find that "she" was there too. Hospital ships are very thoughtful. As he turned round towards Weybridge he felt her hand drawing the cigarettes from his pocket, and a minute later a lighted Virginian was pushed between his lips. He raised his right hand in thanks. "Mustn't let her all out," he shouted over his shoulder, "that tyre on the front wheel's got a very weak spot; it'll go sooner or later."

Yet when he got close to the station he found that a short "blind" before the hill could not be avoided. "Shall I?" he shouted, and a tightened grip was enough answer.

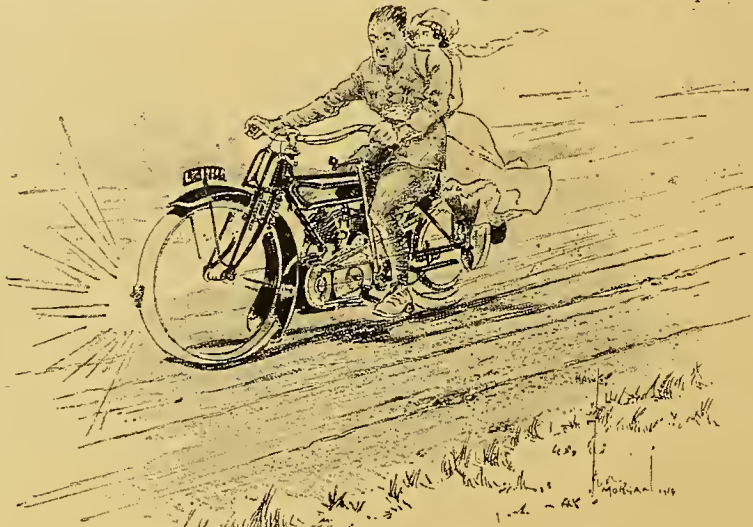
They were just picking up well when the tyre went; in a fraction of a second he realised that he had no control over the machine, and fixed the very spot amongst the heather at the side where they should pitch. Yet they seemed to be minutes reaching it. He felt

as though he had just stopped everything for a little, while he examined the spot, looking into each yellow flower and noticing every drop of dew. The noise of the burst had been appalling: and yet he seemed quite used to it; vaguely he remembered having heard it once at quite frequent intervals, some-

where out of England, when—ah! yes . . . he raised himself on a stiff elbow, almost drenched in the dew. Well, anyhow, the first hour's sun would dry that thoroughly; it didn't take long in such a climate. . . . But where was the 'bus?

Oh! of course, he had been dreaming. But how vivid it had been.

"What was that, Spee by?" he shouted. "H.E.," growled a voice behind him. "Double L," he added with



"They were just picking up well when the tyre went."

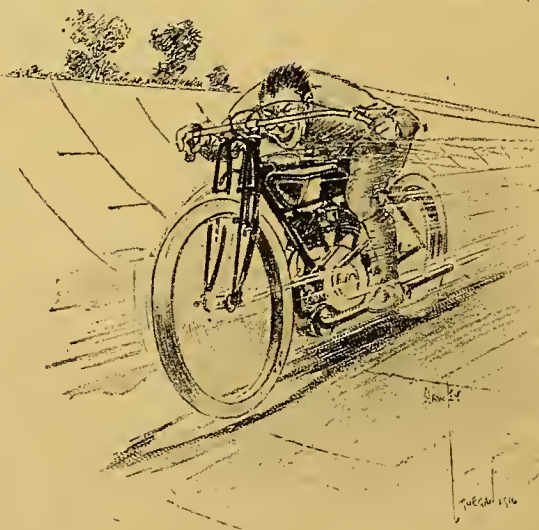
a laugh, curling himself up again.

### ON BROOKLANDS.

It seemed as though he had been driving for hours, every nerve in his body seemed tense: every muscle strained. He knew there was something at stake; something big: and somehow he felt he was winning, there was a wonderful rush of wind in his face, yet his eyes were quite unaffected: he couldn't be wearing a

helmet, since he felt his hair waved back in the breeze, and his head was cool; he felt somehow as though he had just had a glorious shampoo. That made him laugh. He couldn't somehow stop laughing . . . it seemed so jolly fine to be winning so easily: there was nothing ahead of him on the track! he was simply unbeatable. What if he stopped and lit a cigarette and then went on? He shrieked with laughter at the idea. What a jest it would be!

Somewhere behind him there came a little purring that grew a bit insistent. His confidence seemed to leave him suddenly: both machines were roaring now, but what a splendid cackle! His hands got hot and sticky, and he felt his grip on the bars loosening.



"It seemed as though he had been driving for hours, every nerve in his body seemed tense: every muscle strained."



**The Hospital Ship.—**

Perspiration began to pour from him: then a shadow started crawling up behind him. He could see the machine out of the corner of his eye: it was certainly gaining. With a roar that startled him it overtook and passed him. Well, it was hardly worth while going on, now. He seemed to be drifting just anywhere. Two or three machines passed him. Then suddenly a very small voice right in his ear distinctly said, "Who ran that belt through?"

With a long sigh he rubbed his eyes and sat up.

"Who a . . . what . . . ?"

"Who ran that belt through?"

"Who did *what*?"

"Oh, do wake up, you chump: didn't you hear a machine gun?"

"No . . . well, yes: I suppose I must have: I seem to remember it."

**ON THE PORTSMOUTH ROAD.**

He was leaning on his Zenith just where the road turns at the entrance to Ripley, explaining very carefully to someone that that house over there was the twelve-pound house; referring to the newly painted golden medallions on the great iron gates. He

seemed to be surrounded by every motorist he had ever known; he recognised every machine, and every detail on it: dirty knee-grips here; enormous exhausts there; he caught sight of a Brough, and waved his hand and shouted, "Hullo! Ken."

"Harry's comin' along on somethin' rather sweet, isn't he?" said someone; and they all stopped talking and listened to the perfectly running engine. . .

He stretched lazily and opened his eyes. Ever so far above him the blue sky reached out to infinity.

Straight overhead an aeroplane passed on an early morning reconnaissance. How clearly he saw it, he could even distinguish the exhaust. . . that engine sounded pretty healthy. With a puzzled look in his eyes he repeated to himself very softly: "Harry's comin' along on somethin' rather sweet, isn't he?" Who could have said that just now? Good lor', he must have been dreaming.

He roused himself and scrambled to his feet. Crossing over he kicked Speeby affectionately: "Come and help with the breakfast," he said.

"Comin', sir," said Speeby, sitting up.

He burst into a shriek of laughter at the "Sir." A slow smile dawned over Speeby's face. "I dreamt I was on a ship," he explained.

## Electric Ignition for Acetylene Lamps.

### A Method of Lighting an Acetylene Lamp from the Saddle.

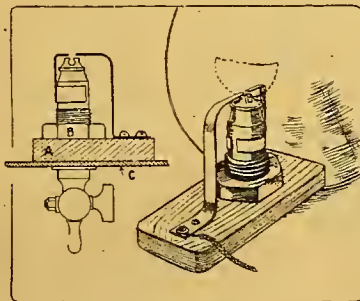
ONE of the inconveniences of acetylene lamps is that they are very troublesome to light. Nothing is more disagreeable when returning from an excursion at the fall of night, and travelling quickly so as to arrive in time for supper, than to be obliged to get down from the machine in order to light the lamp. In bad weather, lighting the lamp is so tiresome that often the motor cyclist prefers to ride in the semi-darkness and risk an accident so as to get home more quickly and without a stop.

To remedy this inconvenience I have combined a very simple little arrangement which at the desired moment causes a spark from the plug of the engine to pass above the acetylene burner. The operation is performed without descending from the machine and without stopping, and I have never had the least trouble with it nor been obliged to use matches. At lighting-up time I turn the water tap of the generator, and while continuing to ride, I wait until the gas comes out of the burner. That is easily ascertained from the odour. At this moment I take hold of an insulating holder attached to a supple wire and touch the sparking plug of the engine. The spark passes above the gas burner, and the gas lights. There is a misfire at the engine, but that is not important. Don't wait too long or you *might* burst the lamp.

**Construction of the Device.**

A piece of insulating material, wood or fibre A, is fixed under the burner carrier between the fixing screw B and the wall C of the lamp. This piece serves as a

support to a thin blade of metal, which is curved in such a way that its thin end comes over the burner at the edge of the gas aperture and facing another blade of metal fixed to the metallic part of the burner by a collar or a metallic wire. The two blades must have their extremities as near as possible to each other, but not so near as to prevent the formation of the fan-shaped flame. It is between these two blades that the spark will occur. Care must be taken thoroughly to insulate the metal fixed to the insulating piece. The wire attached to this blade can be a flexible wire, but well insulated. It will come out of the lamp by means of any air orifice, and will be attached to a kind of insulating handle terminated by a metallic button.



Dr. Camus's method of lighting an acetylene lamp.

**Alternative Methods.**

In the ordinary way this handle would be placed within reach of the motor cyclist in such a way as to enable him to take hold of it at the

moment of lighting to place the button against the plug.

In case the plug is difficult of access, a wire could be led from it to some convenient point of the frame within reach of the hand, where another metallic button could be fixed, well insulated, against which one could press the button of the handle to produce a spark.

It is also possible and easy to replace the holder and the insulating button by a switch, of which one pole is attached to the plug and the other to the lighter, but in this case care must be taken to use a switch well insulated, the poles of which are sufficiently separated to prevent the sparking from the plug passing over them.

(Dr.) R. CAMUS.





## SPECIAL FEATURES

HEAVY SIDECAR MACHINES AS SOLO MOUNTS.  
THE STANDARDISATION OF CONTROLS. OVERSEAS OPINIONS.

## TIME TO LIGHT LAMPS

"SUMMER" TIME.

Sept. 7th	...	...	8.3 p.m.
" 9th	...	...	7.58 "
" 11th	...	...	7.54 "
" 13th	...	...	7.50 "

## Pure Petrol Very Rare.

Complaints are increasing in number that most of the petrol one buys nowadays is adulterated—usually with paraffin. If such is the case it is scandalous in view of the price charged.

## Petrol Substitutes Popular.

Motor cyclists are settling down to petrol substitutes, of which there are about a score of brands. We have questioned many motor cyclists, and rarely find any using neat petrol. Heavy fuel is much more satisfactory with an air-cooled engine than with one of the water-cooled type.

## Duplicate Tanks.

Users of machines such as the old two-speed  $3\frac{1}{2}$  h.p. Humber and the spring frame Edmund having duplicate tanks find the latter of the greatest possible convenience. One compartment is filled with petrol for starting purposes, the other with the substitute favoured.

## Paraffin in the Heavy Section.

Motor cyclists of the Heavy Section of the Machine Gun Corps, who have their own machines in camp, are trying to run them on practically pure paraffin. The two-strokes go very well, we are told, though they do not two-stroke so regularly as with petrol.

## Obtaining Petrol Substitutes.

Readers about to purchase petrol substitutes are advised to take advantage of *The Motor Cycle Deposit System*, the operation of which is described on the first page of the Miscellaneous Advertisements. This suggestion is made in view of some complaints received of non-delivery of goods after payment has been made.

## Motor Cycle v. Ostrich.

An officer with General Smuts's force writes of his experiences from Kondoa Irangi. After describing how an apparently pro-German rhinoceros had overturned one of the armoured cars, he tells the following story of a race with an ostrich: "When riding a motor cycle one day an ostrich took it into its tiny head to keep pace with me. I opened my machine out full, but the ostrich, had no difficulty in keeping up, and if it had liked I am sure it could have beaten me hands down."

## Routes to the Scottish Capital.

Of the three roads from Newcastle to Edinburgh, the R.A.C. at present recommends that *via* Wooler and Coldstream, as the road *via* Carter Bar is still in bad condition. The military embargo has, however, been removed from the Newcastle-Berwick-Edinburgh road north of Berwick.

## Carry Your Exemption Certificates.

Motor cyclists engaged upon Government work or work of national importance, and who have received exemption certificates, would be well advised to carry them. The authorities are now holding up at different towns men of military age whether they are wearing official badges or not. A troublesome two or three hours' delay may be avoided if one is armed with an exemption certificate. At seaside resorts the special constables and military authorities seem to be enjoying holding up men and depriving them of two or three hours' sunshine while waiting in the police station for the examination of any papers they may have. At Llandudno ten days ago nearly 300 men were rounded up, much to the disgust of men wearing badges, and the sum total of all these efforts was the identification of two absentees!

## British Motor Cycles for Rumania.

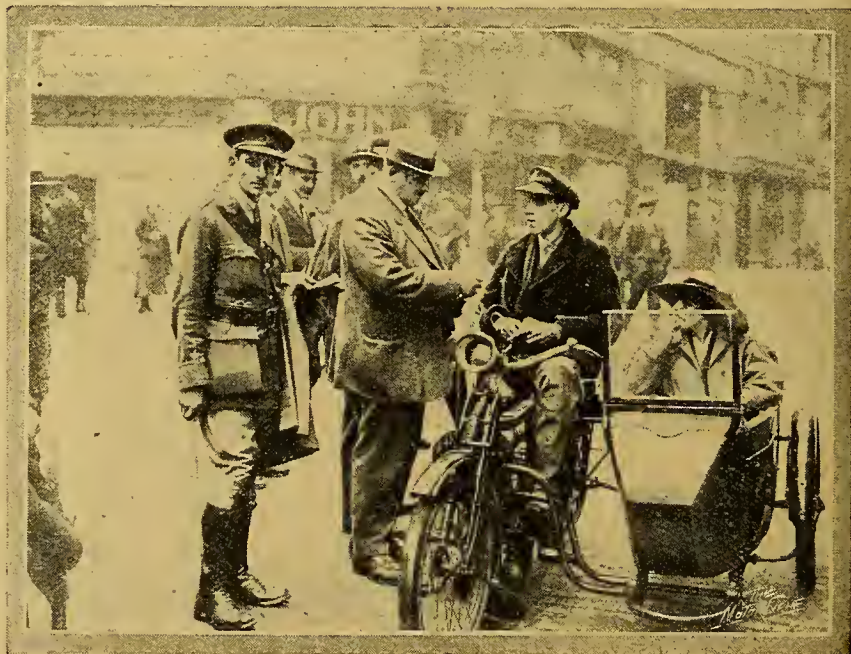
A batch of over 300 Douglasses are now *en route* to the Rumanian Government, the makers having received permission to ship them a few days before the entrance of Rumania on the side of the Entente was announced.

## The Petrol Committee.

A veterinary surgeon in West Norfolk, anxious to economise in petrol, laid up his car and bought a lightweight O.K. Although he filled in the necessary form in good time and promptly sent it to 19, Berkeley Street, he was, a week ago, without his due allowance. Our correspondence pages show that this is no exceptional case. Other users on important work cannot obtain more than the half-gallon per week.

## Missing Machine Recovered.

The Manchester Motor Cycle Hire Co. inform us that as a result of the paragraph in our last issue the Enfield two-stroke reported as missing from their premises has been recovered. The person who is alleged to have stolen the machine sold it to a London dealer, who in turn sold it to a customer. The latter handed the machine over to the police immediately he saw the announcement in our last issue.



## MOTOR CYCLISTS OF MILITARY AGE! CARRY YOUR EXEMPTION CARDS!

Birmingham military authorities, in conjunction with the police, are displaying great activity in rounding up men who should be in the army, and last Sunday many motor cyclists, among others, were stopped to show cause why they were not in khaki.



### The National Relief Funds.

At the week-end the principal war funds stood as follow:

Price of Wales's National Relief Fund (£3,443,250 distributed)	£5,946,363	0	0
British Red Cross Fund .. ..	4,308,107	1	2
Tobacco Fund .. ..	113,182	10	8
Kitchener National Memorial Fund .. ..	264,000	0	0

### Help Wanted for a Soldiers' Concert.

Sec.-Lt. K. S. Kelway, A.S.C., M.T., B.E.F., France, is getting up a concert at the Front, and will be glad to receive used music or amusing verses for which the present owners have no use.

### Raffling a Motor Cycle.

Commander Johnstone, R.N., who was lost in the Jutland Battle, was an enthusiastic motor cyclist and rode a Lea-Francis. A friend of his, Surgeon H. Trenchard Rossiter, R.N. (also a keen rider), is going to sell the machine by raffling it among the ships at his base.

### Down "Zummerzet."

On Monday we met Lt. I. B. Hart-Davies (R.F.C.), looking very fit and well. He told us that motoring friends of his visiting Porlock had been stopped by the local police and advised to go home, the "locals" apparently being under the impression that motoring had now been prohibited.

### American Twins.

A letter in our last issue from Capt. A. Lindsay, R.G.A., on the subject of American motor cycles, has drawn quite a batch of letters from readers, a selection from which will appear next week. A good many of the correspondents, however, connect Capt. A. Lindsay, R.G.A., with Capt. A. Lindsay, M.B., R.A.M.C. It is perhaps well for us to explain that, so far as we are aware, the two writers have no connection with one another.

### Mail Delivery by Motor Cycle.

A paragraph under this heading in our issue of August 17th referred to the use of motor cycles in the United States for country postal work. According to latest reports, only sidecarriers will be allowed, the previous report that solo machines might be used having been modified. The assistant postmaster who has charge of the U.S.A. rural mail deliveries is highly in favour of the use of motor cycles for this class of work, but believes a sidecarrier necessary to avoid mishaps which might finally result in a ban against the motor cycle altogether.

### The Arbuthnot Trophy Fund over £180.

The following additional subscriptions to the Admiral Arbuthnot Trophy Fund have been received during the last week by the secretary of the Auto Cycle Union, 83, Pall Mall, S.W.:

Jointless Rim, Ltd.	£	s.	d.
Brown Bros., Ltd.	..	5	0
J. V. Pugh, Esq.	..	5	0
Rudge-Whitworth, Ltd.	..	5	0
Norton Motors, Ltd.	..	5	0
A.B.C. Motors, Ltd.	..	5	0
C. Macintosh and Co., Ltd.	..	5	0
The Enfield Cycle Co., Ltd.	..	5	0
H. Collier and Sons, Ltd.	..	5	0
New Imperial Cycles, Ltd.	..	2	0

The total sum subscribed now amounts to over £180. Steps will shortly be taken to have the trophy made, which will take the form of a statuette of the late Rear-Admiral in undress naval uniform.

### Twenty Substitutes Now

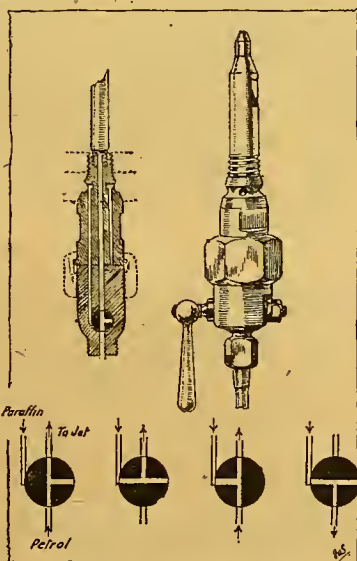
We have a list of twenty petrol substitutes in our possession, so that it is not necessary for motor cyclists to cut down their riding to fine limits.

### Motor Cycle Charity Races.

Two motor cycle events figured in the programme of the annual charity sports organised by the Coventry and District Clubs' Alliance, held on Saturday last. The two laps pursuit race was won by S. Wright (3½ h.p. Humber), and the one mile handicap by F. Sibley (Baby Triumph). A photograph of some of the competitors appears on page 214.

### Petrol Supplies—Future Prospects.

At the present time the Government stocks of petrol appear to have largely increased, as deliveries have lately been coming in well. The Admiralty has taken the matter in hand, we are led to believe, and there are now greater facilities for bringing petrol to this country. We are told, however, not to be too optimistic. If things continue to go on as they are doing, and the Government stocks are still further increased, we may hope for a relaxation of the present stringent rules regulating the purchase of petrol by private owners; but if, on the other hand, the Navy or Army demand further supplies, it is quite possible that the present state of affairs will continue, or that even stronger measures may be taken. The daily papers take a very cheery view of the situation, but those who have interviewed authorities on the subject warn our readers not to raise their hopes too highly.



HUFFAM'S PETROL OR PARAFFIN DEVICE.

(See page 185 of our last issue.)

(Right) Sketch of the outside. (Left) Diagrammatic section. (Below) Section of tap in various positions, which, reading from left to right are: Petrol only, paraffin only, petrol-paraffin mixture, and draining the float chamber. It takes the place of the usual jet attachment. Mr. Huffam's address is 21, Treadway Court, Golder's Green, N.W.

### Dust in France.

Lord Northcliffe, in his description in Tuesday's *Times* of his visit to General Birdwood and the Australian troops, remarks that one of the Australians remarked that the dust made him fairly homesick. If the dust in the French war zone is half as bad as it can be in Australia it must be very bad indeed.

### Wounded Soldiers' Sidecar Outing at Devizes.

The population of Devizes is not a large one, but a sidecar outing for twenty-one wounded soldiers was recently held by a number of local motor cyclists. The party went from the hospital at Devizes to Edington via Potterne, Great Cheverell, and Erlestoke. Tea was taken at Edington, and some time was spent boating on the lake there. The outing was so successful that it is hoped to be able to repeat it at a later date.

### Petrol Consumption Records.

Economy in consumption is very much to the fore these days, and, as our correspondence pages testify, many readers are making efforts to get improved results in this respect. Some remarkable runs have been accomplished at one time or another, the most phenomenal perhaps being that claimed by two James riders in the Sutton Coldfield A.C. trial held about three years ago. The machines were both 3½ h.p. twins, specially tuned and fitted for economical running, and the results worked out at 334 and 320 m.p.g. respectively.

At the time considerable doubt was thrown upon these results, including that of the winner of the light car class—a 10 h.p. Singer was credited with doing eighty-seven miles to the gallon. The method of measuring the consumption was the cause of the controversy. The competitors in the Sutton Coldfield trial came to the starting points with tanks full, covered the course of twenty-four miles, the officials subsequently replenishing the tank and checking the amount of petrol required to fill it.

### Latest M.M.G.S. Recruits.

As mentioned in our last issue, the final inspection of recruits for the Motor Machine Gun Service was held at Coventry on Tuesday of last week, when the undermentioned motor cyclists were accepted to await a call from the training centre of the Motor Machine Gun Service, the position of the camp being about to be changed.

In future, as mentioned in the War Office letter reproduced in the recruiting section of our last issue, the method of obtaining motor cyclists for military service will be arranged by the Commands as men are called up.

- Catchpole, R., Wakefield, Lowestoft.
- Evins, G., Aston, Birmingham.
- Fawcett, F., Kendal.
- Franklin, F. S., Wallingford.
- Hill, E. B., Hall Green, Birmingham.
- Housden, H. T., High Wycombe.
- Howes, C. L. V., Ryton-Eleven-Towns.
- Isaac, J. H., Merthyr Tydfil.
- James, N. A., Stroud, Glos.
- King, T. A., Earl Shilton, near Hinckley.
- Lancaster, S., London.
- Mason, J. W., Coventry.
- Peteh, H., Coventry.
- Ross, W. A., Rogart, Sutherlandshire.
- Sinnett, I. J., Coventry.
- Thomas, W. H., Cardiff.
- Wilson, F., Coventry.
- Wilson, J. H., Grimsby.



## A WEEK ON THE ESSEQUIBO COAST.

### TAKING IT EASY IN BRITISH GUIANA.

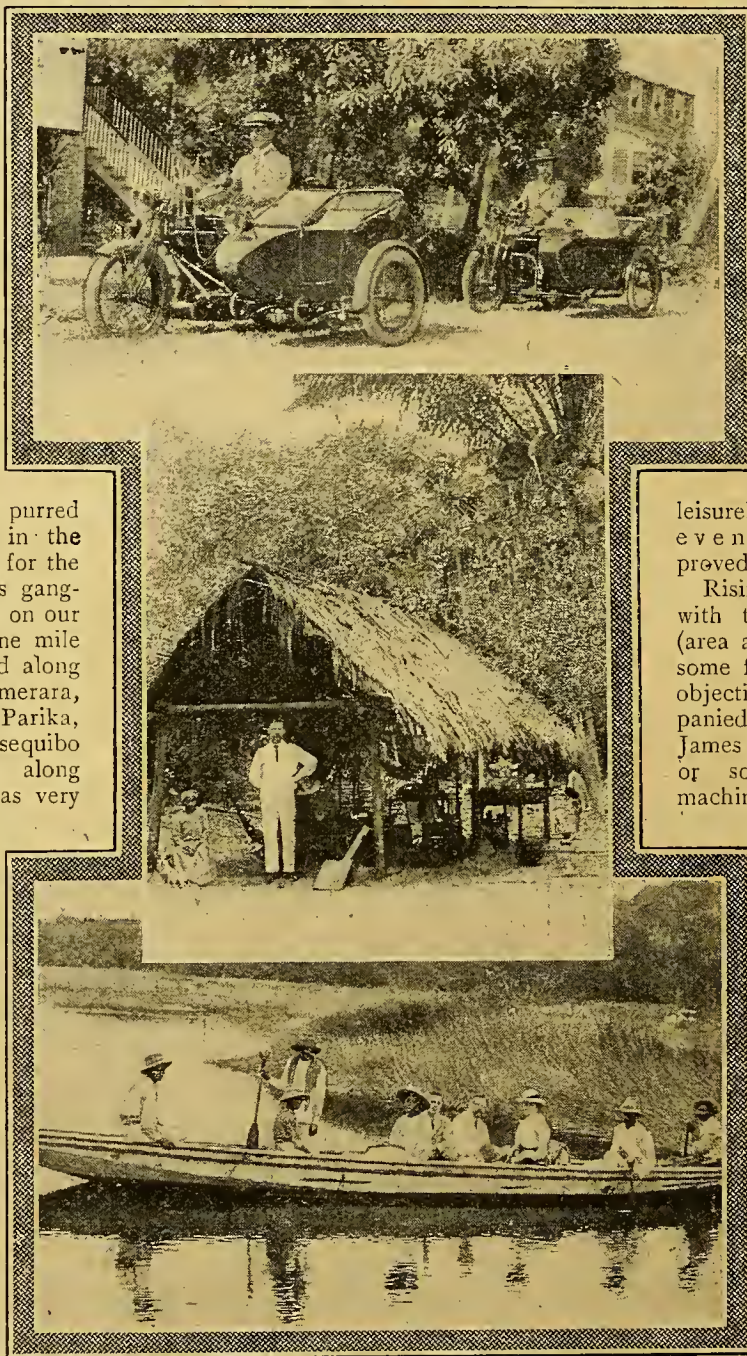
**T**HOUGH the weather had been very unsettled, on the morning of our start the sun rose in a cloudless sky, and gentle breezes foretold a fair, breezy, tropical day. At 6.30 our 1914 8 h.p. Matchless and sidecar, heavily laden with the various necessities for a week's stay away from our home in Georgetown, left our garage, my brother being my fellow passenger. A quick run of a mile or so and we arrived at the wharf on the east bank of the Demerara River. Having bought tickets, we crossed on the ferry steamer in fifteen minutes. A dig at the kick-starter and the engine purred softly: gently letting in the clutch and accelerating for the climb up the steamer's gangway, we were soon well on our way on the twenty-one mile stretch of winding road along the west coast of Demerara, our destination being Parika, at the mouth of the Essequibo River. The surface along this stretch of road was very indifferent, some places being shockingly bad, necessitating a very slow speed. I may explain that our coastal roads here all run across country which lies below the level of the sea; the roads are made upon raised dykes or dams with a deep wide trench filled with water on either side, so that if there is an accident it means a bath for probably both machine and rider, if nothing more serious. The surfaces are metalled with burnt earth, and when a drought is followed by heavy

rains, as in this case, they become very "pot-hole." Several stops were made to take snapshots of pretty spots, but as Parika had to be reached in time to catch the 8.45 boat for Suddie, on the opposite bank of the

Essequibo, we were not able to make as many stops as we should have liked. The run across the mouth of this huge river, with its many large islands, took three hours, and it was shortly after twelve that the steamer's destination was reached. A run of seven miles and we arrived at our friends' house at Queenstown. The remainder of the day was spent

leisurely; in the cool of the evening a ten mile spin proved very enjoyable.

Rising early next morning, with the large Capoeira lake (area about four-square miles) some few miles inland as our objective, we motored, accompanied by our friends on their James and sidecar, for a mile or so, then, leaving our machines we took to a punt drawn by a mule (these punts are used for carrying canes on the sugar plantations here); at the end of an hour we were on the banks of the lake, then, changing boats and transshipping our baggage, we paddled for the opposite side with its lovely palms, white sandy beach, bathing house, and cool shady bungalow. A very enjoyable day was spent there, bathing and exploring the huts of the aboriginal Indians. At dusk we returned, after a most enjoyable day, all very much sunburnt.



SCENES IN BRITISH GUIANA.

(Top) Matchless and James sidecars used on the holiday tour described in this article.

(Centre) An aboriginal Indian's home.

(Bottom) The party on the lake with boatmen and attendants.



**A Week on the Essequibo Coast.—**

On the succeeding day we motored south along the left bank of the Essequibo River, passing through Suddie on our way to the country beyond. The road in this direction is very pretty, running through avenues of mangoes and palms in places; after passing the seventh milestone from Suddie the road surface is very bad, being grass-grown in the centre (this is generally the case with roads in outlying districts little used). This terminates after the tenth mile in a short stretch of loose sand about 4in. deep, through which it is practically impossible for a motor to proceed; the residents (natives) towards the end of that stretch had apparently never seen a motor cycle and sidecar, and evinced great interest in the Matchless as it glided quietly along. We returned home at 8.40, having covered thirty-six miles; the fresh, cool morning air had put a keen edge on our appetites, and we did justice to our breakfasts. In the afternoon we did a brisk three-mile walk to the bank of the lake, and half an hour's paddling in an Indian dug-out canoe brought us to the sandy shore on the opposite side, where we indulged in a refreshing dip. Before returning home we visited the Indians' hut which had been photographed on the Saturday, in order to show them the photograph; their wonder and interest to see themselves and their home depicted thus were amusing. The open sides of Indian houses may cause some wonder to dwellers in a cold country, but it must be remembered that the mean temperature in these parts is above 80°. On our way home we encountered a troop of monkeys in one part of the forest. It was interesting to watch them disporting themselves, leaping from bough to bough and chattering to one another.

**A New but Bad Road.**

Starting at three on the following afternoon we rode north along the road to the Pomeroon River—the last five miles of the twenty-eight mile stretch from Suddie has only recently been made, and the surface was very bad; the road had sunk abruptly in places, causing holes about 6in. deep. In other parts there was unrolled metal quite 4in. deep, and then again other stretches were grass-grown in the centre, and thus raised high enough to strike the chassis of the sidecar. A speed exceeding ten miles an hour was impossible. The scenery in this part is grand, the road running through virgin forest—gigantic tropical growth on both sides—through which the sun's rays cannot penetrate. We reached the banks of the river at five, and after a look round retraced our way, stopping for tea, which we had brought in a Thermos flask. At this point parrots were flying overhead in large flocks, and we regretted not having a gun with us. A large bag would have been easily possible, for they were flying literally in hundreds, screaming loudly as they went. Our run home was uneventful, we arriving there just after dark.

On the last day of our holiday the greater part of the morning was spent packing. We motored fifteen miles to the steamer at Aurora, 7½ miles on the other side of Suddie, and from there travelled back to Georgetown.

There are not many motor cycles in this colony, and the James and sidecar referred to was the only one we saw on that coast, but several Ford and other cheap American cars were to be seen. We enjoyed a series of absolutely no-trouble runs totalling 170 miles.

C. W. H. COLLIER.

## Are Imports Prohibited? No!

OUR comments under the above heading which appeared in a leading article in the issue of August 17th caused a good deal of speculation. In it we showed that whereas imports of foreign motor cycles were supposed to have been prohibited as from March last, no fewer than 1,020 machines, which together with parts were valued at £99,538, were imported into this country during April, May, June, and July.

We wrote to the Board of Trade on the subject enclosing a copy of *The Motor Cycle* containing the article quoting the official returns, and a reply is now forthcoming and is given hereunder:

[Copy.]  
Board of Trade,  
Dept. of Import Restrictions,  
22, Carlisle Place,  
London, S.W.,  
28th August, 1916.

Sir,

In reply to your letter of 14th August, relative to the importation of motor cycles, I am directed by the Controller to inform you that licences for the importation of motor cycles have been given by this Department only on very rare occasions and for very special reasons, and that from the records in this Department it appears that only a very small proportion of the cycles referred to by you have been imported on the specific authority of this Department.

I am, however, to point out that there is a standing rule whereby goods on the Prohibited list, which can

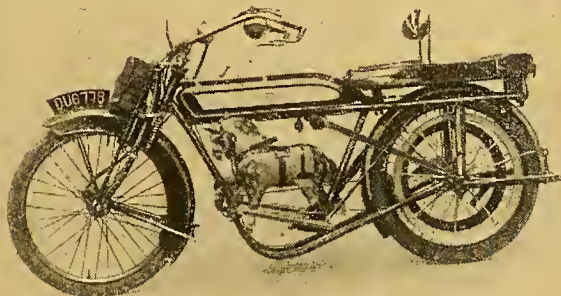
be shown by means of Bills of Lading to have left their place of origin, consigned to the importer in this country, before the date on which they were prohibited, are admitted into the United Kingdom without special authority from this Department in each case.

I am, sir,

Your obedient servant,

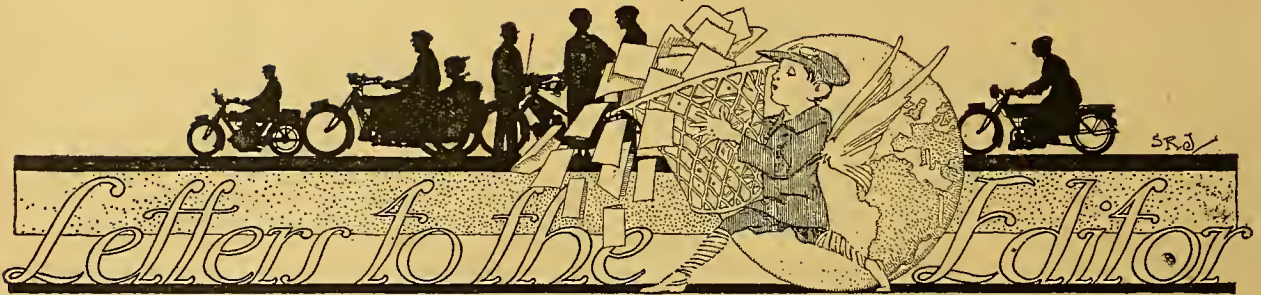
(Signed) H. J. PHILLIPS,  
Secretary.

The Editor,  
*The Motor Cycle*,  
20, Tudor Street, E.C.



A novel spring seat design evolved by a Coventry motor cyclist. The seat is supported on the carrier, which is pivoted in front and sprung on the stout enclosed springs. Observe the 1 h.p. power unit!





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Short Measure of Petrol.

Sir,—During the petrol shortage is it not fair that the Control Committee should enforce the full quantity of two gallons being supplied instead of tins containing about one pint or more short?

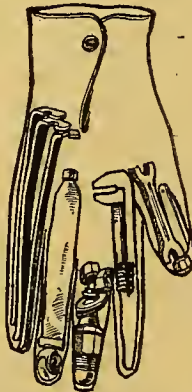
I find a good carbide saver is to bore  $\frac{1}{4}$  in. holes in an empty  $\frac{1}{2}$  lb. tin all over the bottom. When the used carbide is put in the tin and shaken, it quickly sifts all the hard from the waste, and keeps the hands clean.

SIDNEY J. WILLIAMS.

#### An Improved Toolkit.

Sir,—The enclosed sketch shows how one can use an old glove for carrying tools, etc., in the saddle bag or one's coat. The rider who adopts this plan will be able to keep his tools handy, and in good condition, and need not go to the expense of buying any ready-made tool carrier. The sketch explains the idea.

J. D. ROBINSON.



#### Decarbonising on Active Service.

Sir,—With reference to a paragraph on page 160 of *The Motor Cycle* of August 24th, we should very much like to know how Mr. Sidney George manages to lubricate his engine (about two-thirds of the work out here has to be done on low gear) so as to keep it so free from carbon. 30,000 miles without decarbonising seems rather "steep," and we should like to employ his methods and obtain similar results. The roads out here are atrocious, and with so much low gear work the engine needs a plentiful supply of oil, also the fuel is a trifle different from the No. 1 used in peace times.

2ND A.M. C. RAINER.

2ND A.M. KERR.

2ND A.M. PATON.

1ST A.M. A. RAYMOND.

B.E.F.

#### American Motor Cycles.

Sir,—Referring to Capt. Lindsay's letter on the American machine, I think he has touched the tender spot of their design, and, despite the occasional speed bursts of these tawdry monsters, the English manufacturer has never had any cause to fear the invasion which, in normal times, was so often threatened.

I am moved to write, however, in defence of one, at any rate, of those "three leading singles" which come in for an undeserved jibe.

Having ridden every model of the leading single from 1907 until 1916, I can only say that those who follow the crowd do indeed "get all they deserve," for their wisdom in purchasing a machine which not only made the motor-cycle trade what it is to-day, but has, by a factory policy of well-informed conservatism, established a steady rock amongst a sea of "talking point" innovators and hasty experimentalists who have many times brought the industry almost to destruction.

At least 85% of single-cylinder engine design is not only influenced by that one leading single, which is so noticeably omitted from Capt. Lindsay's list of representative machines, but is absolutely copied therefrom.

Lest I be accused of having an axe to grind, I will not mention the name of my "leading single," but merely give a clue to its identity by saying that it is most nobly doing its duty in France and other fields, and that the only real complaint the D.R.'s have against it is that on very rough roads the springs of the front forks have been known to break.

D. H. SMITH, M.T., A.S.C.

#### Petrol Substitutes.

Sir,—I wish to call your readers' attention to a small matter which has probably escaped their notice. Previous to the petrol licence age, Binks fuel was advertised at 1s. 4d. per gallon (not bad for paraffin). With the petrol permits it rose to 1s. 10d. It is still advertised at that price, but when one writes for a few barrels the price quoted is 2s. 6d. per gallon. This is a clear case of profiteering. Motor cyclists would do well to keep this in mind when normal times come again. I think these and similar cases ought to be made public.

CW 45.

[The above letter was submitted to Messrs. C. Binks, Ltd., whose reply is appended.—Ed.]

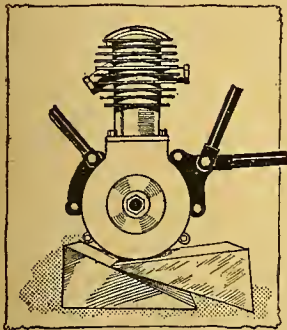
Referring to the above letter, signed "CW 45," in which I am accused of exploiting motor cyclists for my own personal gain, I take this opportunity of repudiating the accusation of your anonymous correspondent. He evidently does not know what he is talking about, or he would not talk such utter nonsense. The price this fuel is sold at is entirely governed by things outside my control, but I would suggest that your correspondent enquires from some shipping house the freightage of oil from California, and then compare it with the rate prevalent every six months since the beginning of the war; he will then begin to understand something of the position. The prices of this fuel are entirely governed by shipping charges. This fuel is sold at practically cost price by me. It would be idle for me to pose as a philanthropist, but nevertheless it is a fact that the whole benefit connected with this fuel concerns the motor cyclists and not myself; also that advertisements have to be sent to your journal some days before they appear, and in the interval the price may go up, and although the fuel may be advertised one week at a certain price it does not necessarily follow that I can sell it at this price, and there is certainly no obligation for anyone to order it at the increased price. If an enquiry is made at our works, they will be told what the price is; if it is higher than the price advertised, it is their option whether they order it, and if they send money without making enquiries this money will be cheerfully returned, provided the higher price is objected to. After reading your correspondent's letter, it is quite refreshing to refer to many hundreds of letters from motor cyclists who have taken the trouble to write and thank me for providing means by which they can use their machines when petrol restrictions are in force.

C. BINKS.



### Removing the Engine.

Sir,—I have lately had occasion to remove and replace the crank case of my  $3\frac{1}{2}$  h.p. T.T. machine, and was at



first rather puzzled how satisfactorily to handle this weighty job. However, the pieces of hard wood I use for running my light car off the pavement into the road solved the problem. They are the usual triangular section, as sketch.

The two were pushed together under the crank case as sketched, and, by just taking the weight, permitted all the bolts to be pushed out with the utmost ease. Drawing them apart lowered the crank case, and allowed it to be withdrawn from the

frame. The process was reversed to assemble the crank case again in the frame.

J. W. G. BROOKER.

### The Boycott of German Goods.

Sir,—It is with extreme indignation that I read Mr. H. Pritchard's letter in *The Motor Cycle* of August 24th. I should like to deal with it paragraph by paragraph.

Firstly, I flatly contradict his statement that muddling diplomacy on both sides caused the war. This contradiction he admits in his second paragraph, where he remarks that we entered the war for the purpose of defending Belgian neutrality. How does he reconcile his two statements?

To take the third paragraph. Is it necessary to compare our motors with German motors? Is there not a sufficiency of all branches of science and engineering in the world for purposes of comparison without the admission of the German variety?

His fourth paragraph is nonsensical. The remainder of the war will inevitably be, for Germany, a war of defence, but nothing could possibly give her the "justification" for saying that the whole war was a war of defence. Has there ever been a more definite war of aggression?

To take his last paragraph next, I beg to state that it will be very much to the credit of Great Britain to have crushed German trade *everywhere* by force of arms (I take strong exception to his expression "political trickery"); it is a form of punishment particularly suited to Germany, as well as being a protection to ourselves against the dumping of German goods and also the "peaceful invasion" policy so beloved of that nation. I believe our object during and after this war is not to help Germany out of her shibboleth of Kultur, but to reduce her to such a condition that she is incapable of inflicting its results upon other nations, and, to deal with Mr. Pritchard's fifth paragraph, the above punishment is the only way we shall have of attaining that end. If it appears to him too drastic, let me remind him of the authenticated atrocities; possibly if he were to see even some of the sights I have seen he would change his mind. I presume he is not thinking of moral suasion!

M.R.C.S.

### The Cause of Overheating.

Sir,—With deep interest I read your leading article in the last issue of your interesting paper, on "Overheating and Engine Stops," and beg permission to add my opinion, which, while not being the entire cause of stoppage from overheating, has undoubtedly a great influence on the usual symptoms of overheating.

Knowing that internal combustion engines depend for their maximum power upon a volatile fuel, which, when mixed in correct chemical proportions with oxygen (air) and exploded, occupy greater volume than previously, we assume that the greater the variation in the cubical contents before and after, the greater the power generated. Heat generated by the explosion of the mixture causes the cylinders of air-cooled engines to become very hot, and the tendency must be to heat the incoming mixture, or *vice versa*, to allow much less to occupy the cylinder space due to the expansion of the gases on the suction stroke. Boyle's law of expansion of a gaseous mixture says that

"gases expand  $\frac{1}{273}$  (one two hundred and seventy-third) of its volume for every rise of one degree in temperature." Therefore, if a cylinder heated from, say,  $50^{\circ}$  F. to  $300^{\circ}$  F. were still working, it follows that (being only a 500 c.c. engine) half the quantity of power will be generated, due to only half the quantity of gases being admitted.

My opinion is that, as the heat increases, the mixture allowed to enter the cylinder decreases, until the quantity entered is so small that after explosion the increase in volume is so small that power drops off and the machine stops. Upon cooling again, the engine is willing again to generate full power, when perfect vaporisation takes place at the lowest possible temperature.

While not wishing to deprecate the ideas of your correspondent, I hope my theory may be enlightening.

CLIFFORD C. FENTON.

Sir,—With reference to the article in your issue of the 31st ult. by Mr. C. H. Stephenson I beg to call attention to the following: The immediate cause of electric conductivity in a gas is not rise in temperature but ionisation. Pure gas, free from ions, has a very high resistance. The passage of the first spark increase the ionisation, thereby reducing the resistance of the gas in the gap. Ionisation by any other means, e.g., by X-rays, has the same effect.

What proportion of ionised gas may remain in the cylinder; how this will affect ignition at continued high engine speeds; the value of high temperature as an ionising agent on the gases in question, are all matters for investigation.

I have neither time, apparatus, nor reference literature to deal with these points at present, and I prefer not to write without authority. I therefore content myself with referring your correspondent, and others interested, to the chapter and references appended on the subject in Mr. W. C. D. Whetnam's excellent book "Experimental Electricity."

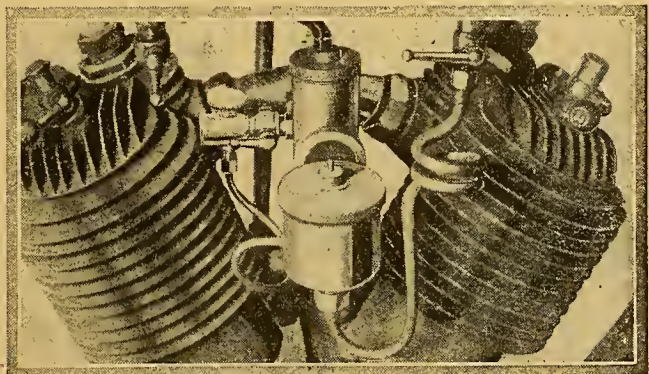
W. J. CRUTCH, B.Sc.

Lt., R.W. Fns.

### War Time Economy.

Sir,—When I come across a good thing I think it is only fair that others should know of it, and for a really economical little carburetter fitting, easily fitted by any amateur, I would recommend the Wilkinson by-pass as fitted to my own old pattern Amac carburetter on a 6 h.p. twin Jap. The illustration will explain. It is fitted into the back of the carburetter body, not into the inlet pipe, so that it can be easily removed with the carburetter intact; and in the position in which I have it it gets the hot air from the front cylinder head, and I find that, with the milled cap controlling jet one-fifth of a turn open, I can get even firing on both cylinders with main throttle shut, and 72 m.p.g. instead of 50 m.p.g. It stands to reason that the running on pilot alone gives maximum economy. Of course, the throttle must be opened occasionally when hill-climbing, but the running on the pilot jet only on the level is excellent. It also has another advantage, in that if the main throttle wire breaks at any time one can always run home on the pilot jet alone, as it can be adjusted from the saddle easily. The usual disclaimer.

C. PALMER.



Wilkinson by-pass attached to Amac carburetter on a 6 h.p. J.A.P. engine. (See accompanying letter from C. Palmer.)



### Petrol Allowances.

Sir,—I have been much interested in the controversy arising out of the petrol licences and the tests of petrol and paraffin as fuel for motor cycles.

As we motor cyclists have been done a great injustice by the meagre allowance of petrol allotted to us, I contend that when petrol, which is now a mixture of, say, 50% paraffin, is purchased, only the actual amount of pure petrol be inserted on the licence. By taking my proportion of paraffin in petrol we could then get twelve gallons of fuel for our cycles in three months.

The point arises as to whether this procedure comes within the meaning of the Act. A.P.R., R.N.

Sir,—I would like to know if any reader of *The Motor Cycle* has been served as I have. I see by the papers that all applications for petrol sent in at the proper time have now been dealt with. I do not know how I can obtain my present supply. My census paper was filled up, and returned from my local post office in July with postal order for 3s. I have written to the Petrol Committee three times, but cannot get any reply. H. CHADWICK.

Sir,—My treatment at the hands of the Petrol Committee may interest you. I am a special constable and use my Douglas for police work *only*—at my expense, of course. I am the only motor cyclist attached to our station, and I have very important duties to carry out in the event of air raids. In my petrol census return I asked for three gallons per week, and was granted the usual six gallons per three months. This I promptly returned, with a certificate from my inspector, pointing out my important duties, to which they replied, "That owing to the shortage," etc., they were unable to grant me more than six gallons per month. SPECIAL.

Sir,—I am the relieving officer and registrar of births and deaths for a country district covering 25,000 acres with no railway facilities. I have to go round my district weekly for relief and registration purposes, covering at least eighty miles per week. I asked for six gallons of petrol per month; granted six for three months. The same amount is allowed to motor cyclists for pleasure. It is quite evident some business men are required on the Petrol Control Committee. H. W. FETCH.

### The Silver Paraffin Vaporiser.

Sir,—I have read Mr. Durant's remarks with interest, but from experience I generally mistrust such sweeping assertions of lack of novelty so glibly put forward.

In the present case I have little faith in the allegation, if it is no more accurate than the statements: first, that if the device were protected in 1903 "the patent would have expired" (ignoring the fact that British patents may last for fourteen years), and, secondly, "no protection numbers stamped on it *such as the Patent Office requires*." (There are no such requirements.) H.W.K.J.

Sir,—I should be obliged if you would allow me through your columns to contradict Mr. A. Durant's statement, in so much that no letter from me has been sent for publication prior to this, *re* vaporiser, to any editor. No vaporisers have been sent out or fitted to a motor cycle for public use; therefore Mr. Durant could not have seen it, as he alleges.

Further, I may remind Mr. A. Durant and your readers that the vaporiser as fitted to the Quadrant is fully protected, and doubtless the Quadrant people are sufficiently intelligent to know how to protect their rights. T. SILVER.

Sir,—Referring to Mr. Silver's vaporiser, the idea is not new, for in 1904-5 I fitted a similar arrangement to the induction pipe of a Humber tricar to counteract the abnormal condensation in the very long induction pipe with which, you may remember, that machine was fitted. The jacket was connected up with a Y piece to the same pipe that conducted hot gases from the exhaust pipe to the Longuemare carburettor heating jacket, and both the jacket and induction pipe had to be heated when running on the so-called Borneo spirit, which I used at that time, otherwise the engine fired very erratically or not at all in cold weather.

I have in the making and shall fit a similar arrangement to my present machine, though I am not using paraffin, but another substitute which requires vaporising.

The arrangement is only an adaptation of the vaporiser of oil engines of the Priestman and other types, and is such common knowledge that it will be fitted by the majority of engineering motorists within a short time, and no doubt they will be thankful that a manufacturer is in a position to supply them, should they not have time to be able to make it themselves. ADAPTABLE.

Preston.

### Three or Four Wheels?

Sir,—There is a truism in Mr. S. L. Burnard's letter, which appeared in your issue of August 31st. He remarks that abuse is no argument. Perhaps that explains why so little notice was taken of his previous letter! Who started the abuse?

Mr. Burnard's views may be typical of those of a large section of the motor cycling community, but will their views be the same in five years' time as they are to-day? Surely we should judge an invention by its future value, and the question of appearance at the outset is of minor importance. And I might ask how many machines—both sole and combination—at present on the market can be considered as anything but ugly? The majority—yes, the majority—are clumsy, ungraceful, and inartistic. There are a few—the A.B.C., the Henderson, the Allon, the Lea-Francis, and the Scott which are actually pleasing to the eye. Yet six years ago the Scott was laughed at, simply because it was unconventional. And who dare laugh at it to-day? So Mr. Burnard had better ask himself whether he is not at present in the position of the scoffers of six years ago.

At any rate, I intend buying a Scott motor cycle next spring, and I hope one day I shall have the pleasure of meeting Mr. Burnard in his new Scott sociable, his face wreathed in smiles. NORMAN WILLIAMS.

### A District Nurse's Mount.

Sir,—Your readers may be interested to hear that I am finding a 24 h.p. two-stroke lightweight Levis extremely useful for covering a scattered district, where I am working during the war. The second day of possessing my machine I did forty-five miles, revisiting an ex-district. It was only my third time on a solo machine.

I am having great satisfaction and practically no troubles from the bicycle, and the small troubles that have occurred are merely those through over-oiling and other amateur mistakes from which, I expect, we all suffer at first.

I strongly advise all war workers, especially women, who have distances to go, to obtain a lightweight and be independent of these present-day erratic train services. I find a pair of overalls over my skirt and apron and a short, narrow nurse's cloak over that, quite easy for both riding and working purposes. NURSE PA 2282.



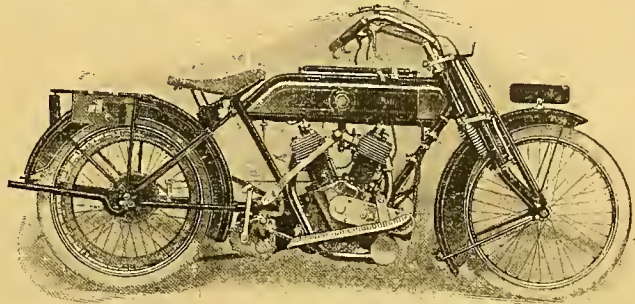
A nurse who uses a Levis in her professional duties.  
(See accompanying letter.)



# Nothing succeeds like-the "SUN"

TREDEGAR MOTOR CYCLING CLUB'S SPEED TRIALS, JULY 13.

## SUN-J.A.P. 6 H.P.



### FIRST & SECOND SIDECAR CLASS

IN COMPETITION WITH "HARLEY-DAVIDSON" 7-9, "ENFIELD" 8 H.P. Etc.

### FIRST & SECOND SOLO CLASS

WE CAN  
SUPPLY  
THE  
SPEEDIEST  
HEAVY WEIGHT

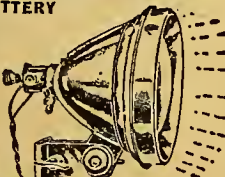
WRITE FOR LIST OF SPEED MODELS.  
**THE SUN CYCLE & FITTINGS CO., LTD.,**  
MAKERS OF THE SPEEDIEST LIGHTWEIGHTS,  
**ASTON BROOK STREET, BIRMINGHAM**

WE CAN  
SUPPLY  
THE MOST  
RELIABLE  
HEAVY WEIGHT

#### Volex MOTOR CYCLE LIGHTING.

##### "VOLEX" DRY BATTERY MOTOR CYCLE HEAD LAMP OUTFIT.

Also supplied in  
Sidecar Outfit at  
same price.



Includes "Volex" Giant Dry Battery, Conducting  
Cord, Switch, and Penetra Motor Cycle Head or  
Sidecar Lamp, with Bulbs.

Price 32/6 complete outfit.

The battery can be fitted in Sidecar Bottom or  
carried in Satchel which can be attached to the  
frame or Motor Cycle. The Dry Battery will  
give about 80 hours' light, and will hold up in  
stock for over 12 months.

Spare "Volex" Giant Battery, 6/6.



##### THE "VOLEX" GIANT DRY BATTERIES.

For Motor Cycle and Sidecar  
Lighting and Ignition Starting  
they are excellent, and have no  
superior. "Volex" Batteries are  
recommended for export.

4 volts, size 6 1/2 x 3 in. square, 6/6  
each. 6 volts, size 6 1/2 x 4 x 3 in.  
8/6 each.

##### THE "VOLEX" AERO DRY BATTERY. British Made.

A very convenient  
size for many pur-  
poses, such as Motor  
Cycles, Cycle Caps,  
etc. Suitable for igni-  
tion, lighting, electric  
horn operation. Holds  
up in stock for years.

4 volts, size 6 1/2 x 4 1/2 x 2 1/2 in. .. Price 8/-.  
6 volts, size 6 1/2 x 6 x 2 1/2 in. .. Price 11/-. ..



##### THE "VOLEX" EMPERAL BATTERY. British Made.

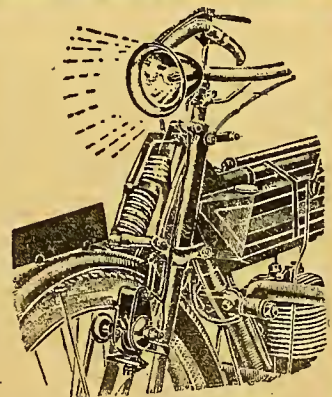
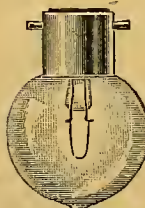
Of particularly heavy capacity,  
recommended for Motor Car,  
Boat, or Engine Ignition; for  
lighting, actuating horn, etc.  
Recommended for export, and  
in conjunction with our  
"Volex" Special Metal Filament  
Bulbs about 150 to 200  
hours' light is obtainable.

4 volts, size 6 1/2 x 7 1/2 x 2 1/2 in. .. Price 10/6.  
6 volts, size 6 1/2 x 5 x 5 in. .. Price 14/6. ..



##### THE "VOLEX" Special Metal Filament Bulb

For use with our  
"Volex" Dry Bat-  
teries, ensuring  
maximum burning  
hours. 4 and 6  
volts, min screw  
cap, 1/- each. 4  
and 6 volts, small  
B cap, 1/6 each.



##### "VOLTALITE."

Self-Generating Electric Motor Cycle LAMP.  
British Made. The FIRST Cost the ONLY Cost.  
The lamp which produces by the movement  
of the machine an inexhaustible supply of  
electric light to illuminate brilliantly the  
head lamp at no cost whatever. Fitted with  
Hoffmann Ball Bearings. Complete with  
head lamp and metal filament bulb, ready  
for use, £4/4. Post free.

**Ward & Goldstone**  
SALFORD MANCHESTER

(Box 17), Sampson Works.  
Contractors to H.M. Government.

TELE phone—7083-4-5-6 Central.  
grams—"Multum, Manchester."  
Established 1892.

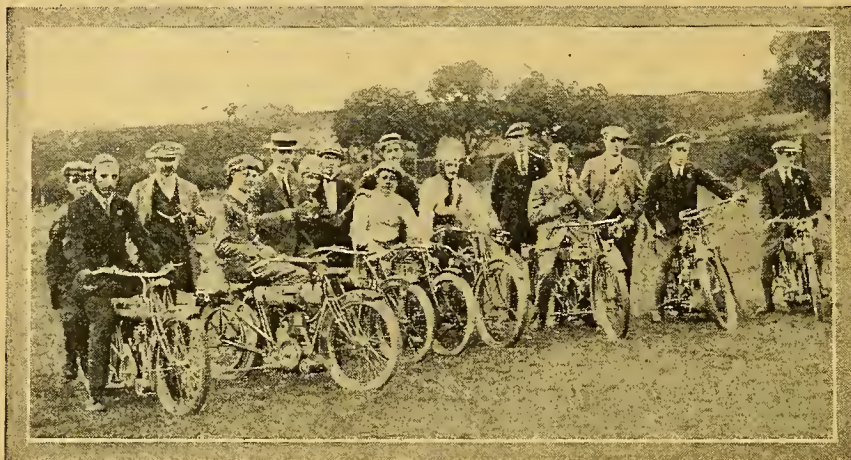
In answering these advertisements it is desirable to mention "The Motor Cycle."



## A TWO-STROKE AFTER 800 MILES ON PARAFFIN.

WE know of a rider of a Scott who has been experimenting with paraffin and paraffin-petrol mixtures, and has now covered over 800 miles with this fuel, the last 600 miles having been run entirely on neat paraffin, petrol only having been used for starting purposes. Fearing lest unevaporated paraffin might be having detrimental effects on the piston rings and bearings, the engine was recently dismantled, and it is interesting

to hear that all the rings were quite free in their grooves, while the amount of carbon deposit anywhere was extremely small and of a decidedly soft nature. All the bearings were in perfect condition, and seemed amply lubricated. A Zenith carburetter was used without any device for heating the fuel, not even a hot air intake. Heat is most necessary if the best results are to be obtained from heavy fuels.



## A WEEK-END CHARITY RACE.

Motor cyclists who competed in the two lap pursuit race that formed part of the programme at the Coventry and District Cycling Clubs' Alliance annual charity sports held on Saturday last.

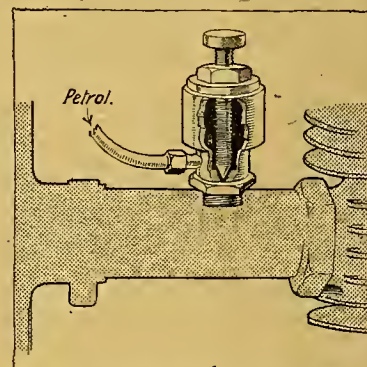
### Average Prices OF Second-hand Machines.

Make.	Year.	H.P.	Average for last week.	Latest average obtainable
A.J.S. ....	1914 6	3-sp. sidecar ..	£63	—
" .....	1916 2½	3-speed .....	—	£52
" .....	1915 6	3-sp. sidecar ..	£86	—
Ailon .....	1915 2½	2-sp. 2-stroke ..	—	£32
Bat .....	1914 5-6	3-speed .....	—	£45
Bradbury ..	1913 4	3-speed .....	—	£28
" .....	1912 4	single-speed ..	£24	—
B.S.A. ....	1916 4	3-sp. sidecar ..	—	£68
Chater-Lea ..	1914 6	sidecar .....	—	£44
Clyoo .....	1914 6	3-sp. sidecar ..	£50	—
Douglas .....	1915 2½	3-speed .....	—	£49
" .....	1915 2½	2-speed .....	£45	—
" .....	1914 2½	2-speed .....	—	£36
Eosfield ....	1914 6	2-sp. sidecar ..	£57	—
" .....	1915 6	2-sp. sidecar ..	£66	—
" .....	1915 2½	2-sp. 2-stroke ..	—	£30
" .....	1916 3	2-speed .....	£47	—
" .....	1914 3	2-speed .....	—	£34
H. Davidson ..	1915 7-9	3-sp. sidecar ..	£66	—
Humber .....	1913 3½	3-sp. sidecar ..	—	£35
Indian .....	1915 5	3-speed .....	—	£47
" .....	1915 5	3-sp. sidecar ..	—	£61
" .....	1916	Powerplus sidecar	£80	—
" .....	1914 7	3-sp. sidecar ..	£49	—
" .....	1913 7	2-sp. sidecar ..	—	£38
James .....	1914 4½	3-sp. sidecar ..	£44	—
" .....	1914 4½	3-speed .....	—	£40
" .....	1916 4½	3-sp. sidecar ..	£78	—
Levis .....	1915	Popular .....	—	£26
" .....	1914 2½	2-stroke .....	£24	—
Matchless ..	1915 8	3-sp. sidecar ..	£74	—
" .....	1914 8	3-sp. sidecar ..	—	£50
New Hudson ..	1915 2½	2-speed .....	£25	—
" .....	1915 4	3-sp. sidecar ..	—	£59
New Imperial	1915 2½	2 speed .....	—	£26

B26

## THE KAY QUICK-STARTING DEVICE.

IN view of the restriction in petrol supplies at the present time, motorists have found it necessary to use one of the many petrol substitutes now on the market. The greatest objection to the use of these substitutes is the difficulty of starting the engine when cold. With the use of the device in our illustration (designed and patented by Mr. Kay, of Halliwell, Bolton) this trouble is avoided, and the only thing required when starting the engine is to turn on the tap of the small auxiliary tank. The engine will then start in the usual way, although the carburetter may,



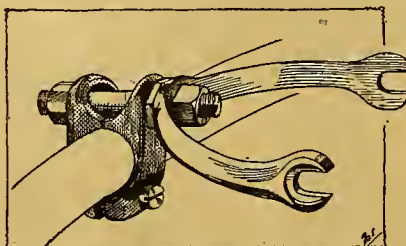
Key adjustable needle valve for supplying petrol to the induction pipe.

be full of substitute. When under way the tap should be turned off, and the engine will continue running on the substitute.

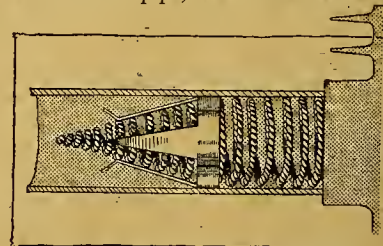
The device consists of a small drip-feed needle valve, screwed into the inlet pipe, which is set to suit the engine, and does not again require to be touched. The petrol is fed from a small auxiliary tank fitted under the main tank. It can be fitted to any engine when a small hole has been drilled and tapped in the inlet pipe. The use of petrol with this device is practically infinitesimal, and half a gallon of petrol would last for a long period.

### THE PEACOCK VAPORISER.

THIS is a little contrivance which when placed in the induction pipe is claimed to increase the vaporising surface and also to transmit heat along the induction pipe, and thus tends to



A new generator bracket suitable for fixing to the handle-bar or frame, produced by the F.R.S. Lamp Co., of Pershore Street, Birmingham. The clip is finished dull black and other parts are plated.



check the entrance of any liquid fuel into the engine. When paraffin is used this is a point of considerable importance. The device is manufactured by Peacock, Cobb, and Co., of Birmingham.



# QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Broken Valves.

?

I have a Calthorpe Junior, which causes a lot of trouble with exhaust valves breaking. Can you suggest a remedy for this?—W.T.

Your trouble is probably caused by any of the following: Valves made of poor material. Overheating, caused through too large a jet, or a choked exhaust outlet. Incorrect valve timing, exhaust valve opening too early, or retarded ignition. Too strong valve springs. Driving too hard.

## Law Regarding Brakes.

?

I have just purchased a motor cycle, and should be pleased if you will give me advice on the following question: The machine is second-hand, and is only fitted with one brake (front), and the machine does not appear to ever have been fitted with another, but I am told that it is breaking the law to ride with less than two. Is this so?—H.F.C.

Yes, it is illegal to ride a machine fitted with only one brake, besides being extremely dangerous using one fitted to the front wheel only. You will probably be able to obtain a belt rim or band brake from any large accessory firm.

## Racing Engine in Free.

?

In the "Questions and Replies" section of your valuable paper of August 10th "N.B.H." writes you re 8 h.p. J.A.P. carburettor trouble, and you reply that allowing the engine to race in free owing to a leaky throttle is likely to do damage to the engine. I have had the same symptoms with my 5-6 h.p. twin overhead J.A.P., but have felt no inconvenience until recently. My big end ball races seized up without warning. Would you attribute this seizure to be caused by too rich a mixture, as the lubrication is O.K.? The carburettor is a J.A.P. with barrel (revolving) throttle, which to all appearances closes tight, but yet supplies enough mixture to run the engine when it is shut off.—E.

A seized big end is more likely to be due to lack of lubrication. Allowing the engine to race when in free does considerable damage to it, ruining the bearings and generally wearing the engine out. Your throttle barrel may be worn, which causes it to allow a certain amount of gas to escape. Perhaps you have rather too large a jet fitted.

## Running on Acetylene.

?

In view of the possibilities of acetylene being used as the motive force for motors, I should like you to answer the following questions: (1.) Would an ordinary cylinder casting withstand the extra strain of the explosion? (2.) Is more air required for acetylene than for petrol? (3.) Would the explosion be more violent and require a later timing?—V.M.

(1.) Acetylene is a very dangerous gas to use as a fuel, as the explosion is more in the nature of a detonation than an explosion. The average cylinder would not stand the explosion of a full charge. (2.) No, about the same proportions, but, if anything, slightly more. (3.) This is answered in No 1. The ignition timing might require to be retarded.

## IMPORTANT NOTICE.

### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

## Cylinder Angle.

?

I have an early model 5 h.p. twin-cylinder machine with accumulator and coil ignition. How can I tell the angle degree, as I wish to fit a magneto to this machine, as it is a good puller and worth the expense? I should say the date is about 1907.—G.B.

If the makers of your machine are unable to tell you the angle of the cylinders it will be necessary to measure the angle at which the cylinders are set in relation to the crankshaft. We think perhaps the easiest way to do this would be as follows: Take a piece of paper and make a template exactly corresponding with the base of each cylinder. Continue these lines until they meet, then with the aid of a protractor, a small instrument which you can purchase at most stationers for a few pence, measure the angle of the lines so formed by the two cylinder bases. When you have ascertained this angle subtract it from 180°, and it will give you the angle at which the cylinders are set.

## Timing the Spark.

?

I have a new 2½ h.p. two-stroke single-speed motor cycle. I have had to return the magneto to the makers. Would you kindly tell me (1) the easiest method of timing when I replace the magneto? (The thing I do not really understand is how to measure the correct distance of the piston from the top of its stroke before replacing the magneto chain.) (2.) Would it be any advantage to have a longer exhaust pipe (for silencing purposes)? (3.) Would a too small jet make any great difference in hill-climbing?—T.H.V.

(1.) The following is the correct method of timing the ignition: Place piston at the top of its stroke; this can be ascertained by putting a wire through the sparking plug hole, and feeling when the piston has travelled as far up the cylinder as possible. The ignition lever should be fully retarded, while the chain should be connected up with the contact points just about to break. (2.) Yes, a long tail pipe to the silencer renders a machine much more silent. (3.) A small jet reduces the power to a certain extent, and so will too large a jet. This also causes four-stroking, while a small jet may cause popping in the carburettor.

## Compression Ratio.

?

(1.) I understand that the compression of a Douglas engine is very low. What should it be? Is there any way of testing it short of using a compression gauge? (2.) I understand that a magneto generates an alternating current. That being the case, would a two-cylinder magneto produce an alternating or direct current at each plug respectively? (3.) At how many revolutions per minute is the horse-power of an engine usually rated at?—G.B.S.

(1.) You can find the compression ratio by measurement, but the actual pressure can only be found by means of a pressure gauge. The pressure, as a rule, will be between 60 lb. and 70 lb per sq. in. The ratio is usually about 4 or 5 to 1. The compression ratio is obtained by dividing your compression space plus piston displacement by the compression space, which gives you a ratio of so much to 1. (2.) The current generated in the primary winding of any magneto is alternating, but the current at the plug points is best described as merely an electrical impulse, as it could hardly be described as either alternating or continuous. (3.) At about 1,500 to 2,000 revolutions.



**Knocking on a Two-stroke.**

**?** Can you tell me what is the matter with my 1916 two-stroke, fitted with Dixie fixed ignition? Unless I time it practically on top of the stroke (about 1 to 1½ mm.) the engine knocks horribly. The other day on a run I was troubled with this all the way, and stopped at the bottom of Reigate Hill to cool down (ignition then advanced about 5 mm.). I ascended the hill well with no trace of knock, and the bicycle ran twenty miles home magnificently, very fast, and no knock. Recently, however, it started again (pure petrol).—C.G.D.

Your trouble may be due to excessive carbon deposit or a faulty plug, causing pre-ignition, or to either poor or insufficient lubricating oil. You should be able to give at least 5 mm. advance. Make sure the piston top is quite clean, and that the piston rings are not gummied up in their grooves—a common fault with air-cooled two-strokes.

**Grinding Noises.**

**?** About a month ago I bought a 3½ h.p. Rudge-Multi from a garage owner, and it does not give me satisfaction. There is always a heavy grinding noise from the engine. I am told it is the plate clutch. At times the engine makes a tinkling noise, which is very infrequent now. The engine overheats very much and very quickly, and pulls badly on the level and hills. Even on the lowest gear it pulls badly on hills. There is plenty of compression, and recently I got the valves ground and the piston and cylinder cleaned, but it has made no alteration or change in the running. There is a slight bend in the petrol pipe, but it gets sufficient petrol. The other day I found it hard to start as the engine was too hot, seemingly. I put a new plug in, and it immediately fired, but began to misfire very much. I then cleaned the old plug and got started, and it fired all right. I wonder if the timing has slipped a little?—S.B.

It is almost impossible to say what is wrong with your machine without actually seeing it. The cause of the grinding may be due to a broken ball race either in the gear or the engine. We can only advise you to overhaul the gear and the engine thoroughly, and see that there is nothing binding or rubbing anywhere, and that all parts, including the clutch, are adequately lubricated. The overheating may be due to any of the following causes: Too large a jet, choked exhaust outlet, and insufficient valve lift, perhaps due to too great a tappet clearance. Whatever is causing the grinding noise may also be responsible for the overheating, owing to the friction. The bend or kink in the petrol pipe would not cause the trouble. The misfiring was probably caused either by the new plug having the points wrongly adjusted (there should be a gap of about ⅜ in.) or by the plug being faulty. The timing would not have this effect.

**Too Rich a Mixture.**

**?** You may be able to offer some suggestion as to the solution of a little puzzle I am experiencing. My mount is a two-stroke, petrol lubrication. Recently a sudden loss of power occurred, and as a lot of oil was thrown out from the joint of crank case, I thought this might be due to a loss of crank case compression. This was remedied by a brown paper and seccotine packing, and at the time of taking down a rather large collection of carbon was found in the transfer passage. This and all other parts were cleaned, and on the return of the machine to the road I found its old power had returned with interest. After the first journey, however, it has now developed another symptom. Whenever a start is made from cold (or after the engine has ever so slightly cooled down during a stop) remarkable difficulty occurs in starting. Usually it immediately fires the charge about twice, and then, running along with the momentum this gives, stops firing. A quick manoeuvring of throttle and extra air (without any defined method, so far as I can see) usually then starts it eight-stroking for about twenty yards or so, then four-stroking for about a further fifty yards, and finally, in about 150 to 200 yards, it settles down to the correct two-stroking, and gives no further bother until the next stop and cool down. Sometimes this procedure is varied, and, instead of eight-stroking, it merely smothers the plug with oil, and no firing of the charge then occurs at all. When this happens, patient changing and cleaning of plugs have to be done until, finally, a charge or two is fired. Magneto spark occurs a good ¾ in. from top of compression stroke.—S.A.P.

Your trouble is evidently due to too rich a mixture, which perhaps you did not notice previously owing to the leaky crank case joint. Try a slightly smaller jet.

**EXPERIENCES WANTED.**

"R.S.J." (Heversham).—8 h.p. British Excelsior. Consumption and reliability.

"J.W." (Grantham).—Rudge Multi and sidecar. Most suitable belt; also petrol consumption.

**RECOMMENDED ROUTES.**

**BRIGHTON TO TIDWORTH.—H.R.A.**

Brighton, Shoreham, Steyning, Pulborough, Petworth, Midhurst, Petersfield, Winchester, Andover, Ludgershall, Tidworth.

**BIRMINGHAM TO FOLKESTONE.—E.D.P.**

Birmingham, Coventry, Daventry, Towcester, Dunstable, St. Albans, Barnet, Enfield, Chingford, Woodford, Barking, Tilbury, Gravesend, Chatham, Maidstone, Charing, Ashford, Hythe, Folkestone.

**LEICESTER TO BRIDLINGTON.—J.C.**

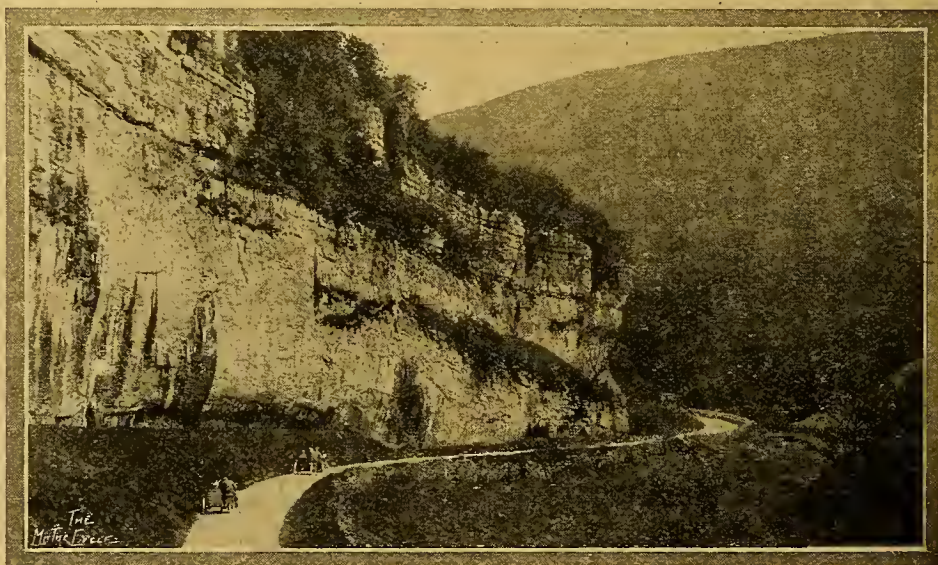
Leicester, Melton Mowbray, Grant-ham, Leadenham, Lincoln, Brigg, New Holland, Hull, Beverley, Great Driffield, Bridlington.

**IPSWICH TO CHESTER.—C.S.B.**

Ipswich, Stowmarket, Bury St. Edmund's, Newmarket, Cambridge, Huntingdon, Thrapston, Kettering, Market Harborough, Husbands Bosworth, Lutterworth, Atherstone, Fazeley, Weeford, Weston, Wellington, Hodnet, Whitchurch, Malpas, Chester.

**NOTTINGHAM TO REDRUTH.—S.S.D.**

Nottingham, Long Eaton, Isley Walton, Whitwick, Coalville, Hugglescote, Hinckley, Coventry, Warwick, Stratford-on-Avon, Evesham, Cheltenham, Stroud, Nailsworth, Bath, Wells, Glastonbury, Durston, Taunton, Cullompton, Exeter, Moretonhampstead, Two Bridges, Tavistock, Callington, Liskeard, Lostwithiel, St. Anstell, Truro, Redruth.




A view in Miller's Dale. This and other Peak district beauty spots were described on pages 182 and 183 of our last issue.



# BOWDEN

## WIRE LTD.

### LONDON



VICTORIA ROAD  
WILLESDEN JUNCTION.  
N. W.

*Established 1897.*

**Manufacturers of**  
Bowden Wire and of all  
Levers and Accessories  
used in its application.

*Trade Marks  
and Names:*

Bowdensolo	Bowdenoir
Bowdenamel	Bowdenite
Bowdensilver	Bowdenbrass

*Orders filled only  
as Government  
requirements permit.*

The **ONLY BELT** for Gradual Gears.



THE  
"ZILLA" BELT  
LEATHER & RUBBER.

**UNBREAKABLE:** Because the whole pulling strain is taken by a steel chain core, manufactured to withstand from 3 to 4 times the pulling strain of any motor cycle yet built.

**NON-SLIPPING:** Because the leather and rubber washers on the chain have 50% greater driving surfaces than leather or rubber belts, and the combination of leather and rubber will grip the driving pulley in any weather.

**FASTER DRIVE:** Because the washer and chain construction gives a flexibility which allows the Zilla Belt to "hug" the smallest pulley without that great internal friction, and force required to bend an ordinary belt round it.

**JUST THE THING FOR SIDECAR WORK,** especially in changeable weather or in exposed positions.

THE BELT THAT SAVES 10% OF PETROL.

## SPECIAL OFFER.

7 7/8"	1"	1 1/8"	1 1/4"	USUAL PRICE for 8ft.
28/-	30/-	34/-	36/-	
22/-	24/-	26/-	28/-	SPECIAL PRICE for any length up to 8ft. Plus 8d. Postage.

The "ZILLA" is the **ONLY PERFECT Belt.**  
Get a "ZILLA" and end all your Belt troubles

All orders delivered per return from stock.

The ZILLA PATENT BELT COMPANY, Ltd.,  
101, Great Western Street, MANCHESTER.

# I SUBMIT

there is a solid reason why you should adopt a **BINKS CARBURETTER**, viz.: **YOU CUT YOUR FUEL BILL IN TWO** if you adopt my system and use my fuel. You can, of course, use petrol or benzol without alteration.

Price of  
Carburetter  
complete--

**49/-**  
plus 10% extra  
war cost.

**FIT ANY  
MACHINE.**

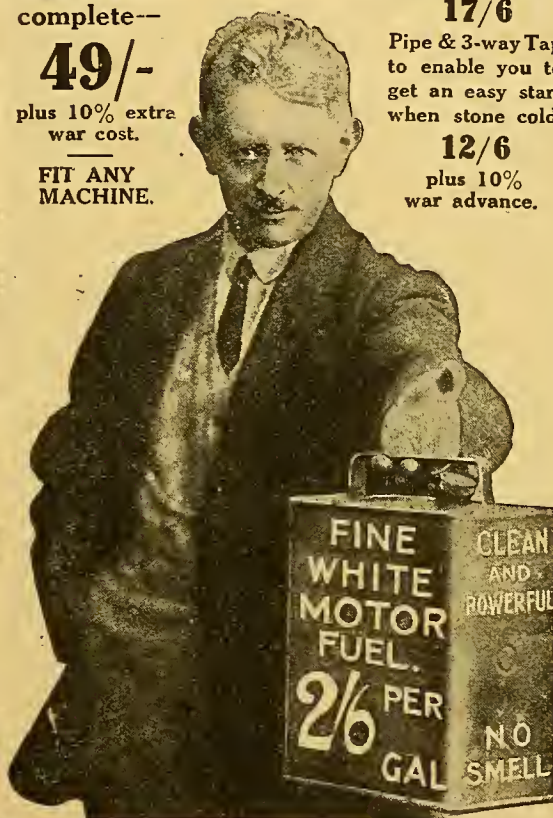
Small extra Tank  
to clip on Frame,

**17/6**

Pipe & 3-way Tap  
to enable you to  
get an easy start  
when stone cold,

**12/6**

plus 10%  
war advance.



## READ!

### MY 3-PHASE JET DAMPING CARBURETTERS

have such perfect vapourising properties that they enable you to use fuel at 2/6 per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at 2/9 a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

## C. BINKS, Ltd., Eccles.



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal to perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £20 in value, a deposit fee of 2s. 6d. is charged, when under £20 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**1913** Abingdon King Dick, 3½ h.p., clutch, in really splendid order, overhauled; £16 cash.—Apply, 44, Selwyn St., Rotherham. [X7001]

### A.J.S.

**1916** A.J.S. Combination in stock.—Cross, Agent, Rotherham. [X7000]

A.J.S., 2½ h.p., 3-speed, 1916, new, in stock.—Pickering, Mardol, Shrewsbury. [X7022]

A.J.S., 2½ h.p., 3-speed, 1915, in fine condition; £46, complete.—Baker, Donnington House, Wyld Green. [X6751]

A.J.S. 6hp. 1914 Combination, £52; 1915 6hp. solo, £44; new 1916 4hp. model, overdue, £76.—Crow Bros., Guildford. [X1398]

A.J.S., 1915 6hp. Combination, complete with all accessories, spare wheel, hood, screen; £92/10.—Walsall Garage, Walsall. [X6960]

**1913** A.J.S., 5hp., with 2 speeds, countershaft, kick starter, clutch, sidecar; bargain, £42/10.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [X1480]

**1915** 4hp. A.J.S., new condition, done 3,500, fitted lamps, horn, wheel discs, splendid machine; accept nearest £60; exchanges.—Walton's, Dawson Sq., Burnley. [X6972]

## CASH OR EXCHANGE.

### NEW MODELS.

**MORGAN** de Luxe, M.A.G. engine, hood ... £127 0  
**EXCELSIOR** (American), 7 h.p., 3 speeds ... £75 0  
**OVERLAND**, 12 h.p., 4-seater, electric starting and lighting (4.4s. tax) ... £225 0  
**RITZ** 4-cylinder 2-seater Light Car ... £145 0  
**ROYAL RUBY**, 2½ h.p., 2-speed; 2-stroke ... £36 10  
**ROYAL RUBY J.A.P.**, 2½ h.p., 2-speed ... £39 10  
**REX**, 6 h.p., kick start, and Rex Sidecar ... £71 0  
**WILLIAMSON** Cy-clac, W.C. Douglas eng. £126 0

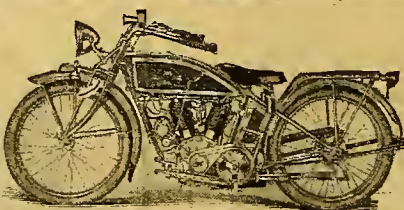
### 1916 (U.S.A.) EXCELSIOR.

7 h.p., twin, 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

A few late 1915 new 7 h.p. 3-speed models, with electrical equipment, at pre-tax price of £71 10s.

Exchanges quoted. Easy payments 2½% extra. We are sole Yorkshire distributors. Liberal terms to trade.

Coachbuilt PERFECTION SIDECARS to suit, £13 10.



### SOLO MACHINES.

**VILLIERS**, 1915, 2½ h.p., 2-speed ... £27 10  
**DOUGLAS**, 1914, 2½ h.p., 2-speed ... £37 10  
**DOUGLAS**, 1914, single gear, chain-belt ... £25 10  
**DOUGLAS**, 1913, 2-speed ... £34 10  
**INDIAN**, 1914, 7 h.p., 2-speed, spring frame ... £29 10  
**INDIAN**, 1912, 4 h.p., 2-speed ... £26 10  
**1912** 3½ h.p. **ZENITH-GRADUA** ... £26 10  
**1912** 3½ h.p. 2-sp. **BRADBURY**, chain drive ... £25 10  
**1912** 6 h.p. 2-speed **CLYNO** ... £23 10  
**1912** 2 h.p. **HUMER** Lightweight ... £15 10  
**HUMBER**, 3½ h.p., 2-sp ed ... £25 10  
**RUDGE**, 3½ h.p., F.I., good order ... £19 19  
**EXCELSIOR**, 3½ h.p., 3-speed, Druid forks ... £17 10  
**ALLDAYS**, 3½ h.p., 2 speeder ... £25 10  
**TRIUMPH**, magneto, spring forks, new tyres ... £14 10  
**DOUGLAS**, 1911, 2-speed, wants attention ... £18 10  
**N.S.U.**, 3½ h.p., 2-speed, spring forks ... £17 10  
**F.N.**, 2½ h.p., 2-speed, shaft drive ... £17 10  
**REX**, 1910, 3½ h.p., semi-T.T. ... £16 10  
**TRIUMPH**, 1911, 3½ h.p., 3-speed ... £26 10  
**TRIUMPH**, 1909, 3½ h.p., 2-speed ... £24 10  
**TRIUMPH**, 3½ h.p., clutch model ... £21 10  
**TORPEDO**, 3½ h.p., 1911 model ... £17 10  
**MINERVA**, 2½ h.p., wants attention ... £4 10  
**DOUGLAS**, 2½ h.p., twin, spring forks ... £15 10

### SIDECAR COMBINATIONS.

6 h.p. (new) **REX** Sidette; reduced to ... £71 0  
**1916** 5-6hp. **COVENTRY EAGLE** Combination ... £72 10  
**1914** 7-9hp. 2-speed **INDIAN** Combination ... £53 10  
**1913** 7 h.p. 2-speed **ARIEL** and Sidecar ... £42 10  
**1913** 6 h.p. 2-speed **REX** and Sidecar ... £43 10  
**1911** 3½ h.p. 3-speed **TRIUMPH** and Sidecar ... £27 10  
**QUADRANT**, 7-9 h.p., 2-speed, twin, chain drive, and coach Sidecar. Fine lot ... £45 10  
**1912** 3½ h.p. 2-speed **PREMIER** and Sidecar ... £33 10  
**1909** 3½ h.p. 2-speed **TRIUMPH** and Sidecar ... £26 10  
**HAZLEWOOD**, 4-5 h.p., twin, and coach Sidecar, 3-speed countershaft ... £42 0

## Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone—766.

Telegrams—"Perfection."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the production of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

**1915** 2½ h.p. A.J.S., 2-speed, drop frame, lamp set, horn, perfect; £40.—Stout's Garage, Egremont, Cumberland. 'Phone: 13. [X305]

A.J.S. Late 1914 6hp. Combination, overhauled, in exceptional nice condition, 3 speeds, kick-starter, coachbuilt sidecar, complete; £60.—6, Warren St., London. [X1598]

### Alldays.

A **LLON**, 2½ h.p., 2-speed, 1916; in stock.—Pickering, Mardol, Shrewsbury. [X7023]

A **LLON**, 1916, accessories; owner at Front; bargain £26/10.—85, Dalberg Rd., Brixton. [X1436]

A **LLONS** in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [X1583]

A **LLON** (July, 1915), mileage 1,200, lamps, horn; offers wanted.—Holt, Horsforth, Leeds. [X1277]

**1914** 3½ h.p. 2-speed Alldays Matchless; £35, or near offer.—Parker and Son, St. Ives, Hunts. [X1618]

**2** 1 h.p. Alldays, 2-stroke; bargain, £22/10.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X1255]

A **LLON**, 2-stroke, quite new, never used; cost £36, take £30.—155, Goldhawk Rd., Shepherd's Bush. [X1267]

**COLMORE** Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [X7090]

A **LLDAYS** 2-stroke, single gear, excellent condition; £20.—A. Salter, 54, St. Andrew's Garage, Uxbridge. [X1358]

**1915** Alldays Allon, 2-stroke, splendid condition; £20.—Lock, 42, Leamington Park Villas, Acton. [X6978]

A **LLON** 2-speed 2-stroke, complete, almost new; 30 gns. or nearest.—Edwards, Branley Rd., Shodland, Kent. [X6726]

A **LLDAYS** Allon, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [X7053]

**1916** Alldays Allons, 2-speed models, in stock; £42; easy payments arranged.—Jones, Garage, Broadnew, Muswell Hill. [X1584]

A **LLONS**, new 1916 2-stroke 2-speed models, £42; exchange or easy terms arranged.—Wanchope's, 9, Shoe Lane, London. [X1452]

**1915** Alldays Allon, 2-speed, and accessories, in perfect condition; £27/10; seen any time.—Donnells Garage, 223, High Rd., Kilburn. [X1375]

A **LLDAYS** Allon, late 1915, 2½ h.p., 2-stroke, 2-speed, not done 1,000 miles, lamps, and horn; £32.—F. Durrant, Thorpe Satchville, Maiton, Mowbray. [X6948]

A **LLDAYS** Allon 2-speed 2-stroke, July, 1915, perfect condition, Palmer cord on back; appointment.—Orderly Room, R.D.C., Connaught Rd., Albert Dock. [X6919]

A **LLDAYS** Matchless, 1914, 2½ h.p., 2-stroke, Dunlop belt, Kempshall tyre, Amas, in excellent running order; bargain. £19; exchanges.—Iden Cycle Co., Thundersley, Essex. [X1333]

A **REAL** Beauty.—Alldays 2-stroke, guaranteed in perfect order, fast, powerful, lamps, tools, knee-grips, footboards, enamel, plating perfect; sacrifice for £20.—Webb, Jeweller, Chesterfield. [X7083]

A **LLON**, countershaft, new this month, disc wheels, mechanical horn, unscratched, perfect condition, running on Binks with petrol; sacrifice nearest to £35.—Christian, Carlton Bakery, Rugby. [X6985]



**MOTOR CYCLES FOR SALE.**

**Alldays.**

**ALLDAYS** Matchless, 1915½, 2½h.p., 2-stroke, speedometer, all accessories, variable jet and ignition, 120 i.p.s. on paraffin, spare petrol tank for starting, vapouriser; £26.—160, Denmark Hill, Camberwell. [1311]

**ALLDAYS** Allons, all models, from stock, also 1915 2-speed kick start De Luxe model, with Lucas accessories, 40 gns.; and 1915 2-speed hand clutch model, Lucas accessories, £38/10; and 1916 single-speed, only shop-soiled, £32/10, real bargain.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1343]

**Ariel.**

**ARIEL**, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [1585]

**1915 Ariel**, coach sidecar, 3-speed, kick starter; £48, or exchange lightweight and cash.—F. Wardle, Woodlesford, Leeds. [X7019]

**ARIEL**, 3½h.p., 3-speed, decompressor, speedometer, accessories, petrol, sidecar; £32, bargain.—96, Shrewsbury Rd., Forest Gate. [1435]

**1915 Ariel**, 3½h.p., 3 speeds, countershaft, excellent order; bargain, £45.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1481]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

**ARIELS**—3½h.p. combinations, with their latest refinements, delivered from stock, £52/10; easy terms if desired; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1329]

**Auto-Wheels**

**AUTO-WHEEL**, latest design, condition like new; £9; guaranteed.—Wanchope's, 9, Shoe Lane, London. [1453]

**AUTO-WHEEL**, latest model, perfect, £8/10; Hubber cycle attached, complete, £12/10.—Matthews, Pawnbroker, W. Croydon. [X6730]

**AUTO-WHEEL** and Chater-Lea hudy-buck tandem; £15/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1341]

**THREE** Genuine Wall Auto-Wheels, 1914 and 1915 models, little used, as new; £8, £9, £10.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X7044]

**Bat.**

**BAT**, 3½h.p., 1912, and coachbuilt sidecar; £18.—6, Warren St., London. [1599]

**BAT-J.A.P.**, 8hp, coachbuilt sidecar, 1913, small mileage, many spares, etc.; £40.—Chatterton, Princess St., Huddersfield. [X6866]

**BAT-J.A.P.**, 4½h.p. Twin, 1914, ridden under 1,000 miles, not used since beginning of war; owner still on active service; any trial or expert examination; £45.—31a, Broomfield Rd., Chelmsford. [X7065]

**Bradbury.**

**BRADBURY**, 4hp, clutch model, all good condition; £19/10, offer—455, York Rd., Wandsworth. [1533]

**BRADBURY**, 4hp, in first-class order, variable gear, good sidecar machine; £22/10.—Bunting, Harrow. [1603]

**1914 3½h.p. Bradbury**, 3 speeds; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0822]

**PETROL** Free with Bradbury 1913 3-speed, 26 gns.; also 1913 clutch model, 19 gns.—Rider Troward, 78, High St., Hampstead. Phone: 5392. [1485]

**BRADBURY**, 4hp, 1914 (November), 2-speed countershaft, Lambert coachbuilt sidecar, complete; £40, nearest offer.—Jones, Victoria Rd., Woodbridge. [1286]

**BRADBURY'S**—Two good second-hand combinations, both 1913 4hp, and fitted good coachbuilt sidecars; one 3-speed countershaft and clutch £32, the other 3-speed hub £26; guaranteed sound.—P. J. Evans, John Bright St., Birmingham. [X7061]

**Brough.**

**BROUGH**, 1916, 3½h.p. horizontal twin, countershaft 3-speed gear, kick starter, speedometer, Lucas lamp, horn, rear lamp, etc., ridden 2,600 miles, practically new; cost £74, accept £58; must sell it once.—King, c/o Sanderson, The Rowans, Milton Rd., Cambridge. [1521]

**Brown.**

**32** h.p. Brown, Mabon clutch, Bosch, spring forks, perfect; £12/10.—248, Bentley Rd., Doncaster. [X6993]

**B.S.A.**

**B.S.A.** New 1916 Models H and K actually in stock; no waiting.—Moss, Wem. [X6992]

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**B.S.A.**, 1915, all chain drive, 4½h.p., coachbuilt sidecar; £55.—Crow Bros., Guildford. [1399]

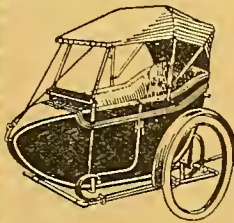
**1916 B.S.A.'s** in stock for immediate delivery; £62.—Parker and Son, St. Ives, Hunts. [1614]

**B.S.A.**, all models in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [1586]

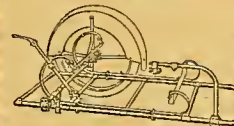
**B.S.A.**, all models; sole district agents; exchanges entertained; good allowances for old machines.—Walsall Garage, Walsall. [X6959]

**CORONET SIDECARS.**

We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28 x 3in. tyre and four point attachment.



Coronet Underslung Chassis.



TORPEDO SIDECARS, £9 15s.

**1916 HARLEY-DAVIDSONS.**

We can give Immediate Delivery, and we will make a big allowance for your old machine.

CASH OFFERS WANTED.	
4½ h.p. STAR, brand new £68 model, big single, 3 speeds.....	£55 0
2½ h.p. Stationary Petrol Engine, new £22 ros. model, magneto, 2 flywheels.....	£16 10
4 h.p. ZENITH, 1911, Gradua variable gear.....	£19 15
2½ h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc.....	£32 10
7-ph.p. PREMIER, 1914, 2-speed countershaft, with £13 ros. new coach Sidecar.....	£49 15
6 h.p. REX, 2-speed, magneto.....	£11 15
2½ h.p. DOUGLAS, 1910.....	£11 15
2½ h.p. MINERVA, magneto, variable gear.....	£8 15
7-ph.p. INDIAN, 1915, 3-speed, electrical model, and £18 Montgomery Sidecar.....	£69 15
1916 7-9 h.p. HARLEY-DAVIDSON.....	£80 15
1916 ditto, electrical model.....	£89 0
1914 Ford Touring Car, detachable wheels.....	£35 0
2½ h.p. EXCELSIOR, 1916, 2-stroke.....	£24 15
20 h.p. FORD Van, new, 1916 model.....	£130 0
20 h.p. FORD Van, 1915 model.....	£90 0
2½ h.p. TYLER, 1915, 2-speed model.....	£24 15
3½ h.p. TRIUMPH, 1910 model.....	£16 15
3½ h.p. LINCOLN-ELK, 1912 model.....	£13 15
3½ h.p. JAMES, 1912, 2-speed, chain drive, and coach Sidecar.....	£26 15
3½ h.p. HUMBER, 1913, 2-speed, Sidecar.....	£29 15
3½ h.p. PREMIER, 1913, 2-speed countershaft gear, belt and chain.....	£26 15
3 h.p. LINCOLN-ELK, 1911, magneto.....	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn.....	£25 15
1915 CALCOTT Light Car, dynamo lighting.....	£215 0
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar.....	£39 15
3½ h.p. HUMBER, 1911, 2 speed.....	£17 15
2½ h.p. MATCHLESS-J.A.P., 1910.....	£10 15
1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps.....	£89 0

**MISCELLANEOUS BARGAINS.**

New £5 weatherproof Magneto, £3 10s.; 1911 Rex frame and tank, 27/6; Long Lengths Steel Tubing, 1½ x 12g., 14g., 16g.; Bosch Magneto, 50/-; B. and B. Carburettor, 12/6; Amac Carburettor, 12/6; New 20/- Brass Electric Sidecar Lamps, 5/6; Ditto Tail Lamps, 5/6; approval; New Spare Valves for Harley-Davidsons; 4/9; 1911 Twin Rex, frame only, 20/-; Douglas Carburettor, 10/5; New 26 x 2½ or 2½ Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); 4/6 ros. Gloria Coach Sidecar, just repainted, £7 15s.; Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburettor taken in exchange).

**BOOTH'S MOTORIES, PORTLAND PLACE, SKIRCOAT ROAD, HALIFAX.**

Phone: 1062.

Close at 6 p.m.

**MOTOR CYCLES FOR SALE.**

**B.S.A.**

**1916 B.S.A.**, 4½h.p., coachbuilt sidecar, chain-cum-belt drive, all accessories; £65.—C. Hurlock, 63, Denmark Hill, London, S.E. [1552]

**B.S.A.**, 1915-16, 4½h.p., chain-belt drive, 3-speed gear box, splendid condition; sacrifice £45.—S.D., 43, Greenway Rd., Tooting, Som. [1514]

**LATE** 1913 3½h.p. B.S.A., 2-speed, free engine, coach sidecar, overhauled, perfect; £37, lowest.—Holt, 35, Albert St., Brierfield, Burnley. [X7002]

**B.S.A.**, 1913, 4hp, 2-speed, chain drive, enamelled and thoroughly overhauled; 28 gns., a bargain.—Moore, 50, Bridge St., Runcorn. [1347]

**1916 B.S.A.**, model K, Mills-Fulford 15 gn. sidecar, lamps, horn, speedometer, had little use; £64.—4, Thornton St., Kempston, Bedford. [1564]

**B.S.A.**, 1913, all chain, 2-speed, cushion clutch, kick start, Cowey speedometer, good condition, recently overhauled; £30.—9a, John St., Norwich. [X6949]

**1914 3-speed** Countershaft B.S.A. Combination, all accessories, new tyres; £50; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [1581]

**1913 B.S.A.**, 2-speed, nearly new coachbuilt car, Lucas lamps, speedometer, spares, in thorough order; £38/10, or near offer.—64, Wyndham Rd., Salisbury. [1377]

**B.S.A.**, 1915, 4½h.p., all chain drive, 3-speed gear, kick-start, nearly new coachbuilt sidecar, splendid condition; £60.—24a, Prudential Buildings, Portsmouth. [1419]

**B.S.A.**, 1914½, 4hp, all chain drive, 3-speed countershaft gear, lamps, horn, speedometer, perfect condition, unpunctured, only 1,400 miles; £46.—272, Fishponds Rd., Bristol. [1437]

**B.S.A.**, 1916 models, in stock, ready for immediate delivery; 4½h.p., 3-speed countershaft gear, chain-cum-belt drive, £62; all-chain drive, £64; exchanges or extended payment terms quoted.—Below.

**B.S.A.**, 1915, with coachbuilt sidecar, complete with lamp set, horn, speedometer, cushion saddle, with backrest, cushion seat for child, luggage grid, etc.; £70.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

**1914½ B.S.A.**, 3 speeds, kick start, chain drive, speedometer, lamps, Stewart horn, complete with Dunhill's Projectile sidecar, all in good running order; price £45, or exchange for twin.—Dyer, 2, Vincent Rd., Norwich. [1276]

**B.S.A.**, late 1915, chain-cum-belt, 3-speed countershaft, P. and H. lamps, horn, and spares, Cowey speedometer, Montgomery long sidecar, hot air intake fitted, in perfect condition; £54.—16, Midland Rd., Wellingborough. [X6895]

**B.S.A.**, 4½h.p., 1916, chain-cum-belt, 3-speed, with sidecar, in beautiful condition, new April last, will run anywhere on paraffin; first cheque for £60 secures; an unprecedented offer; wanted, small car.—Calman, Dental Surgery, Kilsyth, N.B. [X6942]

**B.S.A.** Model H £64, K £62; actually delivered from stock, with Canelet B.S.A. sidecars; also a 1912 free engine machine, £29/10, with accessories; deferred payments by mutual arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1333]

**B.S.A.**, 1914, 4hp, 3-speed, all-chain model, perfect, ridden 3,000, just fitted 2 new Renaults chains, and new Dunlop heavy back, accessories, including Lucas head light, horn, and mirror, Cowey, complete set tools, does 4-55 m.p.h. easily; £42.—Sgt. Child, Essex R.G.A. Caister, near Yarmouth. [X7025]

**4½h.p. New 1916 B.S.A. Models**, chain drive; £64, chain-cum-belt £62; these famous motor cycles are fitted with the countershaft 3-speed gear box; the all-chain drive is recommended for sidecar work, and the chain-cum-belt for solo; cash, exchange, or easy terms.—Wanchope's, 9, Shoe Lane, Fleet St., London. [1454]

**Calcott.**

**CALCOTT** 1914 Lightweight, in excellent order; £17.—Warren's, 386, Euston Rd. Museum 3081. [1411]

**Calthorpe.**

**2½h.p. Calthorpe-Jap**, 2-speed, all accessories, perfect condition; £25.—Chilton, 199, High St., Watford. [1510]

**CALTHORPE**, 1915, 2-stroke, 2-speed; £22; seen by appointment.—62, Frances Rd., Erdington, Birmingham. [X7063]

**2½h.p. 1915 Calthorpe-Jap**, Enfield 2-speed gear, £25.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1253]

**1916 Calthorpe-Jap**, 2½h.p., 2-speed gear, perfect order, condition as new; £25.—Proprietor, Palace Studio, Carnarvon. [X6733]

**1915 Calthorpe Junior**, 4-stroke, 2-speed, been very little used; must sell; £18, or nearest offer.—Box 740, c/o The Motor Cycle. [X6734]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**CALTHORPES**, J.A.P. 2½h.p. engines, 1916 models, £37/16, with Enfield 2-speed gear; also single-speed models, £32; and 2-strokes; we have several good second-hand machines of this make to offer from £17/10.—Wanchope's, 9, Shoe Lane, London. [1455]



## MOTOR CYCLES FOR SALE.

## Calthorpe.

**CALTHORPE-J.A.P.'s**, 2½ h.p., with Enfield gears, 36 gns.; actually in stock; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1330]

**CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [1815]

**CALTHORPE-J.A.P.**, 1915½, 2½ h.p., Enfield 2-speed gear, lamps, horn, speedometer, and model H. Watsonian coachbuilt sidecar, little used; £35, or would separate, a first-class lightweight combination.—Osmond, 3, Thanet Rd., Erith, Kent. [1537]

## Campion.

**CAMPION-PRECISION-J.A.P.**, 4½ h.p., with 2-speed Jardine countershaft gear box, Swan coachbuilt sidecar, with large luggage carrier at rear, new heavy Dunlop tyres, lamp set, horn, etc., machine run under 1,000 miles; £52/10.—Wm. Betts, Ltd., Motor Cycle Dept., 96, Upper Richmond Rd., Putney, S.W. Phones: 1766 and 1698 Putney and Wimbledon [1167]

## Chater-Lea.

**CHATER-LEA**, 1915, complete, new machine (less engine). 2¼ Michelin, tank, guards, X.L. saddle, etc.; £6.—Wadson, Ingoldsbys, Wadsworth. [X6729]

**1914 Chater-Lea**, 6 h.p., No. 7, and coachbuilt sidecar, all accessories; a cheap lot, £44; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [1587]

**1915 8 h.p. Chater-Lea**, J.A.P. engine, Mabon variable gear and clutch, and coach sidecar; a good bargain, all in perfect order, £40; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [1588]

## Chater-Stevens.

**CHATER-STEVENS**, 4½ h.p., and special cane sidecar; real bargain, £16/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1338]

## Clyno.

**CLYNO** and sidecar, 6 h.p., 2 speeds, free; £30, complete; reason sale, called up.—Page Hall, Penrith. [X6939]

**CLYNO**, 2-stroke, 2-speed, splendid condition, hardly been used, all accessories; £28/10.—20, Canonbury Grove, Essex Rd., N. [1520]

**PETROL** Free with 1912 Clyno Combination, 34 gns.; 5-h.p., 2-speed, clutch, kick-start.—Rider Troward, 78, High St., Hampstead. [1494]

**1912 6 h.p. Clyno**, 2 speeds, and coachbuilt sidecar, excellent order, many extras; £35.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1474]

## Connaught.

**CONNAUGHT**, 1914, 2-speed gear box, perfect; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1259]

**1914 Connaught** and accessories, in good condition; £17/10; seen any time.—Bounds' Garage, High Rd., Kilburn. [1374]

## Dalm.

**2½ h.p. Dalm** 2-stroke, 2-speed, 1916, Allon type 24 frame; £28; exchange higher power.—Advertiser, 52, Brodrick Rd., Wandsworth Common. [1425]

## De Luxe.

**DE LUXE**, 1916, 2½ h.p., 2-stroke, perfect; bargain. £19.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1257]

## Diamond.

**DIAMONDS**, 2-stroke models, shop-soiled only, 28 gns.; Diamond-Jap, 2½ h.p., 2-speed; 36 gns.—Sole district agents, Walsall Garage, Walsall. [X6961]

## Douglas.

**1911 Douglas**, all in good condition, good tyres; £12/10.—455, York Rd., Wandsworth. [1531]

**1914 2½ h.p. Douglas**, 2-speed, runs 2-3rd paraffin; £34.—Belmead, Maxwell Rd., Northwood. [1376]

**DOUGLAS**, 1913, 2-speed, in very good order; £28.—Warren's, 386, Euston Rd. Museum 3081. [1405]

**DOUGLAS**, 1915, 2-speed, new condition, with accessories; £45.—Pickering's, Mardol, Shrewsbury. [X7021]

**DOUGLAS**, 2½ h.p., first to view will purchase; £15, no offers.—14, Dodbrooke Rd., West Norwood. [1541]

**DOUGLAS**, 1914, 2-speed, 2 lamps, hooter, been overhauled; £40.—Warren's, 386, Euston Rd. Museum 3081. [1406]

**DOUGLAS**, 1913, 2-speed, lamps, horn, tools, perfect order; £30.—Warren's, 386, Euston Rd. Museum 3081. [1404]

**DOUGLAS Motor Cycle**, 2½ h.p., 2-speed gear, recently overhauled; bargain, £38.—Neall Bros., Ltd., Daventry. [X6494]

**DOUGLAS**, 1916, 2½ h.p., model V, T.T. bars, 2-speed, practically new; £48, inclusive.—L2,068, c/o The Motor Cycle. [1576]

**1911 Douglas**, 2½ h.p., excellent tyres, good order; £15.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1472]

# FOR 1916.

**ROYAL RUBY, SUN, ALLDAYS ALLON, J.H., B.S.A., CALTHORPE, LEVIS, COVENTRY EAGLE, HARLEY-DAVIDSON, EXCELSIORS, INDIANS, and ENFIELDS.**

You cannot beat us on either Cash or Exchange Terms.

## WE WANT YOUR BUSINESS,

And if price and quality count for anything, we bid fair to obtain it.

## EX-STOCK DELIVERIES. LIST OF SECOND-HANDS

carrying our full and comprehensive Guarantee.

### SIDECAR OUTFITS.

**ZENITH**, 1914 (late), 8 h.p., countershaft and clutch, lamps and speedometer, Verona coachbuilt Sidecar, like new ..... £68  
**REX**, 1914, 6 h.p., 2-speed, modele de luxe, handle starting, coach-built Sidecar, just been overhauled ..... £40  
**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidecar ..... £32  
**INDIAN**, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar ..... £62  
**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame ..... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ..... £60  
**A.J.S.**, 1915, 6 h.p., 3-speed, and Sidecar, like new ..... £28  
**REX**, 1913, 6 h.p., 2-speed, cane Sidecar ..... £25  
**RUDGE**, 1913, 5-6 h.p. Multi, with Rudge Sidecar ..... £50  
**INDIAN** 1916 5 h.p. Combination, 3-speed ..... £65  
**MATCHLESS** 1914 8 h.p. 3-speed Combination ..... £60

### SOLO MODELS.

**DOUGLAS**, 1911, 2½ h.p., 2-speed, spring forks ..... £20  
**CALTHORPE**, 1914, 2 h.p., 2-speed ..... £19  
**RUDGE** 1913 3½ h.p. Multi, T.T. bars ..... £33  
**IVY**, 1915, 2-stroke, single-speed ..... £18  
**TRIUMPH**, 1912, 3½ h.p., clutch model ..... £28  
**NEW HUDSON**, 1913, 3½ h.p., 3-speed J.A.P. engine ..... £34  
**TRIUMPH**, 1912, 3½ h.p., clutch model ..... £30  
**TRIUMPH**, 1912, 3½ h.p., clutch, Philipson pulley ..... £28  
**BAT-J.A.P.**, 1911, 8 h.p., 2-speed, spring frame ..... £29  
**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £23  
**BROUGH**, 1914, 8 h.p., T.T. model ..... £42  
**NEW RYDER**, 1916, 2-stroke, dropped frame ..... £22  
**HARLEY**, 1915, 7-9 h.p., 3-speed, T.T. bars ..... £56  
**RUDGE**, 3½ h.p., Philipson pulley, 1915 improvements ..... £43  
**INDIAN**, 1915, 3½ h.p., 3-speed, T.T. model ..... £43  
**RUDGE**, 3½ h.p., special T.T., Philipson pulley ..... £42  
**ROVER**, 1914, 3½ h.p., 3-speed model ..... £30  
**SUN-VILLIERS**, 2½ h.p., 1915, 2-stroke ..... £18  
**ENFIELD**, 1915, 2½ h.p., 2-speed, 2-stroke ..... £37  
**HARLEY**, 1916, 7-9 h.p., 3-speed, T.T. bars ..... £67  
**INDIAN**, 1915, 5 h.p., 3-speed, like new ..... £53  
**JAMES**, 1915, 3½ h.p., 3-speed, twin, as new ..... £48

### CARS AND LIGHT CARS.

**N.A.G.**, 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set ..... £300  
**SUNBEAM**, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled ..... £295  
**KNIGHT JUNIOR**, 1914, 12 h.p., 2-seater, sporting body ..... £155  
**TALBOT**, 1913, 15 h.p., Coupé body by Mulliner, in Bedford cord, dynamo lighting ..... £375  
**MINERVA**, 20 h.p., 5-seater, make an excellent 25 cwt. van. Perfect mechanical order ..... £80  
**MORRIS-OXFORD**, 1913, 10 h.p., all lamps and accessories (including speedometer) ..... £135  
**G.W.K.**, 1914, 9 h.p., just re-painted and new hood fitted ..... £100  
**G.W.K.**, 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £160  
**DEEMSTER**, 1914, 9.5 h.p., 2-seater, all accessories; a bargain at ..... £110

**1914 and 1915 DOUGLAS MACHINES** bought for Cash.

**MAUDES MOTOR MART**  
 100 & 136 Gt Portland St. London W.  
 Telephone -552 Mayfair Telegrams-Abdicote Wesdd

## MOTOR CYCLES FOR SALE.

## Douglas.

**DOUGLAS**, 1913, splendid order, lamps, horn, tools; £24, or nearest; trial.—Waddams, 42, Milverton Rd., Birmingham. (D) [X7009]

**2½ h.p. Douglas**, 1911 model, single speed, very powerful and fast; £17/10, guaranteed.—Wachoppe's, 9, Shoe Lane, London. [1456]

**1915-16 T.T. Douglas**, complete, Lucas lamps; £48; done 500 miles, absolutely like new.—Cross, Effingham Sq., Rotherham. [X6998]

**DOUGLAS** Combination, 4 h.p., late 1915, 3 speeds, kick starter, coachbuilt sidecar, speedometer, lamp set, in new condition; £70.—Below.

**DOUGLAS**, 1915, 2½ h.p., 3 speeds, T.T., in exceptional nice condition; £48.—6, Warren St., London. [1597]

**1913 Douglas**, 2½ h.p., 2 speeds, excellent tyres, T.T. bars, complete; £35.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1471]

**DOUGLAS**, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

**1915 Douglas**, 4 h.p., 3 speeds, coachbuilt sidecar, new condition; bargain, £65.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1476]

**LATE 1914 2½ h.p. T.T. Douglas**, lamps, horn, tools, fast and economical, pink of condition; £38.—Grimston, 154, The Rye, East Dulwich. [1319]

**1913 Late Douglas**, 2½ h.p., 2-speed, good tyres, splendid condition; £31; after eight o'clock.—Mungam, 42, Leamington Park Villas, Acton. [X6966]

**1915 T.T. 2½ h.p. 2-speed Douglas** and accessories, in perfect condition; £42; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [1373]

**1915 Douglas** (Easter, 1916), 2½ h.p., 3-speed, P. and I. lamp set, horn, tools, etc.; little used, new condition; £46.—33, Kendrick Rd., Reading. [X7062]

**1913½ 2-speed Douglas**, fine condition, T.T., new Dunlop back, Lucas horn, lamp, generator; £32; notes only.—Smith, Long's Boot Store, North Walsham. [1298]

**DOUGLAS**, 1915, 2½ h.p. model U, used from January, 1916, Lucas horn and lamps, spares; examination; £45, lowest.—Sawday, Y.M.C.A., Coventry. [X6958]

**DOUGLAS**, 1913-4, 2-speed, kick starter, Lucas accessories; £42; generous deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1339]

**COLMORE** Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

**DOUGLAS** Combination, 4 h.p., 1915, 3 speeds, kick starter, coachbuilt sidecar, speedometer, lamp, cone over 800 miles; set £70.—Burkitt, 4, Temple Villas, Palmerston Rd., Dublin. [X6933]

**DOUGLAS**, late 1914, 2-speed, 2½ h.p. T.T. model, in faultless condition, good tyres and belt, enamelling and plating, good condition; £42/10, no offers.—Wm. Betts, Ltd., Motor Cycle Dept., 96, Upper Richmond Rd., Putney, S.W. Phones: 1766 and 1698 Putney and Wimbledon 1167. [1608]

**DOUGLAS**, 1914, 2½ h.p. T.T., 2-speed, special racing engine, long plated exhaust pipes, Kempshall back tyre, Lucas lamps, horn, speedometer, knee grips, tools, etc., 2 Dunlop belts, has done over 60 m.p.h., doing 50 now, easy starter on substitute, and very economical; £35.—Tinson, 94, Park Rd., Peterborough. [X7050]

**DOUGLAS** Motor Bicycles, 2½ h.p. models; deliveries are almost impossible to obtain. We are large Douglas agents. If there is any possibility of immediate deliveries, we can in all probability assist you. We suggest you write us your requirements. Douglas specialists.—Robinson's Garage, Green St., Cambridge. Tel.: 388. T.A.: Bicycles. [1362]

## Elswick.

**1915 2½ h.p. Elswick**, 2-stroke, engine recently overhauled, good tyres, in perfect condition, lamps, horn; £15/10.—Robinson's Garage, Green St., Cambridge. [1360]

## Enfield.

**3 h.p. Royal Enfield**, 2-speed; £8/10.—Chilton, 199, High St., Watford. [1509]

**COLMORE** Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

**ENFIELD** 3 h.p. Twin, 1914, fine condition, 140 m.p.g.; £32.—89, Oak Lane, Bradford. [1567]

**1916 8 h.p. Enfields** actually in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [1589]

**ENFIELD**, 1915, 3 h.p., 2 speeds, little used, new condition.—Holdstock, Canterbury Rd., Sittingbourne. [1538]

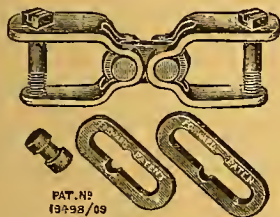
**1916 6 h.p. Enfield** Combination, and accessories, as new; £75; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [1372]

**ENFIELD** 1916 6 h.p. Combination, run 300 miles, complete with spares; any trial or examination; £75, no offers.—4, King's Rd., Mitcham. [1387]

**ON** Sale, 6 h.p. Royal Enfield combination, with accessories, late 1915, not done 1,800 miles; price £66.—5, Bank Terrace, Basford, Stoke-on-Trent. [X6945]



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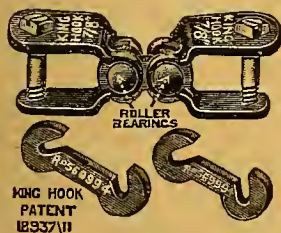
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**ENFIELD**, 1915, T.T., 3h.p., 2-speed, footrests, free engine, head lamp and rear light, horn, etc.; £45.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. (0551)

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**ENFIELD** 1915 6h.p. Combination, complete, usual accessories, guaranteed excellent condition; £65.—P. J. Evans, John Bright St., Birmingham. (X7059)

**1915** Enfield, 6h.p. Model de Luxe combination, Lucas dynamo lighting set, complete, very little used, 3,000 miles; £90.—Sugg, 37, Langdon Rd., Holloway. (1518)

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**1916** 6h.p. Enfield Combination, 90 gns.; 1916 3h.p. twin, 55 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. (0838)

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**NEW** 6h.p. Enfield Combinations from stock, 90 gns.; also a good 1916 second-hand combination, nearly new, with all accessories, 80 gns.—Wanchope's, 9, Shoe Lane, London. (1457)

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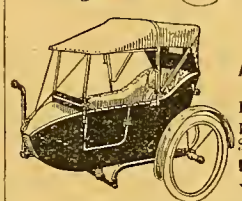
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HARLEY-DAVIDSON.—New and second-hand combinations in stock.—Elice and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

HARLEY-DAVIDSON, model 16J, purchased August, only run 200 miles, perfect; £80.—Dominy, Jewry St., Winchester. [1430]

1915 Harley-Davidson Twin, model 11J, 3 speeds, electrical system, Canoelet sidecar, perfect condition; £75.—Gray's Garage, Watford. [X7037]

COLMORE DEPOT, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

7-9h.p. Harley-Davidson, 3-speed, Bosch mag. model, with rounded tank, magnificent condition, original tyres uncut, horn, 9in. head lamps; £59.—Crow Bros., Guildford. [1397]

HARLEY-DAVIDSON Model 11J, electric light, engine L1304IK, slightly shop-soiled, guaranteed brand new, unused; £70.—Stout's Garage, Egrement, Cumberland. Phone: 13. [1304]

HARLEY-DAVIDSON Combination, late 1915, 11F model, with Canoelet sporting sidecar, complete with lamps, horn, and accessories, new condition; £75.—Christie Bros., St. Andrews. [1297]

1915 Harley-Davidson and Coachbuilt Sidecar, storm apron, lamp, horn, tools, etc., purchased from officer now abroad, done about 4,000 miles.—12, Canterbury Terrace, Maida Vale, W. Phone: Paddington 3214. [1302]

1914 2-speed Harley-Davidson, in fine condition, speedometer, horn, extra carburettor; £38 cash, or consider exchange with countershaft 3-speed 6-h.p., cash adjustment.—F. Devereux, Belle Vue, Shellingham, Hitchin, Herts. [1424]

HARLEY-DAVIDSONS Combinations, with their newest sidecars, actually in stock, £101/15 and £110, or solo £80/15; deferred terms if desired, liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1355]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 51, Renshaw St., Liverpool. [0817]

HARLEY-DAVIDSON (1915 model 11F), with very handsome Mills-Fulford coachbuilt sidecar, painted green, in splendid running order and appearance, almost equal to new; cash price £75, or on deferred payments 2% extra; deposit £16/10, and 12 monthly payments of £5.—William Whiteley, Ltd., Queen's Rd., London, W. [1226]

## Hazelwood.

4-5h.p. 1915 Hazelwood, 3-speed and free engine model, complete with Lucas accessories; £37/10.—Wauchope's, 9, Shoe Lane, London. [1460]

## Henderson.

BARGAIN.—Henderson 4-cyl., latest, property of pilot joined up, very fast, £52/10.—Elm's Garage, Christchurch St., Chelsea, S.W. [X6918]

HENDERSON, 1913, 4-cyl., 2-speed, 12h.p., with Gondola sidecar, speedometer, electric lamp and horn, hood, wind screen, in perfect condition.—Radcliffe Villa, Athenaeum Rd., Whetstone, N. [1321]

## Hobart.

HOBART 3-speed 4h.p. Twin, and 9 gn. Gloria sidecar, all accessories; any trial; £39.—East Kent Motor Co., Station Rd., Canterbury. [0832]

## Humber.

HUMBER Lightweight, lamps, spare belt, etc.; £15/15.—Danie, Peldon, Colchester. [X6728]

3 1/2 h.p. Humber, 2-speed, splendid condition; £21.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1254]

3-SPEED Humber Combination, like new, all accessories; £50.—Leighton's, opposite Wood Green Station. [1550]

2 1/2 h.p. Humber, neat lightweight, absolutely perfect, tyres as new; £14.—Davies, Bulkeley Rd., Poynton, Cheshire. [X7034]

HUMBER, 2-speed, free engine, handle start, running condition; £12, or offer.—304, Woodstock Rd., Oxford. [1421]

3 1/2 h.p. Humber Motor Cycle, Roc 2-speed gear, handle starting, excellent condition; bargain, £14/10.—Parker, St. Giles, Oxford. [X7008]

3 1/2 h.p. Humber, 2-speed, handle starter, sound order, 2 new tyres, fully equipped; £22.—Grocer, 30, Park Av., East Ham. [X6910]

1915 3 1/2 h.p. 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]

HUMBER, 1912, 2-speed, free, and sidecar, in exceptional condition; any trial; £20, no offers.—14, Dodbrooke Rd., West Norwood. [1546]

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1914 4h.p. Humber, water-cooled, 3 speeds, clutch, and handsome coachbuilt sidecar, excellent hill-climber; £50.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [1473]

HUMBER, 3 1/2 h.p., F.E., wicker sidecar, 2 speeds, Philipson, decompressor, tyres as new, complete kit, hardly used last 18 months, sole cause selling, perfect order; £32.—Lient. Ross, Ordnance Depot, Dover. [X6909]

1913 Humber, 3 1/2 h.p., and cane sidecar, Bosch, B. and B. P. and H. lamps, good tyres, one new, Pedley belt, adjustable pulley, horn, spares, overhauled, splendid condition; £32, or close offer; must sell.—10, Crawley Rd., Wood Green. [1484]

HUMBER, 1915, water-cooled, 3-speed, free engine, clutch, kick-start, Mills-Fulford sidecar, tyres unpunctured, complete with lamp set and horn, combination not run 1,500 miles, in genuine new condition; cost £85, will accept £57/10 for quick sale.—Wm. Betts, Ltd., Motor Cycle Dept., 96, Upper Richmond Rd., Putney, S.W. Phones: 1766 and 1698 Putney and Wimbledon 1167. [1609]

## Indian.

5-6h.p. Twin Indian, little used, mag., etc.; £18.—10, Norwood Crescent, Southport. [X6648]

1913 T.T. Red Indian, 7-9h.p., clutch, lamp, etc.; £30.—80, Bishopham Rd., Southport. [X6646a]

INDIAN, 1915, 3 1/2 h.p. twin, 3-speed gear, very little used; £45.—Jones, Hurst Nook, St. Annes-on-Sea. [X7035]

1915 5-6h.p. Indian, 3 speeds, fully equipped, small mileage, as new; £47/10.—Alfred Proctor, Chesham, Bow. [X6980]

INDIAN, 7-9h.p., 3-speed, 1915, spring frame, brand new Canoelet sidecar; £65.—Dominy, Jewry St., Winchester. [1431]

LOOK Here.—Genuine 1914 clutch model kick starter Indian, perfect condition; £34 secures this wonderful bargain.—Millard, Chesterfield. [X7082]

INDIAN, 7-9h.p., splendid condition, electric lamps, kick starter; £45; take good gun part payment.—Bates, 3, St. George's Gate, Canterbury. [1313]

7 h.p. 1914 Indian, 2-speed and free engine model, very powerful and fast, spring frame; £35; guaranteed.—Wauchope's, 9, Shoe Lane, London. [1461]

INDIANS, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X7057]

5 h.p. Indian, late 1915, 3 speeds, kick starter, run about 2,000 miles, original Dunlop tyres, in excellent condition throughout, accessories; £48.—S., 41, Ash Rd., Stratford. [1354]

INDIAN 1916 Powerplus Model, with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £80.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]

7-9h.p. 1915 Indian and Sidecar De Luxe, 3-speed, clutch, chain drive, and kick-start model, electric lighting set, electric horn, mirror; 70 gns.; guaranteed.—Wauchope's, 9, Shoe Lane, London. [1468]

INDIAN Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £85.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X7056]

BIRMINGHAM Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X7056]

INDIAN Powerplus Combination, 1916, 7-9h.p., 3-speed, spring frame, dynamo lighting set, horn, and speedometer; cost £111, used few trial runs only; sell £100, or exchange late 2-seater car, cash adjustment.—Apply, Box 752, c/o The Autocar. [X6905]

INDIAN Powerplus Combination, 1916, 7-9h.p., 3-speed, spring frame, dynamo lighting set, horn, and speedometer; cost £111, used few trial runs only; sell £100, or exchange late 2-seater car, cash adjustment.—Apply, Box 751, c/o The Motor Cycle. [X6906]

1913 Indian Combination, 7-9h.p., 2-speed, clutch, spring frame, coachbuilt sidecar (cost £25), large P.H. lamp, Lucas rear, speedometer, horn, and spares, in splendid condition, ready to ride away; £55; evenings.—Weyang, 20, Wolseley Av., Wimbledon Park. [1438]

P. J. EVANS, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5h.p. 3-speed model, £70; 7h.p. T.T. Powerplus, £75; 7h.p. 3-speed, spring frame, and electric light, £78; special de Luxe 7h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X7053]

## Invicta.

INVICTA, 2-stroke, nearly new, pan saddle, Lucas horn and lamp; £25.—33, St. Stephen's Rd., Bow. [1502]

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IVY, 1915, 2 1/2 h.p., 2-speed, Lucas lamps and horn; great bargain, £25/10.—The Walsall Garage, Walsall. [X6963]



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## No Imports in August.

**A**N event which cannot be passed over by the observant is the total cessation of imports of motor cycles last month. Though prohibited in March, neutral-made machines were allowed to enter this country under certain conditions up till July, but August represented the first blank month. We do not record this important fact as a result of feelings of rejoicing. We have already acknowledged that, although we British taught our American cousins in the early days what a motor cycle should be like, they in turn have shown us many desirable features of motor cycle construction. The real point is the important change wrought by the war and the necessity of keeping much needed gold in this country. When the glorious days of peace return we shall be glad to see once again the best of British motor cycles competing against the pick of the American market, but, till then, every patriotic Britisher with the interests of his country at heart agrees that imports should cease.

## Choice of Regiment.

**F**OR the benefit of those who may not have noticed the important announcement which appeared on page 188 of our issue of August 31st, we repeat that the method of obtaining motor cyclists for military service will in future be arranged by the different Commands as men are called up. This announcement was made in a letter from the War Office to the Editor of *The Motor Cycle* expressing the Army Council's appreciation of our work spread over the past two years.

In effect, this new official decision brings the motor cyclist sections into line with the Training Reserve outlined in Army Order 259 of August 1st. It is clear that in future, recruits presenting themselves for service will not have that freedom of choice of regiment which has been an appreciated privilege hitherto. On a man presenting himself for enlistment, should he be

found to be an experienced motorist, he will be allotted to *any* section which might at that time be in want of such a type of man.

Even in the past, all recruits accepted for any branch of H.M. Forces have been enlisted for "General Service," so that there was no guarantee that a man accepted for any particular section would continue with that section. In other words, the War Office may transfer men from one branch to another, as necessity arises, just as they have done in the case of motor cyclist despatch riders attached to Yeomanry regiments. These men, we hear, have had their motor cycles taken from them and have been given rifles and put into line regiments. Other despatch riders trained on motor cycles have finally been mounted on "push" cycles when the conditions of the country demanded it. Again, a certain number of men now attached to the Heavy Section Machine Gun Corps were, by War Office orders, transferred from the Motor Machine Gun Service, for which latter section they were enlisted, and, indeed, originally intended. In one of the instances named, we may state that we have come in for some unkind remarks from a few dissentients, though we are entirely unconnected with any changes which may have been made; indeed, we were obviously powerless to influence them. Naturally, transfers are not always popular, but this is no doubt realised by the War Office authorities, whose paramount object is to win the war. The Army can be likened to a great machine; if the War Office may render it more efficient by transferring a spoke (representing a batch of men) from one section to another, it is done without consulting the likes or dislikes of those who may be transferred.

The new announcement is bound to come as a disappointment to many men at present in munition factories who have hitherto been prevented by their employers from enlisting on account of the fact that they were engaged on work of national importance.



## THE PROHIBITION WORKS AT LAST.

### NO MOTOR CYCLES IMPORTED LAST MONTH.

**I**N commenting upon the lengthy interval between the coming into force "on paper" and actually of the prohibition of imported motor cycles in our issue of August 10th, we stated that "in the meanwhile it will be interesting to see which arrives first—the declaration of peace or the end of the imports of foreign-built motor cycles on which deposit was paid by March 27th." The latter has arrived first, and somewhat sooner than we expected, for the Board of Trade returns for August reveal the very interesting fact that no motor cycles were imported into this country during that month. The value of spare parts has also dropped considerably. It may be as well to remind readers that under certain conditions motor cycles intended for use with sidecarriers can still be imported, though apparently none arrived last month.

It is very gratifying to see a good increase in the export figures, the motor cycle industry thus doing its share in reducing the adverse trade balance.

#### IMPORTS.

	Aug., 1916.	July, 1916.	Aug., 1915.
Number ... ..	—	253	645
Value, complete machines ...	—	£11,386	£157,400
„ tyres and parts ...	£8,182	£15,848	£111,850

#### EXPORTS.

	Aug., 1916.	July, 1916.	Aug., 1915.
Number ... ..	1,322	866	1,092
Value, complete machines ...	£64,632	£37,227	£54,347
„ tyres and parts ...	£35,395	£34,628	£25,519

#### Tremendous Petrol Increase.

The most interesting part of the Board of Trade returns, however, is that relating to petrol imports. The following figures reveal a remarkable increase over those of the previous month:

July, 1916, 11,526,600 gals. (duty paid on 10,528,695 gals.).  
Aug., 1916, 28,773,053 gals. (duty paid on 10,017,985 gals.).

Whatever this is due to, it gives us renewed hope for increased supplies in the quarter commencing November 1st.

## WARTIME ECONOMY.

### THE EFFICIENT USE OF CHEAPER FUEL.

**I**N connection with the articles on the use of cheap fuel perhaps the writer's experience will prove of service to those hesitating as to what course to adopt. My journeys, on business, cover seventy to eighty miles per week certain, with extras and also an occasional run in the country (very occasional now). This seventy miles is made up of journeys of a maximum length of about three miles and the odd journeys connected with a small factory engaged on war work.

Obviously, for odd travelling of this description pure Binks or kerosene fuel was unsuited, as having to fill the carburetter with petrol each time would be a nuisance and uneconomical. As a compromise a 50% mixture of No. 2 petrol and Binks was used, and inserted in each two gallons of petrol was a naphthalene ball, price about twelve a penny. The machine is a 1913 two-speed countershaft  $3\frac{1}{2}$  h.p. Premier, with sidecar generally attached, solo only occasionally. The carburetter is a 1913 B. and B., to which I fitted a Badcock by-pass about three months ago. Since making the alterations noted below I have covered about 700 miles; average human load, 25 stone.

The consumption works out as follows:

*Solo riding* test run, Derby to Sheffield and back. Total mileage Stewart speedometer 78, consumption  $5\frac{1}{2}$  pints=113 miles per gallon.

*Sidecar* test run, Derby to near Wolverhampton and back. Mileage 88, consumption 78 m.p.g.

The sidecar test would have been better but for the fact that heavy wind caused excessive bottom gear work. With an intermediate gear this would have been better. The sidecar is of medium weight.

The average speed of the sidecar can be kept at 25 m.p.h. indefinitely if the roads will allow, 35 m.p.h. having been attained over good surfaces.

*Solo riding* speed is also limited by road surface, 50 m.p.h. having been touched on good stretches.

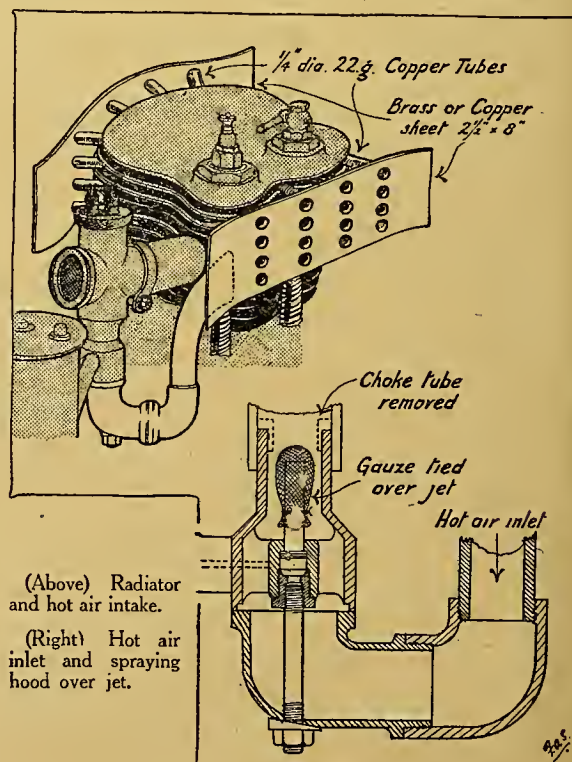
The alterations to effect this are as follow:

(1.) **Carburetter.**—Fine gauze hood fitted over jet to break up spray, hot air inlet fitted, choke tube removed. Induction pipe lagged with asbestos.

(2.) **Cylinder.**— $\frac{1}{8}$  in. thick packing inserted under flange. Special radiators fitted to fins of cylinder.

I may say that with the radiators shown I can drive indefinitely on low gear without overheating, and the oil consumption is reduced by about 50%.

A. WILKINSON.







### Why Horizontal Twins Start Easily.

Not the least cause of the popularity of horizontal twins is their universal faculty of easy starting. One theory of the cause is that when a vertical engine is standing, the oil drains down from between the piston and cylinder, leaving the upper contact surfaces almost bare, and possibly creating a perfect jam of oil down towards the foot of the piston, especially when it is left low in the cylinder. Contrariwise, the horizontal twin maintains its oil film during the longest wait. It sounds plausible enough; and, true or untrue, I have never known a vertical twin or single which started so readily from cold as my 1915  $2\frac{3}{4}$  h.p. Douglas, which would always paddle off in a yard or so, provided it had been accurately oiled during its last run. On the other hand, I don't know that I shall feel absolutely sure on the matter until I have taken down a cold engine of each type after a long halt, for it takes some while to turn, pedal, or kick a really gummy vertical single free, whereas in theory the first few turns, pedallings, or kicks should splash up a fresh oil film; and, on the other hand, the oil ought in theory to drain down to the bottom of the circular cross section of a horizontal twin, which would leave threequarters of the arc fairly dry. After all, ought not any theory to take into consideration the facts that the horizontal twin is chiefly known in very small sizes, say 175 c.c. per cylinder, whereas the single is known chiefly in the 500 c.c. size; so you get your initial explosion after overcoming about a third of the resistance which a big single represents; and almost immediately after the first bang there is a sporting chance of another bang.

### The Cause of Overheating.

I hope the size eight hats will take up Mr. Stephenson's overheating suggestions (*The Motor Cycle*, August 31st, page 175), and work them out to a conclusion. Like many riders I have always been extremely puzzled by the special type of overheating which he describes, viz., when the engine quietly peters out without knocking. The stoppage is unaccompanied by any noise, is generally all but instantaneous, and has never been explained. We have all had considerable experience of it lately, as it is the worst vice of the average baby two-stroke engine. As readers will be aware, the engine will usually start off quite merrily in a minute or so; whether it repeats the performance again on the hill depends partly on the length of the hill, and partly on the length of the stoppage. The matter is thus obviously a question of temperature. I confess that a very few months ago I should have been tickled to death by Mr. Stephenson's theory of the electric current passing sparks over a cushion of very hot gas; it seems to fit the facts so admirably, and I have no alternative suggestion to offer in its place.

But I have a question to ask him. The phenomenon usually disappears with certain exchanges of plugs.

In my garage there are at present two machines, a  $2\frac{1}{2}$  h.p. two-stroke and a  $2\frac{3}{4}$  h.p. four-stroke twin, both of which were delivered with English plugs, and both of which regularly stopped, with the special symptoms described by Mr. Stephenson, whenever they were set to climb a hill leading up to my house. I tried several other makes of British plugs to no purpose, and one British maker went so far as to make a special plug for me without avail. Finally, I unearthed some rusty old Bosch plugs, and neither engine has suffered a stop of this kind since. So before I can accept the new theory, I shall want some light thrown on the question of whether the temperature of the electrodes can possibly be a dominant factor in the temperature of the cushion of gas between them. If this is so, can there be such a vast difference between the heating of electrodes of different makes in the same engine under the same circumstances as to permit or prevent the "silent discharge"?

### Appearance.

Mr. Scott has inflicted an extremely smashing castigation on Mr. Burnard, but he hardly tackles the real point in his remarks on the question of appearance. It is a commonplace that the unfamiliar usually strikes us as unpleasant; but Mr. Scott almost implies that the unfamiliar is invariably recognised as the acme of beauty when the eye gets used to it; and this is absolutely untrue. We can reconcile ourselves into tolerating most hideosities for sufficient reason; and in course of time we master the æsthetic possibilities of a novelty, and make the best of it. Thus, the early motor cars offended everybody's taste at first; then we got accustomed to the missing horse; finally, we realised that the prehistoric motor cars were hideous and improved their aspect until the modern car is really quite handsome. Now nothing can ever make the sidecar or the Scott sociable beautiful; they break every law of symmetry and balance; and the lack of balance in appearance is emphasised in the Scott by the disc wheels and other items which create a false impression of solidity, and exaggerate its intrinsic lopsidedness. Mr. Burnard does not dislike it because it is unfamiliar; in its main æsthetic outlines, it is identical with the sidecar, to which we are quite accustomed, and which we all agree is ugly from an artistic standpoint. This admitted ugliness is not only perpetuated, but emphasised in the Scott, for the skeleton details, which tone down the lopsidedness of the sidecar, are all filled in and blackened and underlined in the Scott. But on occasions we put up with what is ugly for sufficient reasons. The sidecar is ugly, because it is lopsided; the Morgan is less ugly; but we tolerate and even enthuse over sidecars and Morgans, because they have long been practicable three-wheelers. The Scott—I hope its designer will forgive me—is æsthetically even uglier than a sidecar; but if it is better (as I feel it is bound to be); it should annex a remunerative slice of the market.





"Failures" in a tangle on Blea Tarn Pass, Lake District, in the A.C.U. One Day Trial of 1912.

I HAVE already confessed to being a kind of semi-"shamateur" in a brief and early chapter of my riding experiences. I was never presented with free machines, but I often rode special trade machines on public occasions, as I fear other amateurs were also in the habit of doing. I do not know how the modern "shamateur" fares, but in those days the "shamateur's" lot was not always a happy one.

For example, in one trial, after spending a week or more getting my own mount in first-class condition, I was practically forced by my manager to transfer to his latest idea, which was adorned with a weird pulley having nicked edges. Small metal bars, secured to the top of the V belt, were supposed to register with these notches, and furnish a non-slipping drive. During the first few miles the most striking feature of this revolutionary transmission proved to be a fearsome metallic jangling; but when I reached a point ten miles from a railway station, the contraption broke, and, *en passant*, ripped a large lump out of my leg.

#### "Some" Tappet.

The same genius invented an adjustable tappet, which was excellent in theory but in practice used to adjust itself on the road until the valves could no longer seat. Prior to an all-night trial I coaxed him to remove his adjustable tappets from my engine and insert solid tappets. I fetched the machine after supper, and at midnight, thousands of miles from anywhere, the engine stopped. The mechanic had made solid tappets, left them on the bench, and sent me out with the old adjustables, of which the exhaust tappet had—according to custom—lengthened itself in riding.

I became weary of this firm after a few similar experiences, and in search of excitement transferred to another. The latter's chief merit was that they supplied you with innumerable exhaust valves gratis, whereas pure amateurs had to pay for them, and as great chunks scaled off the valve face in 100 miles, this free supply system was a real convenience. I owe them one trying experience. I had been trials riding hard in a very dry summer, and had not struck grease for months. On one long trial in new country we met some appallingly greasy roads, and I had one or two rather bad tosses in a short distance. Being of the bulldog breed, I clenched my teeth, and rode about 150 miles further. When I entered the night garage I found my frame was broken, and its lack of rigidity had been responsible for my many tumbles and bruises.

#### Tyres for Trade Riders.

After that I had perhaps the weirdest experience of my competition life. I had repented of my quasi-"shamateurism," and was riding purely on my own, but quite a fleet of trade men bestrode similar machines in a thousand-mile affair. At the start I had the laugh of them, for they were all cursing their managing director who had sent them out on what were practically track racing tyres. I, knowing the weakness of their standard covers, had fitted a gigantic Kempshall on a special rim. On the very first day my carrier broke, and cut my new Kempshall in half. So I ate humble pie, and borrowed a track racing type cover from one of the trade men. It was worn out by night, and on reaching the hotel I was admitted into



**More Sporting Reminiscences.—**

the freemasonry of the team. Underneath the rear seat of a car accompanying the trial were spare covers *ad lib.*, and the entire team were fitting new covers at least once daily. How we did it I don't know. Those were the days of the short control system, and the margin between 18 and 20 m.p.h. over ten and twenty-mile controls is not long, whilst we only had half an hour after breakfast each morning, of which at least fifteen minutes went to the usual fight for petrol cans and funnels. I know I had about three dozen punctures that week, and changed six covers, nor was I the unluckiest of the bunch.

**An Indomitable Sportsman.**

About this time much light relief was afforded in many big trials by a certain sportsman who regularly finished the day's ride at three o'clock the next morning. He was not a bad driver or mechanic by any means, but he always rode some impossible 'bus, often selecting, for example, a single-gear'd lightweight for a week of bad hills. He used to say it was easier to carry it up a precipice than to push a standard touring machine; and certainly few of us recorded clean ascents in those days. So he would usually turn up at 3 a.m. and sleep in the hotel porch till the servants woke up, when he would have a refresher or two, breakfast with us, and start out again gaily at 8 a.m. to repeat the performance next night. His record achievement was as follows: He reached the half-way house of the day's run about midnight; it was many miles from a railway station, and at the foot of the awful hill he found two dejected trade riders who were wondering how to get back to London. It was pitch dark, and they had only about a teacupful of carbide and one lamp. But he unearthed a smithy, where the trio repaired all three machines. The one decent goer was then ridden up the hill, and the other two were pushed up, the one and only lamp being taken up and down the hill for each machine. Then, with the one lighted machine leading, the dauntless trio covered many miles of highly dangerous road, and were with us in time to start punctually on the next day's run. I think it was this day's run which included a very bad corner not far from the start. Now this indomitable old sportsman's worst failing was a habit of taking corners much too fast. So some of the knowing ones waited at this corner to see him come along—not too near the danger point, or he would have smelt a rat. About half an hour after the leaders had passed, the dauntless one was seen tearing up at about 40 m.p.h. There was a cloud of dust

and a crash, and we rushed to render first aid. When we reached the scene there was no sign of the sportsman's machine, which was at the bottom of a concealed ditch, but its owner could be seen in the field peering through the barbed wire fence rather anxiously.

**Judges and Strawberries.**

It was on this run that the judges in the official car purchased a huge punnet of strawberries to eat *en route*. Finding they had over-estimated their appetite for fruit, they generously tossed the basket—still containing three or four pounds—to a small laddie by the roadside. The car was going fast, and the heavy missile hit the laddie on the temple. He went over as if he had been shot, and for the rest of the week the quartette shivered whenever they saw a policeman looking interested in them.

My friends sometimes wonder why I am not on speaking terms with a certain press photographer. It



A couple of riders rounding a bend on Silver Hill in the A.C.U. 1913 trial. The riders are K. A. Macdonald (3½ h.p. Singer) and A. Sumner (8 h.p. Zenith).

(Inset) Running through Threlkeld in the same trial. W. J. Sproule (3½ h.p. P. and M.) followed by H. W. Teeton (3½ h.p. James).

was thuswise. Advancing years, corporation, and reputation led to my being promoted to the proud position of an official, and riding in a real car with flags on it. One day the official car broke down on a particularly lonesome run; we were giving a courtesy lift to the aforesaid press photographer, who was particularly anxious to secure some snapshots on a famous hill a few miles further on. When the second official car came up, we sent the camera man on with them to the hill. It was late in the afternoon before we had completed our repairs, and we grew so hungry in the process that there was almost a squabble over the division of the camera man's luncheon; hotels, of course, were non-existent in these wilds. Towards 6 p.m. we reached the hill *en route* to the night garage, and there we found the press photographer, almost fainting. Relying on our skill in roadside repairs, he had disembarked there from the second car at 10 a.m., since when he had neither eaten nor drunk. He is a relentless, unforgiving man.



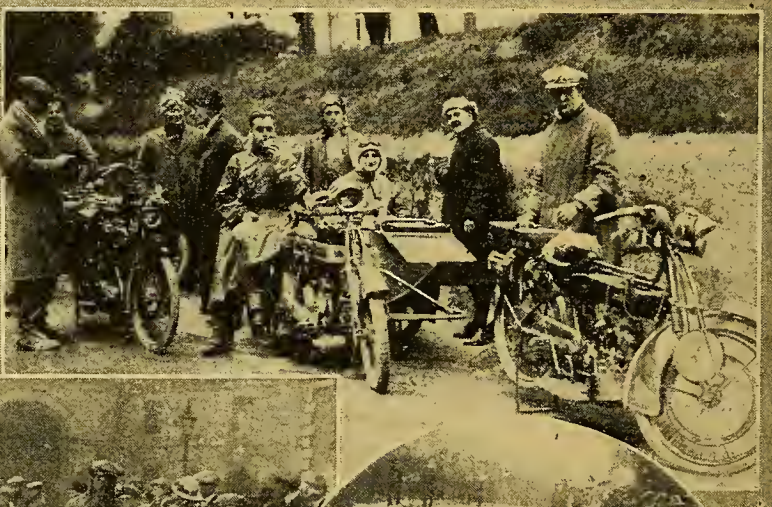
**More Sporting Reminiscences.—**

Here is a pathetic experience. I was well in the running for several special prizes, not to speak of the ordinary gold medal, towards the evening of the fifth day of a very important trial, when my jet choked in a perfect hurricane of rain and wind. I was using an experimental carburetter, with which I had experienced no trouble, and commenced to take it to pieces quite blithely, being well ahead of minimum time. I failed to notice that if the carburetter were dismantled in the ordinary way the jet would inevitably be torn off its socket, and this naturally occurred; nor had I a spare jet of any sort or kind. As my mishap occurred along a speed stretch, and the riders were all hurrying in to garage in a bad temper, I knew my chances of getting a jet of any sort were remote. The only thing was to try to stop every rider and borrow a jet of some sort, which couldn't possibly fit, but might be faked up. Marvellous to relate, I eventually got hold of a jet made for a very different carburetter, and by dint of much hammering got it jammed in place and reamed out to give an approximate mixture.

**Frightening the Ladies.**

On my very next trial my machine gave up hopelessly 150 miles from

headquarters. It had rained the whole of the morning, and was now thunderously hot. I had taken the entire engine to bits by the roadside, and was smeared with oil and grease and mud from head to foot, whilst my apparel was torn and disreputable to a degree. Moreover, owing to trouble overnight, I had not shaved for forty-eight hours. I succeeded in reaching a main line station after a long run across country, and staggered on to the platform just as a very fashionable holiday express pulled up. As the third-class carriages were all full, the guard pushed me into a first-class compartment, full of Vere de Veres in their society best, including two remarkably pretty girls. I never knew before how eloquently the inbred pride of centuries can twitch away a skirt.



(Top) Just over two years ago, but how long it seems! Outside the check at Stirling in the 1914 Scottish "six days."

(Middle) At the York control in the 1914 "London-Edinburgh."

(Bottom) Would a despatch rider grumble at the above "road"? We very much doubt it. The rider is J. Haslam (Premier sidecar) on Lee Hill, Shibden Dale, in the A.C.U. six days trial of 1914.

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## Lack of Petrol Licences.

**W**E are informed by the Petrol Control Committee that they possess a large number of postal orders which have been sent to them for petrol licences without a covering letter, and they are unable to trace them. This fact may account for want of attention, of which numerous motor cyclists have complained. Any of our readers who have sent postal orders and have not yet received a reply to their communications are requested to send the numbers of

such postal orders to the Petrol Committee, at the same time stating full details of their case. The matter will then receive attention.

Those who have not received their petrol licences in August may carry forward their August allowances to November; that is to say, a motor cyclist who did not receive his card last month entitling him to two gallons will be allowed to purchase this amount in November.



## Economical Management of a 3 $\frac{3}{4}$ h.p. Scott.

### SOME USEFUL TIPS BY A PRACTICAL RIDER.

THE specification of my Scott machine is as follows:

Frame, tank, gear, crank case, and wheels, 1912.

Cylinders, 1915.

Radiator, 1914.

Lubricator, 1916 B. and L. single drip feed.

Carburetter, 1916 Binks, with very ingenious quick starter, and hot air intake.

Magneto, Bosch ZF 2 type (two-spark).

This special magneto was lent me by Mr. Scott for the purpose of experimenting as regards the possible advantage of the two-plug system, and the various renewals above mentioned were also made for experimental purposes. The special magneto necessitated fitting a radiator which left room for the top plugs, the 1912 radiator coming too near the cylinder heads to permit the fitting of extra plugs in this position.

#### Value of Twin Plugs.

So far as one is able to judge, there is no advantage whatever to be gained in the case of a four-stroke engine by employing two sparking plugs in each cylinder, but this certainly does not apply in the case of a two-stroke. One of the Scott T.T. machines proved unusually extravagant in fuel, and the fitting of a two-spark magneto entirely cured this, bringing the consumption well up to average and slightly improving the speed of the machine.

I have made careful tests as regards speed and consumption under the following conditions: (1.) With single plug in each cylinder. (2.) With two plugs in each cylinder—one in the side, the other in the cylinder head. The results proved somewhat surprising. The tests were made with sidecar gears and with empty sidecar attached over a tortuous mountain route, so that conditions generally were unfavourable for good consumption. The following results were obtained:

With single spark:

24.7 m.p.h. 44.2 m.p.g.

Double spark:

32.7 m.p.h. 65.2 m.p.g.

In each case twelve miles were covered.

Great care was taken that all four plugs were in perfect order, but with the single spark the engine was distinctly sluggish, and the exhaust lacked that crisp, clean bark reminiscent of T.T. days. Climbing was poor, and the engine missed fire at intervals. If for an instant the two top plugs were connected up, the note of the exhaust was immediately changed, and one could feel the engine picking up on the gradient. It is necessary to explain, however, that the fuel consisted of a

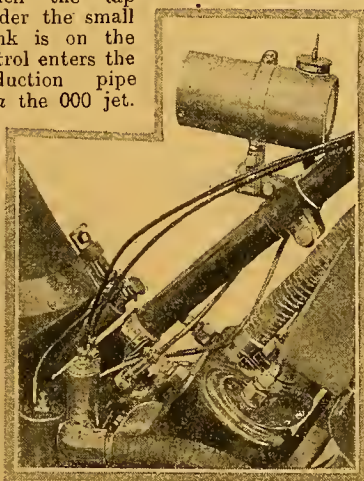
half and half mixture of petrol and Binks fuel, and it is conceivable that the difference would not have been so marked had a lighter fuel been employed.

#### Using a Heavy Fuel.

Riding solo my machine gives a mileage of seventy-eighty per gallon, this being in a mountainous district. Whether the fuel be pure petrol, half petrol and half Binks, or all Binks, makes no perceptible difference to the m.p.g. On the half and half mixture the engine "revs." faster and develops slightly more power than on all petrol, but if Binks fuel only be used the running is decidedly faulty. I have recently hit upon an arrangement, however, which proves highly satisfactory, and which would appear to have removed all the petty nuisances previously encountered with the heavy fuel.

#### An Auxiliary Petrol Jet.

From the small petrol tank shown in the open portion of the frame there extends an ordinary copper pipe connection, terminating in a filter. From this filter extends a second copper pipe, 1in. in length, which is screwed and sweated into the induction pipe, and which contains a Binks 000 jet. Thus when the tap under the small tank is on the petrol enters the induction pipe via the 000 jet.



Method of fixing small petrol tank on Scott. Note quick-starting jet fixed in induction pipe.

The main tank contains heavy fuel, and the small tank No. 1 spirit. In starting both taps are turned on. A small quantity of petrol then drips into the induction pipe, having the same effect as an injection of petrol, while the carburetter slowly fills with the heavy fuel. (As a rule it is necessary to flood

the carburetter of a Scott fairly liberally in order to effect an easy start, and much fuel can be lost in this way.)

Now the small petrol jet, while acting as a quick starter, also entirely takes the place of the ordinary pilot, the latter being permanently sealed with solder. In starting, the throttle is opened till the "pilot" is uncovered; this gives the correct starting mixture for the petrol jet. Until the engine is properly going carburation is erratic, but immediately the engine begins to warm up it runs perfectly on the petrol jet.

We start on petrol in the ordinary way—without flooding, without the trouble of injecting. None of the heavy fuel passes the carburetter till the throttle is sufficiently opened to uncover the middle jet, so that at low speeds, when carburation is apt to be faulty, petrol gas only is admitted to the cylinder. At about 20 m.p.h. the middle jet comes into use, and the proportion of petrol now used is much lower than the proportion of heavy fuel. At full throttle both the middle jet and the main jet are supplying heavy fuel, while the pilot only is supplying petrol. Thus, while petrol is always being consumed, the proportion falls off as the engine speed increases, and the mixture does not become excessively heavy till the engine has attained a speed at which it is capable of properly carburating a heavy fuel.

The proportions consumed depend, of course, on the speed at which one rides. To economise in petrol, cut down the size of the auxiliary jet and employ a larger middle jet. By doing this it is easily possible to cover 250 miles per week on the predetermined half gallon, and the arrangement is theoretically and practically better than the employment of mixtures, which are apt to fluctuate—each different mixture requiring a different carburetter setting. When the engine is idle the petrol tap is, of course, turned off immediately.

#### A Troublesome Knock.

One thing has troubled me exceedingly with this Scott engine when heavy fuels are used—a curious and illusive knock. This knock is evidently determined by the atmospheric condition. On the rare occasions when a spare afternoon has offered an opportunity of investigating it it has stubbornly refused to occur, whereas it is sure to develop at regular intervals during a day of serious business riding. It never occurs on hills. One can bring the engine to a standstill on full throttle without the faintest suggestion of a knock. It occurs only at a speed of from 27 to 34 m.p.h., and it is



**Economical Management of a 3½ h.p. Scott.**—unlike any other knock on earth, except that it is extremely troublesome, demanding instant readjustment of the carburettor controls.

I came to the conclusion that this state of affairs was due entirely to the high compression of the Scott engine, the charge detonating on compression, for no alteration of the firing point effected an improvement. It was cured by fitting small extension pieces into which two of the plugs screw. These extension pieces slightly reduce the compression, and they also have the desirable effect of protecting the two more important plugs from oil. But their presence slightly interferes with the running at high speeds.

#### Cooling the Plugs.

The plugs in the cylinder heads are dependent on air cooling, and for a long time I suspected these members, with their fine wire points, of causing pre-ignition. I still believe that their presence made it necessary to resort to the use of compression reducers, and with heavy fuels, which are apt to cause overheating, it is well to make every provision possible in the way of cooling the sparking plug. I am of the opinion that most overheating troubles originate at the sparking plug.

Realising this, I carried out an excellent suggestion set forward in these columns by a correspondent, the accompanying sketch being self-explanatory. The



A sparking plug radiator.

main as cool as those penetrating the water jackets.

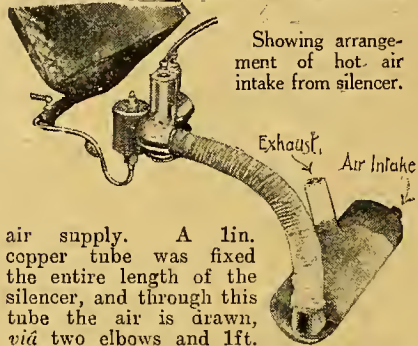
The top plugs are fitted also with copper discs directly below the cable connections. These were fitted in the hope of conducting the heat away from the central electrodes—the real offenders. Their value I have yet to prove. If the plugs were so designed that the heat would pass readily from the central sparking point to the top of the stem these discs would doubtless prove of value, but the present day sparking plug is far from being a perfect article, and anything in the way of gadgets are hardly calculated to improve it.

#### Fitting a Hot Air Intake.

I have found that two-stroke air-cooled lightweights are, when started, entirely indifferent as to whether the fuel they consume is all petrol, half petrol and half something cheaper, or all something cheaper. I recently filled up a two-stroke Triumph with paraffin. It purred home merrily. My little Velocette, which is a gem of comfort and efficiency, starts immediately on a mixture of two-thirds Binks and one-third petrol. The Scott, on the other hand, having the very desirable feature of water-cooling, demands an efficient hot

air intake if heavy fuels are to be used.

When fitting my carburettor, I made the following provision as regards the



air supply. A lin. copper tube was fixed the entire length of the silencer, and through this tube the air is drawn, via two elbows and 1ft. of flexible piping. The flexible piping is lagged to prevent radiation, and the elbow which screws on to the carburettor is drilled with air holes. In cold weather these air holes are covered by a steel clip; in hot weather, when the atmosphere is warm and consequently expanded, the engine runs better with these air holes uncovered. When flexible tubing is used, it should be at least ¼ in. larger than the air port on the carburettor.

I do not think bad carburation of a heavy fuel would be so likely to damage the cylinders or bearing of a Scott engine as it would to damage those of, say, a 3½ h.p. internal flywheel four-stroke. With the latter the crank case holds a considerable quantity of oil, which may become thinned down by gradual percolation of the fuel past the piston rings. I may add that I have never known this to happen, but I am assured that it *does*. With the Scott, on the other hand, a very small quantity of oil is carried in the sump, and as this is constantly changing it cannot very well become unduly thinned.

During the spring cleaning evolutions an old leather golf bag was unearthed, and the stitches having rotted, it was consigned to that restful place where so many dear old friends go during this

regrettable and, I suppose, necessary period. Realising that the tank of the Scott was its most disreputable feature, I rescued this pathetic pre-war relic in the nick of time, and by the use of a few brass eyelets converted it into a most respectable covering for the tank. The pocket amidship, provided for spare balls, etc., comes in vastly useful for carrying a small "King Dick," oil-can, and other emergency gear.

#### General Hints.

If properly managed, a Scott motor cycle is by no means costly to run, while for speed, comfort, and ingenious design it would be hard to beat.

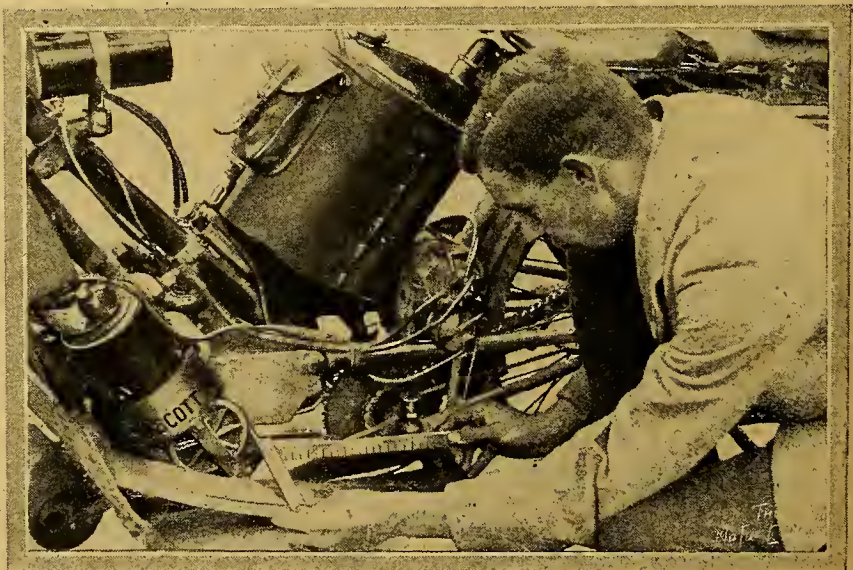
To obtain good results observe carefully the following words of wisdom. If a single-drip oil feed is used, keep the plunger clipped down and depend upon the suction of the crank case. Should one cylinder get more oil than the other, take out the small stops contained in the unions of the oil feed pipes, and hammer up the stop which is permitting an excessive feed to pass. Carefully repeat this process till correct distribution is obtained.

Low consumption and smooth running are largely dependent on correct oiling and the entire absence of air leaks. All the joints should be carefully made with seccotine or some other suitable preparation, running it well round the pins by which the rods holding down the cylinders are secured, and also round the cylinder joints.

It is a mistake to correct the tension of the chains by running the countershaft out of alignment with the engine. The high gear chain on my machine is so slack that it will almost meet, but it has run thus for over 2,000 miles, and the alignment being perfect I have no fears for it. Broken countershaft chains are invariably due to incorrect alignment—not slackness.

To correct countershaft alignment place a square at the extreme edge of the crank case door, and measure from the edge of the square to the centre of the shaft on either side.

H.M.B.



Checking alignment of countershaft by the use of a set-square and rule.

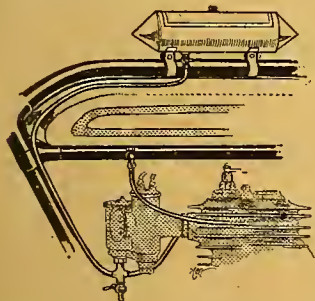


## THE EDMUND PANNIER TANK.

NOW that paraffin, petrol-paraffin mixtures, and other heavy fuels have to form the chief source of power in these days of restricted petrol supplies, motor cyclists will be interested in the Edmund pannier type petrol tank, which, owing to the design of the frame, is essential. The two compartments are of equal size, and are independent of each other; they can therefore, if necessary, be used to contain petrol and paraffin respectively. The feed pipes can then be connected up by means of a T union, and pure petrol used for starting. After the engine has warmed up, it may be run on either pure paraffin or the taps so adjusted as to give a half and half mixture or a mixture in whatever proportions gives the best results.

## SIMPLE METHOD OF RUNNING ON PARAFFIN.

THOUGH there is nothing novel in the device we are about to describe, it is some satisfaction to motor cyclists to know that they can purchase a complete outfit which may be fitted to their motor cycles to enable them to run on pure paraffin without difficulty. Messrs. Attwood's, 86, Rosebery Avenue, London, E.C., sell this equipment, which consists

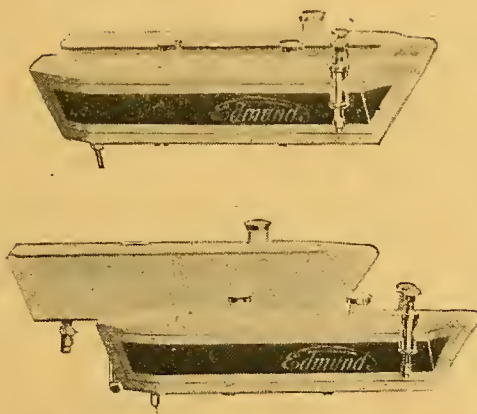


The Attwood petrol substitute equipment described in the accompanying letterpress.

of a torpedo tank to fit on the top tube, a four-way branch to be attached to the bottom of the float chamber, and a coil of pipe. The torpedo tank contains petrol for starting purposes.

To start the machine the tap at the bottom of the four-way device (at the bottom of the float chamber) is turned on, and the float chamber is drained of paraffin, which is placed in the main tank. This tap is then shut off, and the petrol tap is turned on. The engine is started up in the ordinary way. The paraffin is turned on and the petrol turned off, when the machine should run on pure paraffin. The pipe conducting paraffin is wound once or twice round the cylinder, so that the heavy fuel is thoroughly warmed; in fact, after a few minutes' running the pipe becomes very warm, and the warmth even extends to the float chamber.

We were driven for some distance in an old British Excelsior machine, fitted with a sidecar, in London traffic, and we were able to see that the running on



The spring frame Edmund tank is divided, enabling paraffin and petrol to be carried.

the heavy fuel was quite satisfactory, the only difference noticeable being when one was stopped by traffic and it was necessary for the engine to pick up. On this occasion there was the usual "paraffin knock," which may be obviated by judiciously slipping the clutch or changing into a lower gear. On a straightaway run, practically no difference could be noticed. The test was made on common, cheap paraffin.

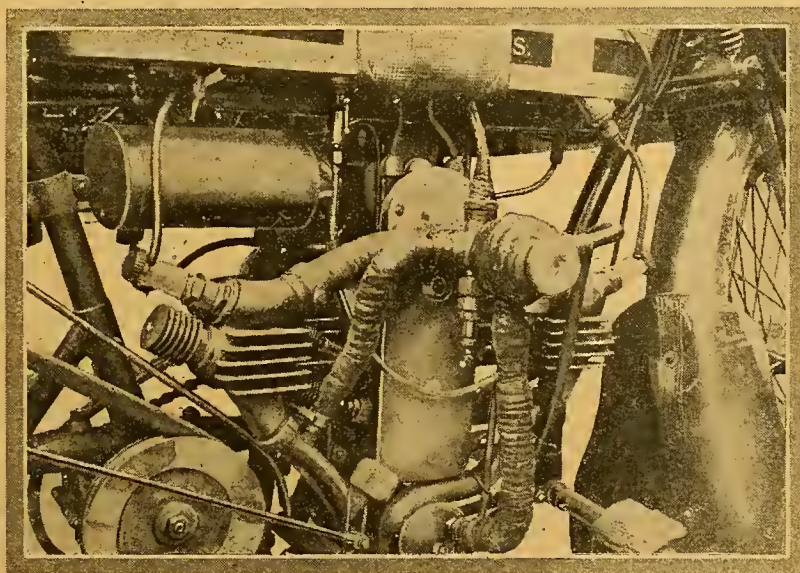
## A DOUGLAS ON HEAVY FUEL.

WE recently met quite by accident an officer not unknown in motoring circles in peace time who has seen service both in Gallipoli and at the Western front, and was enjoying the concluding days of a spell of sick leave. He was riding a 1915 2½ h.p. Douglas, to which he had added certain fittings of his own which enable him to enjoy his handy little mount notwithstanding the restrictions of the Petrol Committee.

When the gallant officer arrived in England the latter body had not long assumed control, and he had not heard much about it, but it did not take him long to decide that a petrol ticket was not worth applying for, as by the time he received it many of his precious days of respite would have elapsed. So he set to work and rapidly improved his mount, so that it would burn practically anything in the way of fuel.

He first fitted a small auxiliary tank under the main petrol reservoir, to enable pure petrol to be carried for starting purposes, and, finding that as it was situated very little higher than the carburettor the flow of petrol would be greatly assisted by pressure feed, he fixed up a tyre valve and a pump connection. He then came to the conclusion that the carburettor was not adequately warmed, so he fitted a half-inch brass pipe from the rear exhaust pipe to the existing Amac hot air jacket. In his opinion, however, this did not suffice, so he extended the air intake, as seen in the photograph, fitted an extra jacket round it, and connected it to the silencer by means of a further brass pipe, and provided an outlet for the exhaust gases. The inlet pipe and the two pipes conveying hot air are heavily lagged with asbestos bound with insulating tape.

Another improvement was the fitting of an adjustable jet, which was done by enlarging the existing Amac jet and passing through it a tapered wire to the bottom of which a small lever or handle is attached. This needle or wire passes through a stuffing box containing asbestos so as to prevent leakage. Our friend can now start on petrol with a fairly large jet opening, then turn on the paraffin or heavy fuel, and after a few minutes' running close down the jet and obtain a consumption of well over one hundred miles to the gallon. There is a detachable gauze in the air inlet extension which will collect any free fuel and also serve to exclude dust. It should be noted that the rear exhaust valve cap is provided with a brass radiator.



Douglas adapted for running on petrol substitutes. Note position of petrol tank below main tank. The sparking plugs shown are similar to those used in Zeppelin engines.



# QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Carburettor Blow-back.

**?** (1.) My machine has lately developed a serious blow-back through the air intake of the carburettor, a 1912 B. and B., thus wasting petrol to such an extent that I was left without any on the road. After putting in some paraffin, drops were blown out of the aperture. I do not think that this is caused by the inlet valve not seating properly, as the machine has never done this before. (2.) Are disc wheels dangerous on a solo mount on account of side winds or other causes? I have heard that the steering is seriously affected. Is this so?—D.A.N.

(1.) A weak inlet valve spring would cause the trouble of which you complain. When running on heavy fuel a blow-back is frequently noticed, although it is not noticed with petrol, as when petrol is used the spray is vaporised and not seen when blown back. (2.) We really do not think so, and unless the wind were high you would not feel the ill effects of the disc wheels when cornering.

## Accidents and Insurance.

**?** I have an Allon, insured with the — Co., Ltd., at a premium of £2 7s. 6d. I have had the misfortune to run into a very bad pot-hole, thereby fracturing the frame of the machine. I immediately informed the company of the mishap, and forwarded repairer's estimate. They tell me that no policy of motor cycle insurance covers such accident, but they are perfectly willing, without prejudice, to offer me half the cost of repairs, which would mean £2 12s. 6d. for them to pay. The claim I made is, in my opinion, perfectly in order, there being no evidence of reckless driving, and at the time of the accident I was fully complying with the terms of the said policy. I should esteem it a great favour if you would kindly advise me whether to accept half damages or to stand out for the whole.—A.D.W.

It is not customary for insurance companies to admit liability in the case of damage caused by road vibration. The accident must be due to impact, and although the policy submitted refers to "accidental external means" whilst the machine is being ridden, this is followed by a proviso that the company shall not be liable for the fracture of parts unless caused by impact. We think, under the circumstances, that the offer to pay half the cost of repairs is a very fair one.

## Running on Paraffin.

**?** I wonder if you would be kind enough to give me details of alterations or additions I should require to make in order to allow my cycle to run satisfactorily on paraffin. I refer particularly to alterations to the carburettor. My machine is a 1912 Triumph with their 1912 type carburettor.—H.G.M.

We refer you to recent articles and illustrations in these columns bearing upon the subject. First of all, to enable a start to be made from cold, it is necessary to have a small auxiliary tank fitted to contain petrol; the pipe from this should be connected by means of a T piece to the main fuel feed pipe. Thus, when a start from cold is desired the paraffin tap is turned off and the pure petrol turned on. It may be found convenient to have a drain tap fitted to the lowest part of the float chamber to drain off any paraffin

## Too Small a Jet.

**?** I have a B. and B. carburettor fitted on my 3½ h.p. single-cylinder motor cycle, which has never caused any trouble until a few days ago. I discovered a leakage of petrol; on investigating I found it came out of the carburettor as soon as I turned it on at the tank, and was caused by one of the washers on the jet being defective. However, I obtained a new jet (same as the old one, No. 32), and since fixing same I find my machine will scarcely take any air, runs badly, and gets hot very quickly. There is also a considerable spraying back of petrol through the air inlet directly it is opened. Do you think the new jet has anything to do with it?—C.J.

It would seem that as your trouble coincides with the fitting of the new jet it is probable that, although the jet was marked the same as the previous one, the size is really different. Try fitting the washer from the new jet on the old one. It looks as though the new jet were too small, which would undoubtedly cause the symptoms you complain of. Blow back from the air intake is often caused through weak inlet springs.

## IMPORTANT NOTICE.

### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

which may be left. In warm weather an air-cooled engine, when once warmed up, will frequently run perfectly well without any alteration at all, but to obtain the best results some device for heating the carburettor and induction pipe are really necessary. This may be done by fitting a vaporiser, such as the Silver, which we recently described and illustrated. A simple method is to take a pipe about ¼ in. bore from the exhaust pipe and coil it several times round the induction pipe, and, if possible, round the spray chamber of the carburettor. All air drawn into the carburettor should be drawn from some position adjacent to the hot cylinder or exhaust pipe. This may be done by fitting a pipe from the air intake and leading it to some suitable position. Benefit is also obtained if the paraffin fuel feed pipe is carried for a coil or so round the cylinder, so that the fuel is warmed before entering the carburettor. You need not make any alteration to the jet. A slightly lower compression may also be used.

## Popping in Carburettor.

**?** I have a two-stroke motor cycle which is causing me trouble. It starts up very easily, but after running with full air for about one mile it starts popping back through the carburettor. Then if I close the air and gradually open again the engine starts off all right for a short time, then the same occurs again. I may say that I have taken the engine down, cleaned the cylinder and rings, also the carburettor, but still the trouble continues.—J.T.

Popping in the carburettor is usually due to too weak a mixture, which may be due to any of the following causes: Stopped or partially stopped jet, choked petrol feed pipe, or any of the petrol passages. The trouble might also be caused by air leaks, either between the carburettor and engine or in the crank case. Retarded magneto timing might also cause popping. The spark should occur when the piston is on the top of its stroke with the ignition fully retarded. As your machine runs all right for about a mile, it would seem that the most likely cause of the trouble is due to a partial or occasional stoppage of the petrol supply. Make sure there is no water in the petrol; this is sometimes difficult to trace, owing to its being transparent.



## TYPES OF AVON TYRES—No. 6

## "Druid"

THE Avon "Druid" Cover is well-known amongst motor cyclists as a good product at a low figure. It is speedy, safe, and wonderfully hard-wearing if properly treated and not given work for which it is not designed. For instance, the "Druid" is quite a good cover for the front wheel of a  $3\frac{1}{2}$  solo, but the driving wheel would be better off with a "Stonehenge" or even a "Tricar" if pillion work is in the programme. Adequate tyreing and careful usage always yield handsome profits in mileage.



Type.	For Machines	1½	2	2½	2½ to fit 2½	3
Sunstone.....	Up to 8 h.p.	—	—	44/-	49/6	60/6
Combination .....	Up to 5-6 h.p.	—	—	53/-	55/-	57/9
Three-ribbed * .....	'Big' Models	—	—	—	—	48/4
Tricar.....	Up to 5-6 h.p.	—	—	38/6	41/3	44/-
Stonehenge .....	Up to 4 h.p.	—	22/9	24/9	26/9	29/6
Druid.....	Up to 2½ h.p.	17/4	19/3	21/2	—	—
Lightweight 3-rib .....	2-strokes, etc.	12/-	14/7†	16/9	—	—
Lightweight, studded..	do.	14/10	16/6‡	18/2	—	—
Endless Tube * * ..	—	6/11	7/2	8/3	9/4	10/2

\* For high-powered machines with motor rims. Also made 650×65 at 40/- and 43/8.  
 † 24×2 12/-. ‡ 24×2 14/10. \* \* Dome ends 2/3 per tube extra.

# AVON

## TYRES

Full illustrated Catalogue free from—

Avon India Rubber Co., Ltd., 19, Newman Street, Oxford Street, London, W.

Depots—Manchester,

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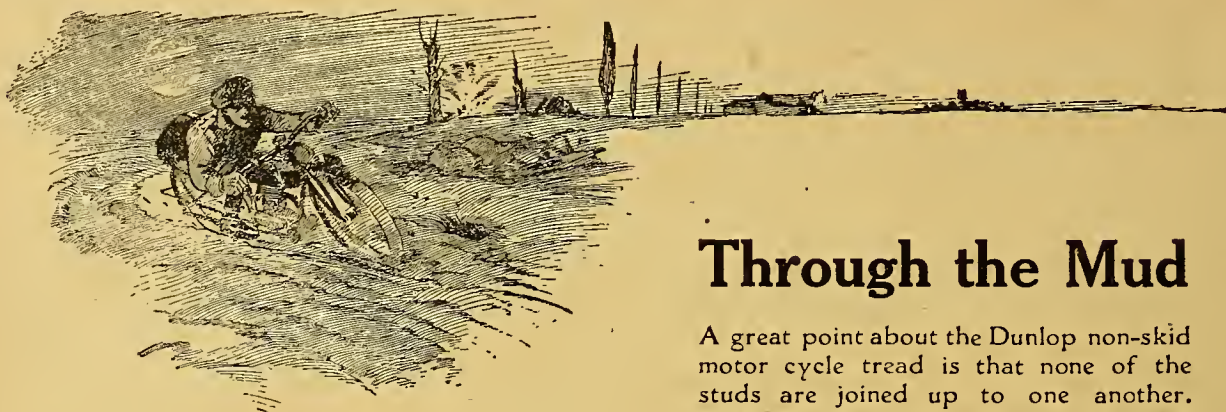
Swansea,

Paris.

1,000 Agents hold stocks. Ample supplies available.

In answering this advertisement it is desirable to mention "The Motor Cycle"





## Through the Mud

A great point about the Dunlop non-skid motor cycle tread is that none of the studs are joined up to one another. Therefore the mud can escape freely from the channels between them when the weight is brought to bear, thus permitting the studs to reach solid ground, without which a tread is ineffective.

A tread of what you might call a closed pattern, in which the mud is confined within the pattern of the tread, does not allow it to escape, and therefore the tread never reaches solid ground.

This feature of the Dunlop tread is very effective whether it is a case of driving, braking, or of a lateral skid. It might be as well to point out here that miniature designs become clogged on a greasy road, having a far weaker effect even when new than a worn Dunlop.

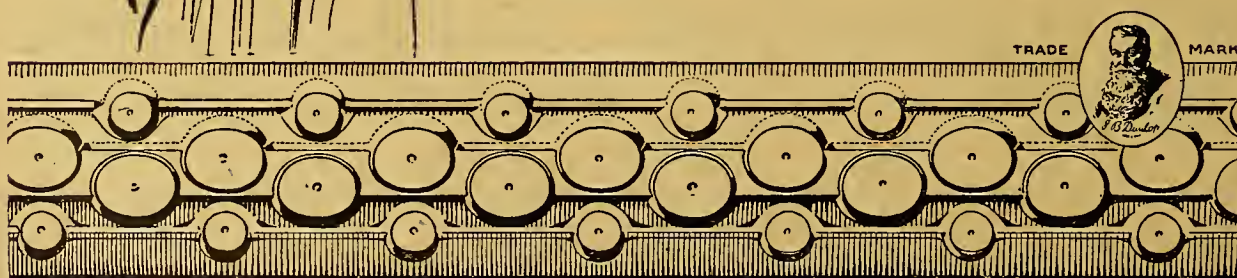


# DUNLOP

## RUBBER COMPANY, LIMITED,

Founders of the Pneumatic Tyre Industry,  
Para Mills, Aston Cross, BIRMINGHAM.

OF ALL CYCLE & MOTOR CYCLE AGENTS.



The Dunlop rubber studded non-skid motor cycle tread.



### An Elusive Knock.

**?** My 2½ h.p. motor cycle, which I bought new sixteen months ago, develops a most pronounced knocking before I have gone a mile, although it gets plenty of oil, and the engine is quite clean and the bearings all in order. I thought that the compression was too high, so I fitted a plate between the crank case and the cylinder, but this had no effect. I have also changed the plugs, with the same result. The machine goes all right before it starts knocking, and has a healthy exhaust. I have done everything I can to stop the knocking, but have failed, so shall be obliged if you can help me to solve the problem.—E.W.S.

As you say all bearings are in good order and the engine clean, it is extremely difficult to suggest what can possibly be wrong with your machine without actually seeing it. The usual causes of knocking are as follow: (1.) Worn bearings (big end or small end). (2.) Worn piston rings, rings loose fit in their grooves, or rings stuck fast in their grooves with carbon deposit (a very common fault with two-strokes). (3.) Too weak a mixture. (4.) Insufficient lubrication, pre-ignition, caused by carbon deposit, or a faulty sparking plug. (5.) A metallic knock may sometimes be traced to a loose pulley or sprocket. We presume you are running the machine on petrol; paraffin often causes persistent knocking

### Removing the Flywheels.

**?** I have a 1910 Triumph, a beautiful machine, which I am overhauling. I have got the engine down, but in seeking to get out the connecting rod to rebush I am confronted by an unexpected difficulty. I have unkeyed the timing pinion on shaft and removed that side half of crank case, but the pulley side half I cannot move. This would not matter if I could get the flywheels apart, but although I have removed the nut on crank pin the pin refuses to drive out. I am a mechanic, having access to all ordinary tools, but nothing I use seems able to negotiate what in other machines is a simple operation. Could you tell me: (1.) If the bearing spool on the pulley side is fastened internally. (2.) The method of taking off that side of the crank case. (3.) Whether the crank pin is a driving fit through the flywheel, or if the flywheel is screwed on to the crank pin? (4.) The usual method of getting at the connecting rod in this engine?—S.M.

(1.) No; this is merely a tight driving fit on engine-shaft. (2.) You require a piece of brass and a heavy hammer; the flywheels can then be driven out of their bearings. It is best to get someone to support the crank case while you hit the end of the crankshaft a few smart blows with the hammer, interposing the piece of brass to prevent damage to the thread. (3.) The crank pin is fitted into the flywheels on a taper. After the nut has been removed, the pin has to be driven out in a similar manner to that described above. (4.) When the flywheels have been taken apart, the connecting rod can simply be lifted off the crank pin. Separating the flywheels

is really no job for the amateur, as re-assembling is a very tricky job, and really requires special tools, or at any rate a lathe, to make a really satisfactory job. Unless the flywheels are really true bad running will result.

### Intermittent Running.

**?** I have a 4½ h.p. single motor cycle and sidecar, and just recently had a new cylinder and piston; but previous to having them put in it did a bit of misfiring, so I fitted a new high-tension wire. Now the trouble is, after I have run it about five miles it begins to misfire, and if I change from top gear to second gear it will sometimes keep running and sometimes stop dead. If I keep in top gear it stops dead after about thirty yards of misfiring. I have tried closing the air and giving more throttle, and have retarded the spark, but it stops just the same, and after it has stopped I give it one kick, and off it goes again for about another mile and sometimes ten miles, but then commences missing again. I have ground the valves in and changed the plugs. A lot of oil comes out of the timing case, which is by the side of the magneto. Do you think the oil gets into the magneto? I have looked at the points and they appear all right.—CHAS. R.

It is difficult to say what is the cause of your trouble from the particulars you give. An intermittent misfire is usually due to ignition. See to the following adjustments: That the little rocker arm of the contact breaker is not sticking, and that the points separate correctly; the gap when broken should be .4 mm. Unless the carbon brush is oily it is not likely to be the leakage of oil that is causing the trouble. The symptoms rather point to a petrol shortage, which may be caused through grit or dirt in some of the carburettor passages. We would recommend you again to see to this point to make sure. If the engine stops suddenly it might be pre-ignition due to overheating, which might be the result of the new piston being too tight.



### AN IMPROVED RUBBER GOGGLE.

The all-rubber goggle is still very popular among motor cyclists. While visiting the Euston Road showrooms of Messrs. Alfred Dunhill, Ltd., recently we noticed a pair of these goggles fitted with red rubber sponge round the eyeholes. These are specially designed for use at the Front when the enemy is using tear shells, but they will be none the less useful to those of us who have to remain at home, and should be most comfortable to wear.

### Knocking.

**?** Will you please let me know what is wrong with my 2½ h.p. engine? It very soon gets hot, and if I then attempt to open out, or climb hills on top, there is a metallic knocking. It has always done this. I have had a new piston and rings from the makers, but it still persists in behaving in this way. I have looked to the magneto timing; it has a fixed ignition, and the points just break as the piston is within about ¼ in. of top of stroke. The valve timing agrees with your directions in "Motor Cycles and How to Manage Them." To stop the noise, I have to reduce gas and speed on the level, and drop to low gear when climbing. I am using a 24 jet.—D.M.

The trouble is probably due to driving on too weak a mixture, or to using a plug the points of which become incandescent and cause pre-ignition. Use a good single-point plug of good make, and try a slightly larger jet. If the knocking persists, try retarding the magneto timing slightly.

### RECOMMENDED ROUTES.

#### LEICESTER TO GRIMSBY.—T.J.T.

Leicester, Melton Mowbray, Leadenham, Lincoln, Langworth, Lissington, Market Rasen, Caistor, Grimsby.

#### DROITWICH TO ABERYSTWYTH.—H.E.

Droitwich, Worcester, Bromyard, Leominster, Pembridge, Kington, New Radnor, Rhayader, Dyffryn, Aberystwyth.

#### WIGAN TO SCARBOROUGH.—J.M.C.

Wigan, Bolton, Accrington, Burnley, Colne, Skipton, Ilkley, Otley, Tadcaster, York, Malton, Scarborough. Approximately 130 miles.

#### SCARBOROUGH TO BEDFORD.—J.M.C.

Scarborough, Great Driffield, Beverley, Hull, New Holland, Brigg, Lincoln, Leadenham, Grantham, Stamford, Stilton, Buckden, Eaton Socon, Bedford. Approximately 160 miles.

#### STROUD TO FINSBURY PARK, N.—F.S.R.

Stroud, Cirencester, Fairford, Lechlade, Faringdon, Oxford, Tetworth, Stokenchurch, High Wycombe, Pinner, Beaconsfield, Gerrard's Cross, Uxbridge, Ruimslip, Harrow, Hendon, Church End, East Finchley, Highgate, Holloway, Finsbury Park.

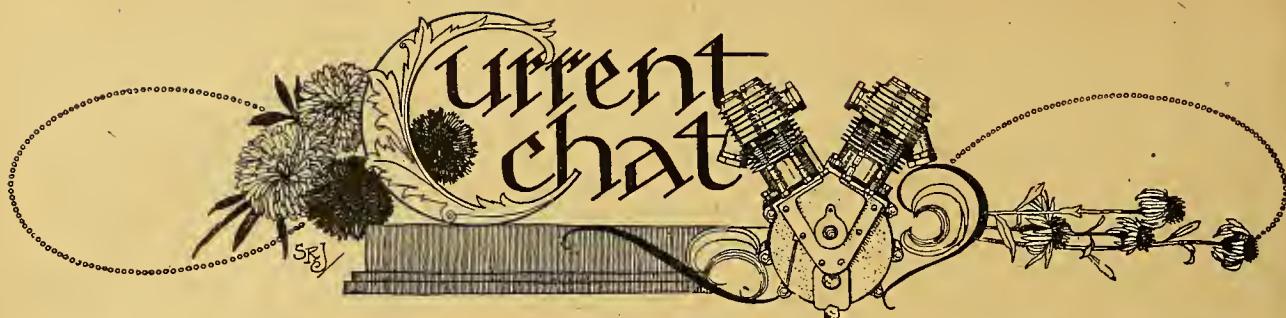
#### BRIGHTON TO GRANTHAM (AVOIDING LONDON).—H.R.A.

Brighton, Shoreham, Steyning, West Grinstead, Horsham, Dorking, Leatherhead, Cobham, Chertsey, Staines, Windsor, Slough, Beaconsfield, Amersham, Chesham, Tring, Ivinghoe, Dunstable, Houghton Regis, Amphill, Bedford, Higham Ferrers, Thrapston, Oundle, Wansford, Stamford, Grantham.

#### SHEFFIELD TO MANCHESTER AND BLACKPOOL.—T.B.

Sheffield, Tupton Hill, Rivelin Mill Bridge, New England, Ashopton, Snake Inn, Glossop, Denton, Manchester, Swinton, Walkden, Chequerbent, Blackrod, Chorley, Preston, Lytham, Blackpool.





## TIME TO LIGHT LAMPS.

"SUMMER" TIME.

Sept. 14th	...	...	7.48 p.m.
" 16th	...	...	7.43 "
" 18th	...	...	7.38 "
" 20th	...	...	7.34 "

## The Late Mr. Arthur R. Price.

Trade men have received with deep regret the news of the unexpected death last week of Mr. Arthur R. Price, a well-known Birmingham accessory dealer in Vevo goods.

## A Big Wounded Soldiers' Outing.

It is anticipated that all outings for wounded soldiers will be eclipsed on Saturday next, the date of the run arranged by the staff and workmen of the Triumph Cycle Co., Ltd. A large fleet of sidecars and cars will pick up men from hospitals in Coventry and district, and convey them to Stoneleigh Park, where a varied and enjoyable programme will be gone through.

## Great Increase in Petrol Imports.

Great interest has been aroused by the fact that 28,773,053 gallons of petrol came into this country last month, whereas only 11,526,600 gallons were imported in the previous month. These are stupendous figures, and one realises what they mean better when we say that the August figures prove that on the average 38,621 gallons of petrol came into the country every hour.

## Girls' Plucky Enterprise.

In our issue of July 27th we mentioned that two American lady motor cyclists, Miss Adeline and Miss Augusta Van Buren, were attempting a journey across the American continent mounted on Powerplus Indians. During their great journey they made a detour after reaching Denver in order to make the ascent of a famous American mountain test hill, known as Pikes Peak. The length of this hill is twelve miles, and it rises about 14,000 feet, with an average gradient of 1 in 14 and a maximum gradient of 1 in 9. The surface is extremely rough, and appalling corners abound. The two girls report that they had little difficulty either in ascending or descending. After the climb they returned to Denver and continued the following day on their way to the Pacific Coast. Their route lies *via* Salt Lake City, and around the great desert, which will undoubtedly prove the most arduous part of their long journey. From San Francisco the sisters will return to New York.

## Vaporisation of Heavy Fuel.

Yesterday's issue of *The Light Car* contains an article on the use of a vaporiser in connection with heavy fuels. The advantages and disadvantages of heavy fuels, from a light car owner's point of view, are summarised as follow:

**ADVANTAGES.**  
1. A saving of 6d. to 1s. 6d. per gallon.  
2. No restrictions as to storage.  
3. Fairly easy to obtain.

**DISADVANTAGES.**  
1. Lack of elasticity in the engine.  
2. Necessity of changing down earlier on hills.  
3. Slightly less power.  
4. Petrol essential for initial starts.

## Revival of Old Inventions.

Among recent patents filed is one relating to spring forks. This patent was applied for by a Mr. Frank Spencer, and consists of utilising rubber buffers in place of steel springs. The specification shows it fitted to a Triumph type fork. Readers will no doubt remember that on practically all Triumph racing machines the main fork spring was replaced with a rubber pad to prevent excessive bouncing. Another revival of an old practice is seen in the patent applied for by a Swedish motor dealer, Mr. Emil Alfred Jern, of Gävle. This patent is really a revival of the old front-driven Werner, the engine being mounted on the steering head, and driving by belt to the front wheel. The only improvement on the old Werner system is the inclusion of a magneto and spring forks. It is remarkable how these old inventions keep cropping up under new names.

## SPECIAL FEATURES.

## TRIALS REMINISCENCES.

ECONOMICAL MANAGEMENT OF A SCOTT.  
MILITARY NOTES FROM FAR AND NEAR

## Death of a Well-known Manufacturer.

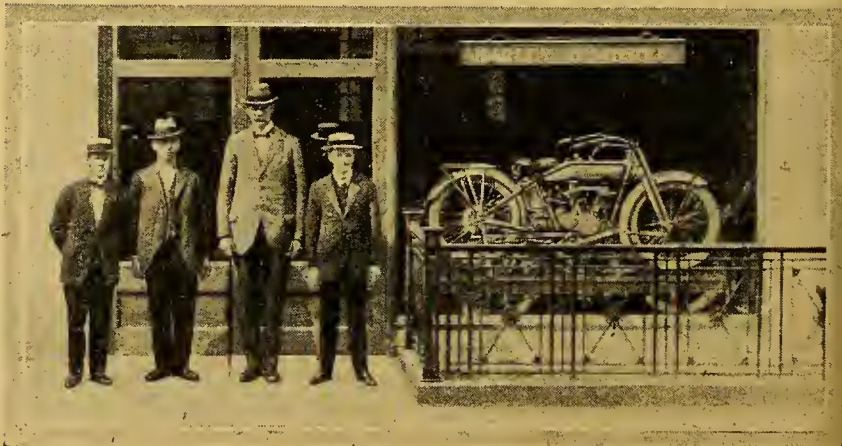
Mr. William Allday, of Birmingham, died last week at the age of 66. He was managing director of Alldays and Onions, Ltd., a firm of old standing, and manufacturing, besides the well-known Allon motor cycles, motor cars and commercial vehicles.

## A Commendable Decision.

In the endeavour to avoid street accidents, the London General Omnibus Co. has arranged for a special staff of instructors to visit the various schools in the London area with a cinematograph apparatus, for the purpose of pointing out to the children the dangers that exist, and to illustrate means whereby they can be reduced to a minimum.

## "Stop Petrol Substitutes" the Latest Cry.

A daily newspaper says that it is time the Government did something to stop the use of petrol substitutes. We expected a growl of this nature sooner or later. If the unexpected happened, and the use of substitutes was restricted, it might mean that the newspaper in question would have to curtail its motor delivery fleet. Then everybody would laugh.



## THE TALLEST MOTOR CYCLE AGENT IN THE WORLD?

Mr. Früs Hansen, of Copenhagen, is 6ft. 10in. in height. He represents the Harley-Davidson Company in Denmark, and he has just sold a Harley-Davidson to Prince Axel of Denmark. This photograph was taken in London, and shows, reading from left to right: Mr. Duncan Watson (managing director of the English company), Mr. J. A. Stone (director), Mr. Früs Hansen, and Mr. Walter Davidson (president of the parent concern)



### The One-stroke Engine.

Has any reader ever heard of a one-stroke engine? Such an engine has been designed by a reader, who has recently applied for a patent to cover his invention.

### Royalty who Motor Cycle

The King of Spain has always been a lover of outdoor sport, and a very enthusiastic motorist from the early days. Hence it is not surprising to hear that he has purchased a sidecar outfit for his children, his choice being an Indian. On the previous page we chronicle the purchase of a motor cycle by Prince Axel of Denmark.

### "Joy" Chars-a-bancs and Petrol.

At Conway, on Monday last, two companies running chars-a-bancs in North Wales were summoned for permitting motor spirit to be used for propelling motor chars-a-bancs on pleasure trips. In one case the defence was that the fuel used was a petrol substitute not inflammable at 73° F., and therefore not a motor spirit. The police retort to this was that the fuel was capable of being used as motive power for cars, and that was within the definition adopted in the Order. In the second case the defence was that the car was not a char-a-banc or a like vehicle, being an ordinary hired four-seater. In both cases fines were inflicted.

At Bournemouth a different view was taken. The solicitor for the defence, in asking for an adjournment, said he was confident that he could prove the char-a-banc was not being run on motor spirit. The magistrates, in granting the adjournment, said they could make no restriction on the running of the cars in the meantime.

### Are "Joy" Chars-a-bancs Prohibited?

Here is another case of muddling! The Conway Police Authorities rule that chars-a-bancs are prohibited the use of the roads, no matter what spirit may be used. On the other hand, the Bournemouth police adjourned a case against a char-a-banc proprietor on the latter's undertaking to prove that he was not using petrol—but a substitute.

### Admiral Arbuthnot Trophy Fund Over £200.

Since the figures published in last week's issue have appeared the following subscriptions to the above fund have been received:

	£	s.	d.
Dunlop Rubber Co. ..	5	5	0
Williamson Motor Co. ..	5	5	0
Rex Motor Mfg. Co. ..	5	5	0
Palmer Tyre, Ltd. ..	5	5	0
J. Chater Lea ..	1	1	0
J. Pedley and Sons ..	1	1	0
Lt.-Commander C. Benson, R.N. ..	1	1	0
Captain C. V. Bennett ..	1	0	0

The total sum subscribed now amounts to £206 1s. 6d.

The following donors, it may be mentioned, sent their subscriptions through *The Motor Cycle*: North Wales Motor Exchange, Capt. C. V. Bennett, Fleet-Surgeon H. Trenchard Rossiter, R.N., and County Cycle and Engineering Co.

At the next committee meeting of the A.C.U. it will be proposed that the competition for the trophy be open to officers in both Services (see letter from Capt. C. V. Bennett, page 233 this week).

### No Imports Last Month.

August represented the first blank month in the matter of imports of motor cycles.

### The Principal National Funds.

At the week-end the principal national war funds stood as follows:

Princes of Wales's National Relief Fund (£25,443,250 distributed) ..	£5,950,646	0	0
British Red Cross Fund ..	4,330,690	4	4
Tobacco Fund ..	113,707	0	0
Lord Kitchener National Memorial Fund ..	280,000	0	0

### Rumanian Petrol.

The Central Powers have hitherto relied upon Rumania for petrol since Russia destroyed the oil well plants in Galicia. Now that this important source of supply is cut off from the Prussians there are rumours that a shortage may soon be expected. The British Isles might benefit from Rumanian supplies, were direct and satisfactory means of transport available.



Sgt. W. A. Davenport. Members of the No. 5 Battery ("the Coventry battery"), M.M.G.S., will remember Davenport well, as he went out with them to France in the early days, he, Pountney and Cocker being sergeants. He was invalided home last year, but is quite well again now, and at present is with a batch of A.S.C. motor cycle fitters expecting to go abroad again shortly. Davenport was only married recently.

### A Successful Year's Trading.

The directors of Messrs. Singer and Co., Ltd., Coventry, have declared a dividend of 20%, the profit and loss account showing a surplus of £54,099 6s. 9d. In acknowledging the services of the staff at the annual general meeting, the chairman, Mr. A. E. Jagger, was pleased to mention that Mr. W. E. Bullock (works manager), who has been ill for some time, was now recovering.

### The War Prisoners' Fund.

Mention has been made before in these pages of the fact that the National Cyclists' Union, 27, Chancery Lane, London, W.C., has established a war fund for the purpose of sending parcels to cyclists who are prisoners in Germany. There are several motor cyclists among these to whom packages, containing food to the value of 7s., are being sent every week. In writing to us Mr. S. R. Noble, secretary of the N.C.U., states: "We shall be obliged to stop sending parcels to the motor cyclists unless our income shows a very decided increase within the next week or two."

### The Motor Trades' Debating Society.

Next month sees activities of the above society renewed for the coming session. Trade men anxious to join should write the honorary secretary, Mr. Charles D. Clayton, 52, Shaftesbury Avenue, W.

### An Exceptional Case.

A reader who sent his application and postal order to the Petrol Control Committee on July 26th tells us that he received his licence three days later. Our correspondent considers himself very lucky, and so he is when his case is compared with many who are still without licences. The attention of those in the latter category is called to the announcement from the Petrol Committee on page 222 of this issue.

### Petrol Substitutes and Ponce Courts.

Several readers have stated that their experiences of some petrol substitutes have shown slightly increased speed compared with pure petrol. This must have been the case with a soldier charged at Aldershot the other day with exceeding the speed limit. The defendant stated that he was using a mixture, and that his machine would never have exceeded the speed limit on petrol only!

### Dominions Sidecar Runs for Wounded Soldiers.

The popularity of sidecar outings for wounded soldiers has spread to the Overseas Dominions. Cape Town had such an event soon after the first was held in England, and Australia followed suit some time ago. As a matter of fact, the climatic conditions in most of the Dominions are more favourable for sidecar outings than those generally ruling at home.

### A Victorian Hill-climb.

The Victorian (Melbourne) M.C.C. still run occasional competitions, though naturally the entry lists are very small compared with the pre-war days. The last mail brought particulars of a hill-climb held at Wheeler's Hill—a favourite resort for competition purposes. The results were:

- OVER 600 C.C.
1. R. Finlay (American Excelsior).
  2. H. Pannach (American Excelsior).
- UNDER 600 C.C.
1. J. Spivey (3½ h.p. Precision).
  2. E. Tyler (3½ h.p. Triumph).
- SIDECARS.
1. P. C. Priestley (Ideal-Jap sc.)
  2. H. A. Parsons (Harley-Davidson sc.)

### More Missing Machines.

Instances of missing motor cycles continue to occur in different parts of the country. The following are particulars of two of the last latest cases brought to our notice:

A two-cylinder 8 h.p. Bat-Jap sidecar with dropped handle-bars, Cowey speedometer, obtained by means of a worthless cheque. Information to the Chief Constable, Eastbourne.

A munition worker's 2½ h.p. 1915 Colonial model Douglas disappeared recently from the Borough Road, S.E. T.T. bars, long scratch on left side of tank. Information to Henry Guish, 7, New Street Cottages, Milton Road, Victoria, London, S.W.



# MILITA

## NEWS OF SERVICE MOTOR CY

### FROM MOTOR CYCLE TO AERO ENGINES.

**D.** A. PEARSON, a partner in the firm manufacturing Peco two-stroke motor cycle engines, has recently accepted a commission in the R.F.C. Supervision of aero engine repairs is, we understand, his chief duty.

### FROM B.R.C.S. TO R.F.C.

**M.** R. GLYNN ROWDEN, who before the war was chairman of the Cycle-car Club, and for two years has been with the British Red Cross Society, both in France and at home, has lately been gazetted to a commission in the Royal Flying Corps as Assistant Equipment Officer. Mr. Rowden was formerly a very keen motor cyclist.

### MOTOR CYCLISTS IN THE R.F.C.

**S**EVERAL readers have written to us with reference to the photograph in the last issue showing infantry men being tested on P. and M. motor cycles with a view to transfer to the R.F.C. as motor cyclists.

These enquirers, some of them riders of long experience, have in several cases applied to the R.F.C. for enlistment, but have been informed that no motor cyclists are wanted. This remark may or may not apply to civilians.

### MOTOR CYCLING TO BUSINESS.

**W**E have had an opportunity of reading a letter written by Capt. G. W. Huntbach, M.M.G.S., from France to a friend at the M.M.G.S. training centre. Capt. Huntbach is a keen motor cyclist, and is now in charge of one of the batteries in France. He writes: "For the last three weeks—

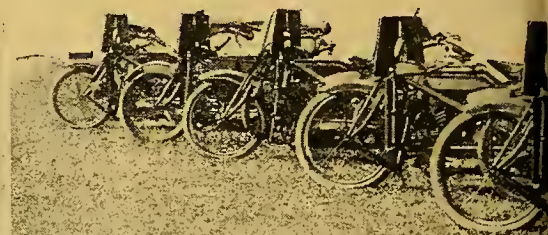


Capt. G. W. Huntbach, M.M.G.S., photographed in his Clyno sidecar 2,300 yards from the nearest Boche sap, and in a well-known town that has still a few walls left standing.

nearly four—we have had four guns in the line, and the other two are on air guard. I motor in to business daily, being overlord of the sector, which means the supervision of many lethal weapons. . . . I still continue to imbibe the practical philosophy of 'Ixon,' and devote such spare time as comes my way to a close perusal of our blue-covered friend, *The Motor Cycle*. I sometimes wish I had the somewhat ancient Premier here when I think of that very delightful spurt up the test hill at Brooklands of nearly a year ago. Meanwhile, the Clyno 'bus satisfies my present desire for speed."

### TRICK RIDING AT A TRAINING CENTRE.

**D**ESPATCH riders are very carefully tested before being finally accepted. The other day a would-be D.R. was put through his paces by a motor cyclist officer at a large training centre. Riding normally, he satisfied the latter's requirements, and he was then told to ride past at a fairly smart pace steering with one hand. This was successfully accomplished, when the rider suddenly stood upon the saddle and rode past with arms outstretched. Returning, he blew the horn with his foot. The officer was naturally taken aback. The trick rider then dismounted and stood at attention, when the officer said, "Where on earth did you learn to do that?" "Up to last Saturday, sir," replied the recruit, "I was earning £25 a week at the Music Hall." Col-lapse of officer.



**ARIEL MACHINE GUN**  
The use of the motor machine gun sidecar has spread and adapted for the conveyance of light machine guns.

### DOUGLAS REPAIR SERVICE.

**W**E are informed by Douglas that, owing to re-arrangement of military base repair shops, we are now not in a position to retain the curtailed repair service hitherto maintained.

### A FRENCH RIDER ON ACTIVE SERVICE.

**W**E are pleased to know that among our many readers in France a number of Frenchmen, some of whom occasionally write us about their motor cycle experiences on active service. One man who sent us the pictures of Rhe reproduced a few weeks ago, has had a varied experience since war began. He started in the infantry, and after active service received a commission. He was wounded last March, declared unfit for the infantry, so he transferred to the mechanical transport and was made a corporal-instructor base with British-built lorries. The move was to the front as a sergeant in the heavy motor artillery, where he is present. He has made efforts to obtain a commission in a motor section, but barred by his age, which is twenty-three, and the French War Office will grant commissions in the automobile services to men over twenty-five.

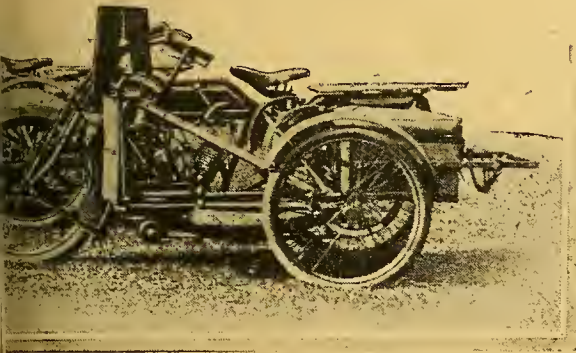
### NEWS FROM "GERMAN EAST."

**A**RTICLES published recently in the pages describing the experience of motor cyclists serving in the German East African campaign have aroused great interest. So far we have only chronicled the doings of men at home, but next week we shall publish an account from a member of the South African Despatch Rider Corps.



# NOTES.

## IN THE VARIOUS WAR ZONES.



### USED OVERSEAS.

every war zone. A batch of Ariels have been specially and a few of them are illustrated above.

### NOTE FROM SOUTHCOMB MAY.

WE have had a note from Col.-Sgt. W. F. Southcomb May, late honorary secretary of the Motor Cycling Club. Southcomb May joined M.M.G.S. eighteen months ago, but, bored with waiting for departure overseas, volunteered for service in a Coast regiment intended for German Africa. His letter was posted at Mombasa, where they had arrived after weeks on board ship.

### MOTOR CYCLIST IN THE SOUDAN.

WE hear that S. W. Carty, before the war a prominent motor cyclist in Newcastle and Liverpool, has received a captaincy. He has only recently returned from the Soudan, where he was in charge of a detachment of lorries and men working the supply transport of the Western Frontier Force fighting against the Sultan of Darfur. It is over 2,000 miles south of Alexandria. Capt. Carty's section went by rail to Assouan (Shallal), then down the Nile on barges to Wadi Halfa, then by rail to Khartoum and El O Beid (Kodofan). From there they trekked the west two hundred miles over desert and bush, where nothing but camels for transport had been seen previously. Supplies of all kinds were carried by motor lorries backwards and forwards to the railway at El O Beid to the east of operations. Darfur lies between French Equatorial Africa and Kordofan. The Sultan's army was beaten and the country taken over. Capt. Carty was praised by the Sirdar (General Sir Gerald Wingate).

### CAPT. W. B. LITTLE.

STAFF Captain W. B. Little, the famous Lake District motor cyclist, has just been gazetted a full captain in the Regular Army. Though at present retaining his work on the staff of his brigade, he will in due course take up his duty with the East Lancashire, to which regiment he has been appointed. This means that

after the war is over Capt. Little will remain in the Regular Army—a regrettable loss to the motor cycling world, but doubtless a national gain.

Thus far, though recently in the very thick of the fighting, he has come through practically scathless, with the exception that he was "gassed" in the early part of 1915. His last letter ends, "One longs for the peaceful heights of Cumberland! How I should have loved to have seen your mountains and dear old Keswick again—it is three years since I was there in summer time. However, I shall have to grin and bear it."

Capt. Little was the first motor cyclist to climb Skiddaw.

### TYRES ON ACTIVE SERVICE.

A MAN in the M.M.G.S., who has been invalided from France and is now in a Hertfordshire Hospital, says that he never had occasion to use a pump to the back tyre (Dunlop) of his Triumph during the six months he was riding the machine.

### M.M.G.S. AND RECRUITING.

FOLLOWING upon the letter from the Army Council to the Editor of *The Motor Cycle* in connection with his work of recruiting, the Commanding Officer of the Motor Machine Gun Service, Lt.-Col. R. J. Colson, has written to Mr. Smith expressing his appreciation of the services rendered, of which the following is an extract:

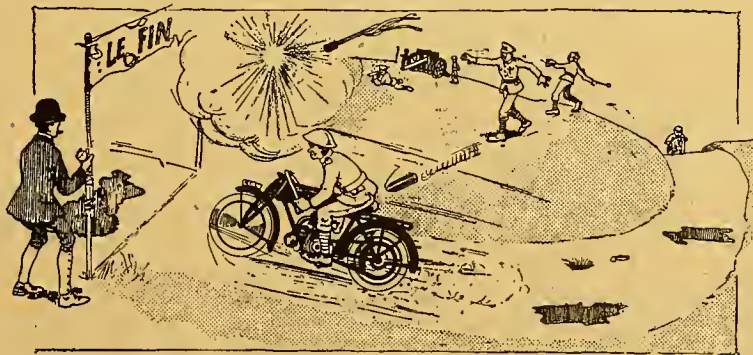
"I feel that I cannot allow your connection with us as Recruiting Officer to pass without writing to you, and again telling you how very grateful we of the Motor Machine Gun Service are for the services rendered in this respect by you."

"Since the formation of the Motor Machine Gun Service, unquestionably the fact that we have been able to enrol such an intelligent class of recruit is entirely due to the efforts of yourself and other friends of *The Motor Cycle*."

"I write this letter on behalf of the officers of the Motor Machine Gun Service, who have much appreciated the work done by you. To their expression of thanks I wish particularly to add my own."

Maj.-Gen. Sir F. S. Robb, C.B., M.V.O., wrote:

"The excellent work done by Mr. Geoffrey Smith is fully appreciated."



From a thumbnail sketch made by Capt. Huntbach. The following is his inscription: "The hill-climb of the future handicap event—1st, 3½ h.p. 'Splinter-proof,' Cpl. Helmet-Steele (scratch), makes best time of day in spite of severe handicap of four whizz-bangs, one belt S.A.A., and three grenades: 2nd, 'Ixion,' on his A.B.C."



## AVERAGE PRICES.

(From "The Motor Cycle" of Sept. 7th.)

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within five weeks.

Make.	Year.	H.P.	Average - for last week.	Latest average obtainable.
A.J.S.	1914	6 3-sp. sidecar	£55	—
"	1916	2½ 3-speed	—	£52
"	1915	—	£90	—
Ailon	1915	2½ 2-sp. 2-stroke	£27	—
Bat.	1914	6 3-sp. sidecar	—	£45
"	1913	8 sidecar	£40	—
Bradbury	1913	4 3-speed	£24	—
"	1914	—	£38	—
B.S.A.	1916	4 3-sp. sidecar	£63	—
"	1916	4 3-speed	£47	—
Chater Lea	1914	6 3-sp. sidecar	£45	—
Calthorpe	1915	2½ 2-speed	£22	—
Clyno	1914	6 3-sp. sidecar	—	£50
Connaught	1914	2-sp., 2-stroke	£23	—
Douglas	1915	2½ 3-speed	£47	—
"	1915	2½ 2-speed	£45	—
"	1915	4 3-sp. sidecar	£68	—
"	1914	2½ 2-speed	£38	—
Enfield	1916	6 2-sp. sidecar	£75	—
"	1915	6 2-sp. sidecar	£70	—
"	1915	3 2-speed	£40	—
"	1916	3 2-speed	—	£47
"	1914	3 2-speed	—	£34
H. Davidson	1915	8 3-sp. sidecar	£75	—
Humber	1913	3½ 3-sp. sidecar	£28	—
Indian	1915	5 3-speed	£47	—
"	1916	Powerplus sidecar	£90	—
"	1914	7 3-sp. sidecar	—	£49
James	1914	4½ 3-sp. sidecar	£40	—
"	1916	4½ 3-sp. sidecar	—	£78
Levis	1915	Popular	£22	—
"	1914	2½ 2-sp., 2-stroke	—	£24
Matchless	1915	8 3-sp. sidecar	—	£74
"	1914	8 2-sp. sidecar	£50	—
"	1913	8 2-sp. sidecar	£41	—
New Hudson	1915	2½ 2-speed	—	£25
"	1915	4 3-sp. sidecar	£55	—
New Imperial	1915	2½ 2-speed	£24	—
P. & M.	1914	3½ 2-sp. sidecar	£41	—
Premier	1914	3½ 3-sp. sidecar	£40	—
"	1913	3½ 2-sp. sidecar	—	£35
"	1915	2-stroke	—	£20
Radco	1915	6 2-sp. sidecar	£47	—
Rex	1914	3½ T.T.	—	£35
Rover	1914	3½ 3-sp. sidecar	£45	—
Rudge	1915	3½ Multi gear	£45	—
"	1914	5 Multi sidecar	—	£50
Scott	1914	3½ 2-sp. sidecar	£50	—
"	1915	3½ 2-sp. sidecar	£58	—
Sunteam	1914	6 3-sp. sidecar	£71	—
"	1914	3½ 3-sp. sidecar	£62	—
Triumph	1915	2½ 2-sp. 2-stroke	£36	—
"	1914	4 3-sp. sidecar	£53	—
Williamson	1915	8 2-sp. sidecar	£70	—
Zemth	1915	6 Gradua sidecar	£35	—
"	1915	8 Gradua sidecar	£62	—

## McLAUGHLIN VARIABLE SPEED GEAR.

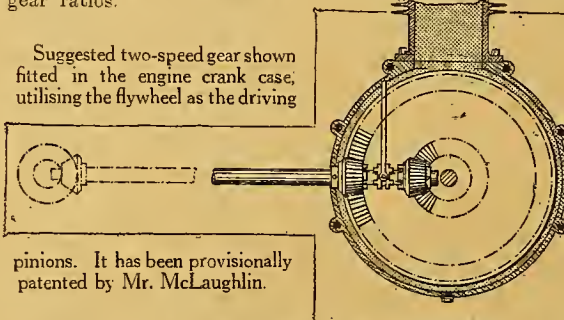
Incorporated in the Engine.

A VARIABLE gear obtained by means of several bevels and sliding pinions or dog clutches is not altogether new to motor cycles, and has been quite common in connection with cars, several having been arranged to give even four or five speeds, but a simple adaption of this type of gearing has been provisionally patented by a Mr. A. W. McLaughlin.

The gear can be adapted to be placed in almost any convenient position—either in the back wheel or in the engine. In this particular patent specification the gear is incorporated in the engine, and so does away with a separate gear box unit. It is proposed to utilise the flywheels on which to secure the large bevel or gear wheels, or the teeth may be incorporated with the flywheels.

With each set of teeth or bevel gear on the engine engages a small bevel or gear wheel, mounted on a shaft, which is coupled with the final drive. This may be either by shaft or any other convenient means.

These gears are mounted in such a manner that they can rotate freely on the shaft, but cannot slide. Therefore, when not connected solidly up by a sliding double-faced dog clutch to the transmission-shaft, they are able to rotate freely, and to give a free engine or neutral position. The driving-shaft between these two loose pinions is either squared or feathered, on which the double-faced dog is mounted, and on which it can slide but not rotate independently. Consequently, upon movement in either direction, it is possible to lock either pinion solid with the shaft, and so obtain a variation of gear ratios.

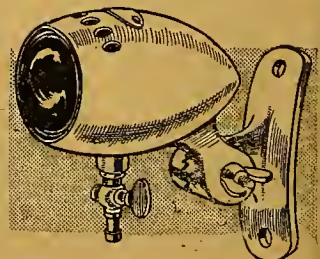
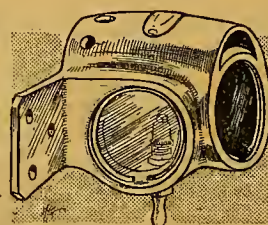
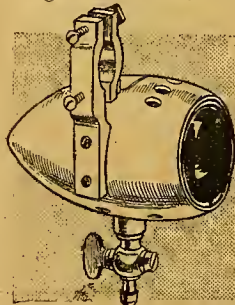


The chief point of interest is that, by adopting this type of gear, all ratios are what might be termed direct-drive—that is, the drive being transmitted direct from the power-shaft to the transmission-shaft through only one set of gears, no matter which ratio is engaged. The specification only indicates two speeds being utilised, but there is no reason why more should not be used.

## SOME USEFUL PATTERN TAIL LAMPS.

THE three tail lamps illustrated are neat aluminium castings sold by the T.W.R. Manufacturing Company, 5, Baldwin Gardens, Acton, London, W. Having smooth exteriors, being made of polished aluminium, and being practically all in one piece, the lamps are easy to clean, strong, durable, and light. They are, moreover, quite easily fitted.

The three patterns dealt with are so designed that they may be attached to



## EXAMPLES OF T.W.R. TAIL LAMPS.

From left to right: Torpedo-pattern aluminium model for fitting to carrier stay. For bolting to number-plate. With adjustable rear mudguard fixing.

the number plate, to the back mudguard, or to one of the carrier tubes. The T.W.R. Manufacturing Co. also supply other lamp accessories.

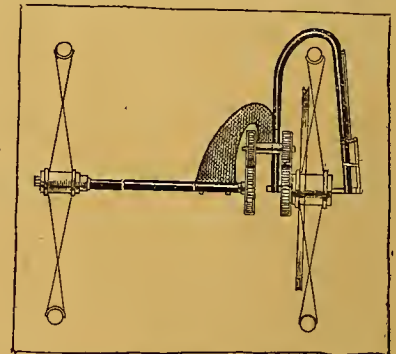
## LIVE AXLE FOR SIDECARS

WITH the object of overcoming the trouble sometimes experienced with heavy sidecar outfits due to rear wheel slip, a Mr. A. E. Ralph, of 18, Percy Street, Garndiffaith, Pontypool, has patented a device which can be fitted to any sidecar machine without alteration to the frame, enabling the sidecar wheel to be driven.

On the hub shell of a hub clutch is mounted a spur gear wheel which drives two gears mounted on a short counter-shaft supported in a casting mounted on the live sidecar axle. This counter-shaft transmits the power to the sidecar

wheel via another gear wheel mounted on the end of the live sidecar axle. Now that both wheels are being driven, a differential action is necessary in order to negotiate corners without causing wheel skidding. This is obtained in a rather novel manner by means of a connection between the steering head of the motor cycle and the hub clutch. When the steering head is turned to negotiate a corner the

clutch is slightly released by means of a rod connection between the steering and



A. E. Ralph's design for driving the sidecar wheel.

clutch mechanism; thus when a corner is being taken the drive is transmitted to the sidecar wheel only.





### The Arbuthnot Trophy.

Sir,—Will you please place the enclosed note for £1 to the Arbuthnot Trophy Fund? Could not this competition be open to officers of both services?

C. V. BENNETT, CAPT., A.S.C.

[The amount named was forwarded to the secretary of the Auto Cycle Union, who in acknowledging our letter mentioned that Capt. Bennett's suggestion would be brought up at the next committee meeting.—Ed.]

### Petrol Substitutes.

Sir,—Is it not time that the inflated prices of *all* petrol substitutes were reduced? What I say is get a vaporiser, which can be had for a few shillings, and run on the cheapest, commonest paraffin. Do not mix it with petrol. After this war petrol will not be heard of. A. DURANT.

Sir,—I was disappointed much the same as "CW 45." I called at the Binks works, and was charged 2s. 8d. per gallon for five gallons. I asked if it would be necessary to change the jets in my carburetter (a new 3 jet Binks), and was told no, as I had a hot air pipe fitted. The result was not so good as on paraffin. J. LEEDALE.

Sir,—Commencing to run an Allon two-stroke on paraffin, I found it a deal of trouble to start the machine. Petrol had to be injected and the plug removed for the purpose. This seemed the only way. It was then very difficult, and the process of removing and replacing the plug needed to be repeated several times. But a better method occurred to me. I removed the valve from the top of the drip feed, and, with the pump empty, poured the petrol down the oil pipe into the crank case. The result was, of course, an immediate start, and the method never fails. Best White Rose paraffin is used, at 1s. 4d. per gallon, and is quite satisfactory. (Rev.) T. W. MORGAN.

Sir,—I read with interest Messrs. Binks' letter in your last issue, as this is the first attempt I have seen in print to justify the enormous increase in the price of fuel.

Messrs. Binks make a plain statement that the whole of the increase is to be attributed to the freight. Let us see what this means. A forty-gallon barrel measures approximately twelve cubic feet, so we may take 133 gallons to represent one freight ton of forty cubic feet. This means that an increase from 1s. 4d. to 2s. 6d. per gallon = 155s. 2d. per ton (i.e., 133 x 1s. 2d.). Now do Messrs. Binks maintain that the freight has increased by this amount since they advertised the fuel at 1s. 4d.? R.B.

Sir,—Seeing the letter by "CW 45" in your issue of the 7th inst. my experience may be of interest.

I sent Messrs. C. Binks, Ltd., my cheque for one barrel of fuel at 1s. 10d. per gallon, and was then informed that the price was advanced to 2s. 6d., except to users of their carburetter, to whom it was 2s. 3d. I felt that this was more than I was willing to pay, and so informed them. My remittance was immediately returned, with a regret that I could not purchase at the new price.

What more can "CW 45" wish for in these abnormal times, when the price of everything varies daily?

The usual disclaimer.

CPL., R.E.

## LETTERS to the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

### Adulterated Petrol.

Sir,—I have been expecting for a long time to see complaints in your paper of the quality of the stuff now sold as petrol, and I hope many readers will take advantage of your columns to let you know their opinions.

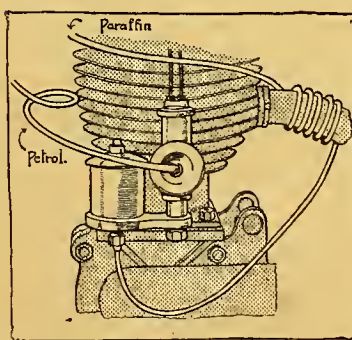
Every motorist or motor cyclist one meets in this neighbourhood (Monmouth) is firmly convinced that petrol is now adulterated to a very great extent—in fact, the common opinion expressed is that it is half paraffin. I know that the cylinder and valves of my motor cycle—a 3 h.p. Enfield—get carbonised up twice as quickly as they used to, and that if I happen to spill a little of the so-called petrol on my clothes it smells for hours—an unmistakable smell of paraffin. Petrol would evaporate very quickly, so I consider the experience a convincing proof of adulteration

DAN H. PRICE.

### Running on Paraffin.

Sir,—I should like to give my experiences to encourage riders of two-stroke machines. In the course of the last four months I have ridden two machines, both of which were fitted with the Villiers two-stroke engine, over a distance of more than 1,000 miles on paraffin with perfect success, including a tour round North Wales, embracing the famous Cross Foxes Hill out of Dolgelly, which the Diamond took with my brother on the carrier without a hitch.

I am sending you a sketch showing how the bicycle is rigged up for this work. The paraffin is contained in the



main tank and led to the float chamber by means of a copper pipe, which is lapped five times round the exhaust pipe about 1½ in. from the flange holding the pipe to the cylinders. This assures perfect vaporisation when running, as the paraffin is heated after a short run to such a degree that, should the nut be unscrewed from the base of the float chamber and a

few drops of the fluid allowed to run on to the hand, a nasty burn will be caused.

Petrol for starting is taken from a small tank, on the back stay of the machine, direct to a nipple and jet soldered into the anti-blow back cap of the carburetter. This entirely obviates the necessity of emptying the float chamber of paraffin before a start can be obtained, as the fine spray of petrol enters the cylinder direct, so making, practically speaking, two carburetters—one for petrol and one for paraffin.

The engine will now start up from cold, with the float chamber full of paraffin and the petrol spray running, with one pull of the back wheel. I should like to point out that I have at no time had an air lock in the long paraffin pipe or carbon deposit on the plug points. The consumption of petrol by this method is hardly appreciable, as the amount I have obtained this last month, namely, one and a half quarts, will last indefinitely.

A ride of 216 miles (Wolverhampton to Towyn, North Wales, and back) cost in fuel 2s. 6d., i.e., two and a half gallons of common paraffin.

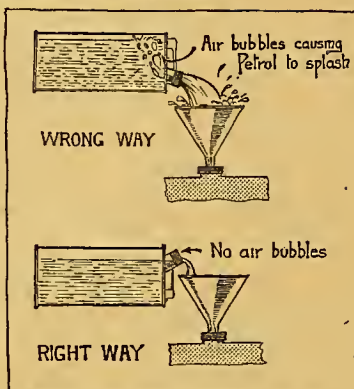
F. A. HOLWARD.



### When Filling your Petrol Tank.

Sir,—I have noticed that a large number of people, when filling their petrol tanks from Shell or Pratt's cans, invariably hold the cans the wrong way, and thus cause the petrol to splash badly in the funnel. The result is a considerable loss. The enclosed sketch shows the right way to prevent this loss, which at the present time may be of value to several readers.

H.L.S.



### Cause of Overheating.

Sir,—I was interested to read in your issue of August 31st Mr. Stephenson's suggestions as to the cause of overheating. His theory, however, is based on certain assumptions which, I think, are open to dispute. The phenomenon to which your contributor refers is well known to those who are familiar with spark gaps and sparking voltages. So far so good; but can such a phenomenon be reproduced in the cylinder of a motor cycle engine? Personally, I think not; the analogy is not strictly correct. The conditions of your contributor's experiments and those obtaining in an engine can scarcely be assumed to be similar. The experiments, I presume, were made in a still atmosphere, and sparking was maintained continuously. In a motor cycle engine these conditions are not repeated. Between each recurring spark the pressure of the medium rises enormously, and then falls to a negative value, taking atmospheric pressure as standard. The gaseous particles in the cylinder would thus appear to be in a state of motion throughout the entire interval. In these circumstances it is difficult to believe that the ionised particles of gas, which are conductors, still surround the plug points at the next sparking moment, and so by conduction prevent the ignition of the charge.

In very rare cases Mr. Stephenson's theory may prove to hold, but I am rather inclined to attribute ignition failure, accompanying overheating, in the majority of cases, to a failure of the plug insulation at the higher temperatures. That such failure occurs in this manner I have proved to myself on many occasions by heating the body of a plug and then testing its insulation resistance.

Much could be added on the general question of overheating, but that does not concern the above remarks on the suggested theory.

Teddington.

A.K.

Sir,—After reading the leader in *The Motor Cycle* for August 31st on "Overheating and Engine Stops," and also Mr. C. H. Stephenson's explanation of overheating, and also realising, as you say, the possible great importance to motorists in general of definitely finding out what causes an engine to stop when overheated, I have decided to give my own ideas as to what actually happens.

I am of the same opinion as your contributor with regard to the amount (weight) drawn into the cylinder being practically the same when the engine is hot as when cold, also with the remark that the stoppage is not caused by defective lubrication; but I do not think his theory, which he calls "silent" discharge, is the cause, or how is it that changing gear will cause an improvement in the firing of the engine? also the engine will get hotter on a low gear and still continue to fire.

Before giving my theory I will give the facts I base it on. I have an old air-cooled tricar, with handle starting direct to the engine-shaft and accumulator ignition, no exhaust lifter, the engine being started by forcing it over the compression. When this tricar is driven up a very steep hill until the engine stops through overheating, if I get out immediately and switch off the ignition, and attempt to pull the engine over compression, I am only able to pull the piston about one-third the way up the compression stroke

B18

when the cylinder is suddenly forced down with such violence that, if I held the handle firmly, it will cause the front wheel nearest to me to lift off the ground. The force is not like the usual backfire, being a strong push. It is absolutely impossible to hold the handle of this machine against the ordinary backfire. If I wait about four seconds and then try again the same thing occurs only with less force. After waiting another four seconds, if I pull the handle very suddenly I can force the engine over compression, when it will practically start and run three firing strokes, i.e., six revolutions, and then stops. The cylinder casting being very heavy retains considerable heat for a short time.

My theory based on this is that on the compression stroke the gas absorbs the heat from the engine, causing through expansion, gradually increasing compression as the engine gets hotter. This heated, highly compressed gas expanding (lightly exploding) on the compression stroke with gradually increasing force as the engine gets hotter and hotter, until, in some cases, knocking is caused.

In other cases, through badly fitting rings, the force of the gas is practically all wasted before the engine reaches the firing stroke, which finally brings the engine to a stop without knocking.

If this theory is correct it also explains why the engine revives when the gear is changed, because thereby the engine can obtain greater momentum to overcome the expanding gases.

F. B. RUDD.

[We think our correspondent is troubled with pre-ignition, caused by some point in the cylinder becoming incandescent, and the only reason that the symptoms are not accompanied by knocking is that, the engine being of old pattern, the compression is lower than generally used.—Ed.]

### The Scott Sociable.

Sir,—Being a regular reader of your paper, I hope you will publish the following remarks concerning the Scott three-wheeler:

I consider the Scott Sociable is perfect, and I can find no reason to justify Mr. S. L. Burnard's expression that it is "horrible." No, sir, the Scott Sociable is not horrible: it is, only unusual, perhaps, and unusual would mean horrible only for the man in the street, who will not, or cannot, understand, but prefers to laugh. I think Mr. Burnard himself will agree with me when I say the principle and mechanical parts are excellent. My purpose is only to write upon the aesthetic point of view. What would be the basis of your opinion when judging the Scott's appearance? Frequently the artistic value is the result of habit; and many people judge beauty by usefulness. In the early days we found the first motor car very ugly, chiefly because we had been used to seeing a horse before every vehicle.

Thus to some people the Scott three-wheeler seems ugly because they have become so accustomed to seeing four-wheelers. A fourth wheel added to the Scott would be exactly like adding an extra window in a house in order to obtain a symmetrical effect. (DR.) RENE CAMUS.

French Army.

Sir,—Having read Mr. Scott's reply to Mr. Burnard's criticism of the Scott Sociable in your issue of the 17th, we would point out Mr. Scott's remark that "hitherto the man wanting comfort and cleanliness has had no other alternative" than the four-wheeler proves Mr. Scott is not conversant with all that has been done to overcome these defects.

Without going into the technical causes why the sidecar combination and motor cycle are the dirtiest vehicles on the road, we say many years' work by us has enabled the ordinary standard machine to be converted into a perfectly clean vehicle and the comfort increased.

The standard sidecar combination is the most economical vehicle both in first cost and upkeep, and for these reasons will be used by a certain section of the community, and if perfect cleanliness and increased comfort be added, the vehicle is made usable by a great number of professions and trades.

KUMFURT MOTOR CYCLE AND ACCESSORIES CO.  
F. WAUGH.

Sir,—There is no doubt the Scott Sociable embodies the desires of motor cyclists, particularly those who are com-



pelled by their business or profession to ride all the year round in all weathers, and, as Mr. Scott remarks, the absence of the fourth wheel does not offend the eye of the occupants of his Sociable, and is immaterial to their comfort. There are two things, however, I am anxious to see announced, and that is the price at which it is to be sold and its petrol consumption. These two are, in my opinion, of most interest to sidecarists, and will decide whether Mr. Scott is to secure the favour of this market, which, I venture to say, Mr. Morgan has not obtained, because the purchase price of the Morgan runabout is beyond the means of the average sidecarist. I think "Ixon" is right when he says "the Scott sociable at £75 would obtain an enormous vogue, but with every £5 advance towards £100 its chances of big sales would dwindle appreciably, and at £100 might be problematical."

SIDECARIST.

### The Silver Paraffin Vaporiser.

Sir,—Allow me to state that this vaporiser was fitted to my old Progress car in 1899, and was not Mr. Silver's idea at all, nor was it mine or Mr. Durant's. I copied the idea from an old farm tractor used by my firm in Canada, the only difference being that it had an outlet as well as an inlet port for the exhaust gases.

I do not know Mr. Durant, who also claims to have invented the apparatus, neither have I seen any of his vaporisers, although I have seen four similar vaporisers of the Silver type fitted by a Chatham firm.

OLD STAGER.

Sir,—With your permission I will answer Mr. Silver's letter (page 212, September 7th). From what I can see these letters will continue indefinitely until you tell us both to stop. One thing I am pleased to see is that I have a champion in "Adaptable." Evidently others have been to the States besides myself; nearly every oil engine I came across out there had a similar vaporiser so fitted. When I get a minute to spare I intend running round Queen Victoria Street to see how many oil engines in this country are so fitted. I have received an anonymous letter stating that, should Mr. Silver take proceedings against us, the writer will be ready with proofs that the vaporiser was fitted to the first motor cycle introduced into this country. Of course the idea is as old as the hills. Mr. Silver has evaded the point by not giving us the protection numbers. If it is protected we shall contest it, and shall protect all our customers using the device which we have fitted to their machines.

"H.W.J.K." says that there are no such requirements as stamping registered numbers on an article registered. Allow me to state that "H.W.J.K." is wrong, and I would refer him to the official pamphlet on the Registration of Designs.

A. DURANT,  
OAKLEIGH MOTOR CO.

### The Boycott of German Goods.

Sir,—I should like to write you a line in connection with Mr. Pritchard's letter in your issue of August 24th.

Even in business will he welcome German commercial travellers and German goods so soon as the war is over?

"Business"! I am sick of the word. Even now, after this country has really been fighting for its life for over two years, some people seem able to think of nothing but "business." For my own part, I feel it is not a question of "crushing German trade," but—could any Britisher deal amicably with German firms and in German goods directly the war is over without feeling that he is in some way false to the memory of men, from all parts of our Empire, who have fallen in this great struggle? And, worse still, false to those men who will remain with us permanently maimed or blinded—in some cases, maimed or blinded by wilful neglect on the part of our enemies?

No. 2890, R.F.C.

B.E.F.

Sir,—I am sorry if my letter should have vexed your correspondent "M.R.C.S." It was far from my intention to vex anyone, my desire merely being to question the advisability of adopting a trade war after the blood war.

"M.R.C.S." is quite at liberty to contradict my statement that "muddling diplomacy on both sides caused the war," but as he fails to bring any evidence in support thereof, his contradiction is of little value against my statement, which is based on examination of the Government's Blue Book.

Nothing in my letter is so nonsensical as your correspondent's suggestion that in comparing our motors with those of the remaining motor manufacturers of the world, we should ignore German motors. Does "M.R.C.S." want us to believe that German engineering is so rotten that we can afford to ignore it?

"M.R.C.S." does not wish to "help Germany out of her shibboleth of Kultur," but "Britisher" in the letter which started this correspondence said that the "spirit of German Kultur must be crushed," and I agree with him, so that on that point it is two to one against "M.R.C.S."

There is no need for "M.R.C.S." to remind me of the authenticated atrocities, for I have studied the Government book on this matter closely, and notwithstanding that I hope "M.R.C.S." will live to learn that hate can never end hate, and the more you do in the direction of crushing a nation (the thing, of course, cannot be entirely done) the more will you prepare for a future imbroglio, instead of obtaining that which we all desire, i.e., permanent peace.

H. PRITCHARD.

I read a letter by H. Pritchard in your issue of August 24th lamenting that you are supporting the idea of a trade war with Germany.

If Mr. Pritchard will take the trouble to read translations and extracts from German writers written before and during the war he will find good cause to alter his present views. The German writers in question distinctly point out that Germans are the chosen people of God, and that they have the right to mould everyone to their ways of thinking. It should not be forgotten that Germany has waged an economic trade war on us at least for twenty years. Every German is also taught that it would be necessary to wage war to bring other nations to their way of thinking, and it is all nonsense to think, as H. Pritchard does, that after the enemy has been beaten on the field of battle his views will be changed. Our main trouble previous to the war has been the *laissez faire* policy adopted in most of our dealings, and we have greatly suffered for it in the past, and would continue to do so in the future if we adopted the views expressed by H. Pritchard.

Every motorist to whom I have spoken on the subject think your announcement regarding enemy advertisements not only patriotic, but a wise proceeding.

S.  
Wimbledon Park, S.W.

### Variable Ignition for Dixie Magneto.

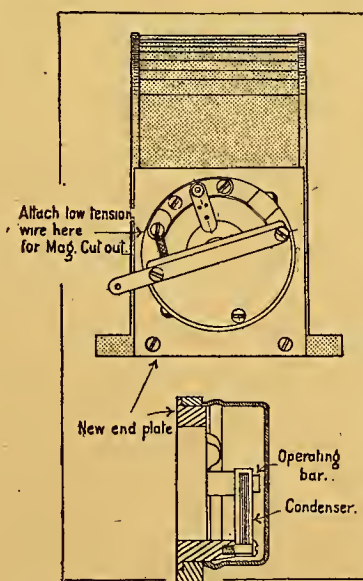
Sir,—Some time ago I converted a fixed ignition Dixie magneto to variable with excellent results. The enclosed sketch shows the converted magneto at full retard, and 35° of movement are obtainable without misfiring.

All that was necessary was to turn off the die-cast metal plate to the diameter of the projecting lip on to which the dust cap fits, but leaving a small flange at the back. A square gunmetal plate was cast and bored out to fit the new shape of the original end-plate so that they could revolve in relation to one another. An operating bar and a Bowden magneto control finished the job.

The alteration has been in commission on my Connaught for three months now, and has shown no defects. It is a boon and a blessing after fixed ignition.

There is no chance of the ring slipping out of position and altering the gap, as there are three forces to hold it in place. (1.) Contact breaker spring, (2) position of magnets, (3) dust cap. The idea is protected.

K. ORD-MACKENZIE



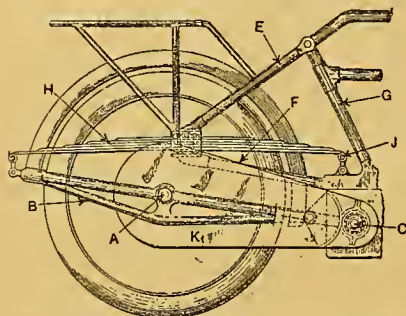


## PATENTS.

Abridged by ERIC W. WALFORD,

### Rear Springing.

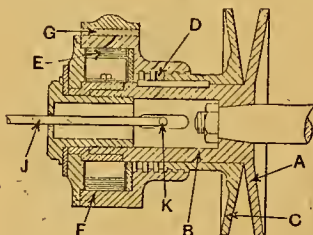
The illustration shows a well-thought-out system of rear springing which can be used with enclosed chain drive, and in which there is a minimum of unsprung weight, whilst at the same time the main rear part of the frame is rigid, so that there is no difficulty in the attachment of a sidecar. The wheel spindle A is carried by a pair of girders B, which are connected at the back and front, and are pivoted at C co-axially with the countershaft. The usual rear frame triangle constituted by the tubes EFG is somewhat modified in form, but, as previously stated, it is rigid, and at the junction of



the tubes E and F are formed the housings for the pivots of a pair of cantilever springs H, the front ends of which are anchored to the frame at J, whilst the rear ends support the wheel-carrying girders B. It will be clear that, as the wheel rises and falls, the girders rock on their pivot C. The right-hand girder carries the chain case K, so that there is no relative movement, and the tension of the chain remains constant. Of course, the system may be employed with belt drive if desired.—Lt.-Commander T. S. V. Phillips, R.N., No. 15,690, 1915.

### A Philipson Pulley Development.

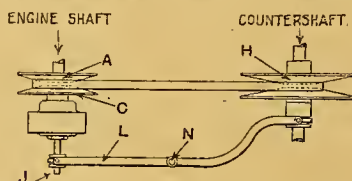
It will be remembered that the well-known Philipson pulley, shown in the sectional view, provides the effect of a variable engine pulley, either automatically by means of a governor weight or



positively by the actuation of a brake device. Briefly, the pulley comprises a fixed flange A, having a sleeve B on which may slide but not rotate the movable flange C. The movable flange is operated by a screw thread device and spring E, contained within a housing F on which the brake G acts. It will be clear that, as the pulley flanges AC are adjusted, the tension of the belt will vary,

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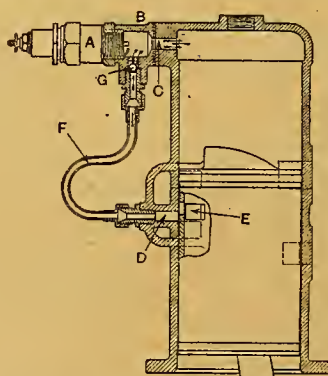
and the present patent covers a development whereby, as shown in the plan view, the driven pulley H also is adjustable to maintain the correct belt tension, and at the same time increase the variable speed effect. This is effected by attaching to the boss of the pulley flange C a rod J, the securing pin K of which slides in a slot in the inner sleeve B. Thus as the flange C is adjusted the rod J is moved, operating one end of a pivoted lever L,



the other end of which actuates the corresponding flange of the driven pulley H. Thus, as the engine pulley is opened out to provide a lower gear, the rear pulley is closed, taking up the slack of the belt, and increasing the driving ratio. In order that the amount of movement of the two pulleys may be co-ordinated to give the desired effect, the pivot N of the lever may be adjustable longitudinally, so that the ratio of movement may be varied.—W. T. W. H., and P. C. Philipson, No. 5,814, 1915.

### Two-stroke Engine Improvement.

With the object of preventing misfiring or four-stroking at low speeds, this inventor proposes to conduct a small supply of fresh gas, undiluted with exhaust residue, to the neighbourhood of the sparking plug. The plug A is located in a chamber B, which is separate from the cylinder casting, and communicates with the combustion head by a comparatively small passage C. In the cylinder



wall just below the usual transfer passage is a passage D, which is opened by a port in the piston E just before the main transfer passage is opened. Thus a portion of the charge in the crank case passes through the passage D and pipe F through the non-return valve G into the firing chamber B, driving out any burnt gas therein, and surrounding the plug points. Immediately succeeding this the main transfer and compression take place, and on ignition the pure gas in the chamber B passes through the passage C, igniting the main charge, which, under certain conditions, might not be suitable for firing by a direct magneto spark.—J. T. Booth, No. 14,062, 1915.

## SPARKLETS.

### Joining the Army.

Mr. R. D. Storey, who has been connected with the Great Portland Street motor agency of that name, is giving up his interest in the concern owing to his joining His Majesty's forces. He hopes to return to the business after the war.

### C.A.V. in Manchester.

Messrs. C. A. Vandervell and Co., Ltd., have now completed arrangements at their Manchester depot, 12, Victoria Buildings, St. Mary's Gate, for the carrying out of repairs to accumulators of all descriptions.

### Dreadnought Developments.

Under the management of Mr. H. G. Olden the business of the Dreadnought motor policies has greatly increased in volume, and has necessitated opening additional premises at No. 1, Queen Victoria Street, E.C.

### Petrol Substitutes in London.

We are informed by Oylers, Ltd., 35, New Cavendish Street, W., that they have been appointed sole London agents for Binks fuel and carburettors. They have also taken the agency for Kempol fuel, and intend to specialise in everything relating to petrol substitutes.

### Balancing of Engines.

We are often asked advice on the subject of engine balancing, and it may be mentioned that the present edition of "Motor Cycles and How to Manage Them" contains an extensive article, written in simple language, on the subject. The handbook is obtainable from our publishers, Iliffe and Sons Ltd., 20, Tudor Street, E.C., price 1s. 6d., or by post 1s. 9d.

### Institution of Automobile Engineers.

The first meeting of the session of the Institution of Automobile Engineers will be held on Wednesday, October 11th, at the Royal Society of Arts, John Street, Adelphi, W.C., at 8 p.m., when the president, Mr. L. A. Legros, M.Inst.C.E., will deliver his presidential address. The address will contain, among other things, a valuable collection of data in reference to torque curves of internal combustion engines. It is hoped that this session it will be possible to arrange for the full number of meetings, but, meantime, the institution is engaged on much important work in connection with research and standardisation, the results of which should be available for the members before the end of the session.

### Review.

We are in receipt of a copy of a publication issued by the British Commercial Gas Association, known as "A Thousand and One Uses for Gas." This issue deals especially with the running in of petrol engines on town gas, and the use generally of gas in the motor car and allied industries. The issue is quite interesting, especially in view of our recently published illustration and particulars describing the running in of A.J.S. motor cycle engines on coal gas. This, of course, results in a great saving of petrol.



# C.A.V. Magnetos

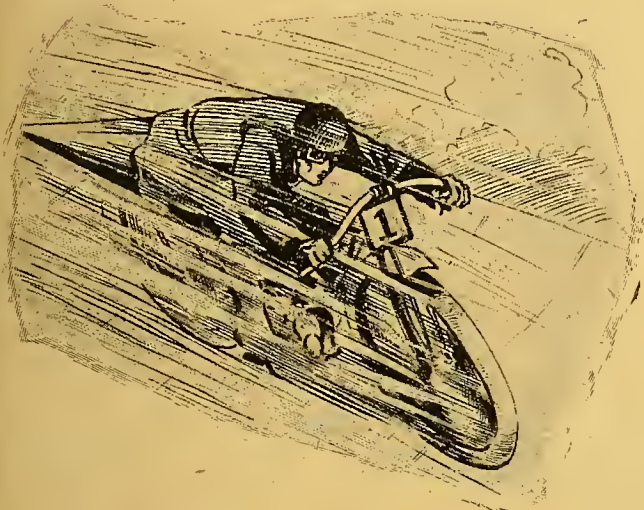
BRITISH THROUGHOUT

"The Magneto that is not too proud to spark."—*Motor Cycle.*

**W**ILL positively START UP at a walk; exceptionally lively at picking up; never a sign of misfiring at high or low speeds; miles per hour faster than other magnetos; totally enclosed; dust-proof and waterproof.

Write for Booklet,  
post free, from—

**C.A. Vandervell & Co., Ltd.**  
Electrical Engineers, ACTON, LONDON.



## To Users PETROL Substitutes

Why  
Wakefield

# CASTROL

Regd.

# MOTOR OIL

must be  
chosen.

**C. C. Wakefield & Co.,**  
Wakefield House, Cheapside,  
London, E.C.

Prompt dispatch can  
now be made.

## Warning!

Experiments prove that, with many petrol substitutes, the oil in the base chamber gets thin and loses much of its lubricating value. The oil is also apt to get past the piston rings.

Only the best lubricating oil should be used to avoid trouble and expense.

The overwhelming list of successes prove Wakefield Castrol superiority.

C.D.C.

Fit

# Wood-Milne Motor Cycle Tyres

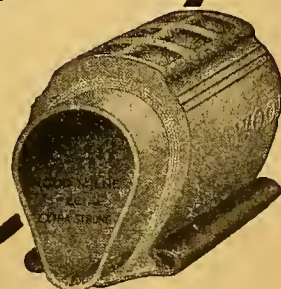
and experience real "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

Wood-Milne,  
Ltd.



Preston.

Wire—"Comfort, Preston."  
"Phon—Preston 418.  
LONDON: Manchester Avenue, E.C.  
Wire—"Byturning, London."  
Phone—City 4797.  
Birmingham, Leeds, Manchester, Bristol, Belfast, Dublin, Glasgow, Etc.



In answering these advertisements it is desirable to mention "The Motor Cycle."

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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

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## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON, 3 1/2 h.p., F.E., nearly new; £16.—162, Boundary Rd., Walthamstow. [X709]

### A.J.S.

**A** J.S., 2 1/2 h.p., 3-speed, 1916, new, in stock.—Pickering, Mardol, Shrewsbury. [X7022]

**1915** A.J.S. Combination, complete, lamps, etc.; £85.—Cross, Jeweller, Rotherham. [X7398]

**A** J.S., 4 h.p., 3-speed, October, 1915, in splendid order; £50.—Munro, Falcon Sq., Inverness. [X7316]

**A** J.S., 4 h.p., 3-speed, and sidecar, new; immediate delivery; £84.—Munro, 14, Falcon Sq., Inverness. [X7314]

**A** J.S. 6 h.p., 1914 Combination, £52; 1915 6 h.p. solo, £44; new 1916 4 h.p. model, overhauled, £76.—Crow Bros., Guildford. [X398]

**A** J.S. 1914 6 h.p. Combination, 3 speeds, kick starter, coachbuilt sidecar, in first-class order and condition; 60 gns.—6, Warren St., London. [X829]

**A** J.S. 1914 Combination, 6 h.p., exceptional engine, 3 speeds, Amac (75 m.p.g.), just overhauled, hand clutch, 3 lamps, horn, spares, tools; £70.—S7, Dindrie Rd., Birkdale. [X7342]

**A** J.S., 2 1/2 h.p., late 1912, semi-T.T., 2-speed, kick start, lamps, horn, tools, etc., in splendid condition; owner joining up; £24.—Dickinson, Potato Merchant, Gt. Nelson St., Liverpool. [X794]



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No.	h.p.		
10603.	2 1/2	1913 2-speed DOUGLAS ....	£27 10
10608.	4 1/2	1915 3-speed JAMES & Sidecar	£55 0
10610.	2 1/2	1914 3-sp. NEW HUDSON and Sidecar .....	£45 0
10614.	3 1/2	1911 single-speed HUMBER .....	£25 0
10620.	7-9	1915 3-sp. INDIAN and Sidecar	£75 0
10624.	2 1/2	1914 2-speed DOUGLAS .....	£35 0
10627.	3 1/2	1914 3-speed MAXIM .....	£15 10
10628.	1 1/2	1914 single-speed DAYTON .....	£12 10
10629.	3 1/2	1914 3-sp. ROVER and Sidecar	£50 0
10630.	3 1/2	1913 3-sp. C'shaft TRIUMPH	£35 0
10632.	4	1915 3-sp. DOUGLAS & S/c	£72 0
10633.	4	1914 3-sp. SINGER & Sidecar	£45 0
10587.	3 1/2	1914 3-sp. QUADRANT & S/c	£42 0
10588.	3 1/2	1913 RUDGE Multi & Sidecar	£45 0
10590.	8	1912 3-sp. MATCHLESS & So.	£35 0
10596.	3 1/2	1913 RUDGE Multi .....	£35 0
10597.	2 1/2	1915 2-sp. 2-str. CALTHORPE	£25 0
10570.	4-5	1915 2-sp. BAT .....	£47 10
10573.	2 1/2	1915 2-sp. CALTHORPE .....	£31 10
10574.	2 1/2	1915 2-sp. JAMES .....	£37 10
10581.	3 1/2	1908 single-speed TRIUMPH .....	£24 0
10583.	4-5	1915 3-sp. HAZLEWOOD .....	£37 10
10584.	3 1/2	1912 PREMIER and Sidecar .....	£20 0
10538.	3 1/2	INDIAN .....	£47 10
10539.	7-9	15 3-sp. HARLEY-DAVIDSON	£65 0
10540.	4 1/2	1914 3-sp. JAMES and Sidecar	£50 0
10542.	3 1/2	1913 3-sp. HUMBER .....	£25 0
10333.	3 1/2	TRIUMPH .....	£22 10
10553.	1 1/2	J.E.S. .....	£10 10
10565.	3 1/2	twin N.U.T. .....	£35 0
10577.	3 1/2	single-speed 1912 TRIUMPH .....	£25 0
10519.	3 1/2	1914 2-sp. PREMIER .....	£35 0
10523.	2 1/2	1913 2-sp. DOUGLAS .....	£44 0
10527.	5-6	1912 2-sp. F.N. .....	£30 0
10533.	4 1/2	3-sp. 1912 QUADRANT .....	£27 10
10477.	2 1/2	1912 2-sp. SINGER .....	£20 0
10478.	2 1/2	1911 single-speed DOUGLAS .....	£17 10
10485.	4	single-speed BRADBURY .....	£23 10
10495.	5	INDIAN and Sidecar .....	£65 0
10430.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10435.	6	1912 REX-J.A.P. and Sidecar .....	£27 10
10448.	4 1/2	1914 3-sp. B.S.A. .....	£57 10
10453.	3 1/2	1915 SUNBEAM and Sidecar .....	£73 10
10458.	2 1/2	1914 2-sp. 2-stroke GLYNO .....	£25 10
10462.	5-6	1913 2-sp. N.S.U. .....	40 gns.
10384.	2 1/2	1914 2-speed 2-stroke ALLON .....	£32 10
10390.	2 1/2	1915 2-sp. WOLF-J.A.P. .....	£30 0
10393.	1 1/2	1916 AUTO-WHEEL .....	£11 10
10396.	3 1/2	2-sp. FAFNIR .....	£12 10
10402.	4 1/2	1915 GRANDUX .....	£37 10
10342.	4 1/2	1914 2-sp. AUTO-WHEEL .....	£10 10
10354.	4	1914 2-sp. BRADBURY .....	£30 0
10323.	2 1/2	1911 2-sp. DOUGLAS .....	£25 0
10325.	3 1/2	single-speed CENTAUR .....	£12 10
10295.	3 1/2	2-sp. N.S.U. .....	£20 0
10142.	3 1/2	1913 3-sp. SINGER .....	£32 10
10109.	3 1/2	1909 F.E. TRIUMPH .....	£25 0
10070.	6	1914 2-sp. ENFIELD Combi'n	£65 0
10068.	3 1/2	1912 QUADRANT, var'le gear	£20 0
10021.	3 1/2	1912 SWIFT .....	£20 0
9867.	2 1/2	1911 2-sp. ENFIELD .....	£22 10
9847.	4 1/2	1915 3-sp. QUADRANT .....	£42 10
9839.	3 1/2	1907 TRIUMPH and Sidecar .....	£22 10
9772.	3 1/2	1914 w-cooled 3-sp. HUMBER	£35 0

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Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

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## MOTOR CYCLES FOR SALE.

### A.J.S.

**A** J.S. 4 h.p. Combination, new April, 1916, about 50 miles, dust cover, hood, side curtains, screen, Lucas dynamo lighting set, 3 lamps, electric inspection lamp, spare bulbs, spare wheel, Stewart horn, watch, speedometer (Watford), spare wheel cover, sidecar apron, spring seat-pillar, tools, full kit, spare parts, machine in perfect condition, every refinement, equal to new; inspection; cost £140, sell £110, bargain.—Chadwick, Richmond Cottage, Wistaston Green, Nantwich, Cheshire. [X728]

### Alldays.

**A** LLON, 2 1/2 h.p., 2-stroke, 2-speed, 1916; in stock.—Pickering, Mardol, Shrewsbury. [X702]

**1914** 3 1/2 h.p. 2-speed Alldays Matchless; £35, or new offer.—Parker and Son, St. Ives, Hunts. [X785]

**2** 1 h.p. Alldays, 2-stroke; bargain, £22/10.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X725]

**C** OLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [X709]

**A** LLAYS Allon, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 33, High Holborn. [X706]

**A** LLAYS Allon, 2-stroke, 2-speed, late 1915, condition good as new; accept £35.—Arch Jones Motor Cycle Works, Barnstaple. [X746]

**1915** 8 h.p. Alldays Matchless Combination, 3 speed, kick starter, splendid condition; £50, or Doughty part payment.—H. Wright, Arlesey, Beds. [X78]

**3** 1 h.p. Alldays, 1913, Roc 2-speed, Montgomery 2 1/2 car, belted 2 tyres new, accessories, etc.; £27.—Pickwell, Fellows Rd., South Farnborough. [X180]

**A** LLAYS Allons, all models, from stock, also 1912 2-speed kick start De Luxe model, with Lucas accessories, 40 gns.; and 1915 2-speed hand clutch mode Lucas accessories, £38/10; and 1916 single-speed, oil shop-soiled, £32/10, real bargain.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X169]

### Ariel.

**3** 1 h.p. Modern Ariel, sidecar, Sturmer-Archer 1 speed, and clutch, new condition; £32.—231, Walkden Rd., Worsley. [X168]

**C** OLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [X709]

### Arno.

**3** 1 h.p. Arno and new cigar sidecar, engine and from 32 as new, auxiliary tank and Y for paraffin, Phillips pulley, and Bowden h.b.c., new Senespray, all blue Rudge T.T. bars, Watford speedometer, electric light tyres and belt excellent condition; bargain, £50, near offer.—Box L2,035, c/o The Motor Cycle. [X165]

### Auto-Wheels

**A** UTO-WHEEL de Luxe, new condition; £7/10; 100 miles away.—Dunckley, 48, Ashley Rd., Crouch Hill, N. [X181]

**A** UTO-WHEEL, 1916, as new, perfect; £14, or a change lightweight, offers.—St. John, R.E., Alder shot. [X737]

**N** EW Standard Model Auto-wheel, crated, Hammer shock absorber; £9.—Rhodes, Edinboro, Kildare, minister. [X174]

**A** UTO-WHEEL, £9; perfect condition; just cleaned owner (lady) going abroad.—Thomas, Laurels, Chas Rd., Southgate. [X164]



## MOTOR CYCLES FOR SALE.

## Auto-Wheels.

**AUTO-WHEEL**, late 1914 model, little used, new condition. £8/10; 1915 ditto, £10.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X7380]

**AUTO-WHEEL** and Chater-Lea Ind-rack tandem; £15/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1696]

## Bat.

**5-h.p. Bats**, new 1916 models, from stock, £63/5, 2-speed gear model.—Wanchope's, London agents, 9, Shoe Lane, London. [1755]

## Blackburne.

**1915 3½ h.p. T.T. Blackburne**, Sturmer-Archer countershaft 3-speed gear, with 1916 sporting Canoelet sidecar, Lucas lamps, Watford speedometer and watch, countless spares, a very attractive outfit, in perfect condition; £65.—Crow Bros., Guildford. [1817]

## Bown.

**BOWNS-VILLIERS**, 3½ h.p., 2-speed, 2-stroke, May 1916, run 750 miles, good as new; bargain, £32.—Lieut. Damant, R.E. Mess, Chatham. [1630]

## Bradbury.

**BRADBURY**, 3½ h.p., 3 speeds, clutch, accessories, good condition; £17.—Routh, Bridgwater. [1657]

**BRADBURY**, 4 h.p., variable gear, £22; sporty sidecar, £5.—Broom, 77, Marylebone Lane, London, W. [1739]

**BRADBURY**, 4 h.p., 2-speed, free engine; £27; approval.—Danstan, 3, George St., Penny Stratford, Bucks. [1793]

**PETROL** Free with 1913 Bradbury, 3-speed, clutch, 26 gns.; 1912 Bradbury, clutch, 17 gns.—Troward, 78, High St., Hampstead. [1767]

**1913 4 h.p. Bradbury** and coachbuilt sidecar, clutch, 2-speed N.S.U., nearly new back tyre and belt, not thoroughly overhauled; must sell; £28.—Winstone, Melton St., Kettering. [X7362]

**BRADBURY**, 1913, 4 h.p., 3 speeds, and sidecar, been laid up during war, in new condition, no rear, fully equipped, many spares; £32.—Watson, 14, Greenbank Terrace, Falmouth. [1649]

**BRADBURY'S**—Two good second-hand combinations, both 1913 4 h.p., and fitted coachbuilt sidecars; one 3-speed countershaft and clutch £25, the other 3-speed hub £25; guaranteed sound.—P. J. Evans, John Bright St., Birmingham. [X7410]

## Brough.

**PETROL** Free with 1916 Brough, horizontal twin, done 100 miles; 55 gns.—Troward, 78, High St., Hampstead. [1768]

## Brown.

**1½ h.p. Brown**, Chater-Lea frame, B. and B. corral-rack 2" after; £6; best arrange appointment by post.—Eric Covey, The Moorings, Burdon Lane, Belmont, Surrey. [1887]

## B.S.A.

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [10798]

**B.S.A.**, 1915, all chain drive, 4½ h.p., coachbuilt sidecar; £55.—Crow Bros., Guildford. [1599]

**1916 B.S.A.'s** in stock for immediate delivery; £62.—Parker and Son, St. Ives, Hunts. [1855]

**B.S.A. Model H**, 4½ h.p., 3-speed, new; immediate delivery; £64.—Munro, 14, Falcon Sq., Inverness. [X7315]

**B.S.A.**, 1913 model, 2-speed, free engine, internal and external condition excellent, accessories; £34.—23, Tinces Rd., Peterborough. [X7400]

**B.S.A.**, new 1914, 3½ h.p., free engine, complete; splendid bargain, £30 cash.—Clarke, 28, Warburton St., Stockton Heath, Cheshire. [X7322]

**B.S.A.**, late 1913, 3½ h.p., clutch model, lamps, accessories, fine condition; £26/10; lightweight wanted.—436, Whitehorse Rd., Thornton Heath. [1705]

**1½ h.p. 1916 B.S.A.**, absolutely as new; too powerful for owner; offers: new Douglas exchange entered.—Merioneth Motor Co., Dolgellay. [X7467]

**WE CAN GIVE IMMEDIATE DELIVERY** from stock of B.S.A. 4½ h.p. model K motor cycles.—W. E. Clark and Co., Motor Engineers, Doncaster. [1643]

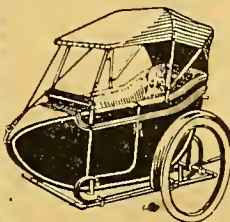
**1916 B.S.A.**, all chain drive, with 15 gn. Mills-Fulford sidecar, electric lamps, speedometer, watch, mechanical horn, etc., only done 700 miles; £72, bargain.—5, Heath St., Hampstead. [1819]

**B.S.A. Model H** £64, K £62; actually delivered from stock, with Canoelet B.S.A. sidecars, also a 1912 free engine machine, £89/10, with accessories; deferred payments by mutual arrangement; exchanges.—Lamb's, 51, High St., Walthamstow, and 50, High Rd., Wood Green. [1691]

**B.S.A.**, 1915½, 4½ h.p., 3-speed, chain drive, kick starter, large roomy coachbuilt sidecar, full accessories, set of tools and spares, machine completely overhauled few weeks ago at cost of £6 (receipt shown), new 1916 extra heavy tyres fitted; the whole outfit in absolutely new condition throughout; will be sacrificed at £67/10; any examination and trial will be allowed; serious buyers.—Apply, Box L2,109, c/o The Motor Cycle. [1666]

## CORONET SIDECARS.

We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28 x 3¼ tyre and four point attachment.



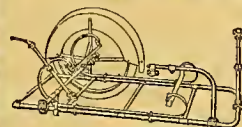
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TORPEDO SIDECARS, £9 15s.

Wanted 10 1915 Harley-Davidsons in exchange for 1916 Harley-Davidsons. Good allowances.

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4½ h.p. STAR, brand new £68 model, big single, 3 speeds.....	£55 0
2½ h.p. Stationary Petrol Engine, new £22 10s. model, magneto, 2 flywheels.....	£16 10
4 h.p. ZENITH, 1911, Gradua variable gear.....	£19 15
2½ h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc.....	£32 10
7-h.p. PREMIER, 1914, 2-speed countershaft, with £13 10s. new coach Sidecar.....	£49 15
6 h.p. REX, 2-speed, magneto.....	£11 15
2½ h.p. DOUGLAS, 1910.....	£11 15
2½ h.p. MINERVA, magneto, variable gear.....	£3 15
7-h.p. INDIAN, 1915, 3-speed, electrical model, and 1st Montgomery Sidecar.....	£69 15
1916 7-h.p. HARLEY-DAVIDSON.....	£80 15
1916 ditto, electrical model.....	£89 0
1914 FORD Touring Car, detachable wheels.....	£85 0
2½ h.p. EXCELSIOR, 1916, 2-stroke.....	£24 15
20 h.p. FORD Van, new, 1916 model.....	£130 0
20 h.p. FORD Van, 1915 model.....	£90 0
2½ h.p. TYLER, 1915, 2-speed model.....	£24 15
3½ h.p. TRIUMPH, 1910 model.....	£16 15
3½ h.p. LINCOLN-ELK, 1912 model.....	£13 15
3½ h.p. JAMES, 1912, 2-speed, chain drive, and coach Sidecar.....	£26 16
3½ h.p. HUMBER, 1913, 2-speed, Sidecar.....	£29 15
3½ h.p. PREMIER, 1913, 2-speed countershaft gear, belt and chain.....	£26 15
3 h.p. LINCOLN-ELK, 1911, magneto.....	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn.....	£25 15
1915 CALCOTT Light Car, dynamo lighting.....	£215 0
7-h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar.....	£69 15
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1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps.....	£89 0

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New £5 weatherproof Magneto, £3 10s.; New Trouser Overalls, 10/6; Long Lengths Steel Tubing, 1½ x 12g., 14g., 16g.; Bosch Magneto, 50/-; B. and B. Carburetter, 12/6; Amac Carburetter, 12/6; New 20/- Brass Electric Sidecar Lamps, 5/6; Ditto Tail Lamps, 5/6; approval; New Spare Valves for Harley-Davidsons, 4/9; Coach-built Sidecar, £4 5s.; Douglas Carburetter, 10/6; New 26 x 2½ or 2½ Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); £16 16s. Gloria Coach Sidecar, just repainted, £7 15s.; Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburetter taken in exchange).

**BOOTH'S MOTORIES,**  
PORTLAND PLACE, SKIRCOAT ROAD,  
HALIFAX.

'Phone 1062.

Close at 6 p.m.

## MOTOR CYCLES FOR SALE.

## Calthorpe.

**1914 Calthorpe Junior**, good condition; £16/16.—Apply, White's Garage, Camberley. [1904]

**1915 Calthorpe-Jap**, 2½ h.p., Enfield gear, in splendid condition; £21.—5, Heath St., Hampstead. [1820]

**CALTHORPE Junior**, 1914, 2-speed, free engine, little used; 15 gns.—98, Devonshire Rd., Holloway. [X7294]

**2½ h.p. Calthorpe-Jap**, 2-speed, all accessories, in good condition; £25.—Chilton, 199, High St., Watford. [X7437]

**2½ h.p. 1915 Calthorpe-Jap**, Enfield 2-speed gear; £25.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1253]

**NEW March**, 1916, Calthorpe 2-speed, 2-stroke, perfect condition; owner going abroad; £23.—2nd Lt. Edger, R.F.C., Upavon. [X7124]

**CALTHORPE**, 2-stroke (1916), 2-speed, free engine, equal to new, all accessories; £30, near other.—179, Brixton Rd., S.W. [X7491]

**CALTHORPE**, 1915 J.A.P. engine, 2½ h.p., Enfield 2 speeds, as new, £25; a 1914 Calthorpe 2 speeds, £16.—6, Warren St., London. [1831]

**1916 Calthorpe-Jap**, Enfield speed, new Lucas lamp, horn, done 100 miles; £35, no offers.—Barton, Clarendon, Fotheringham Rd., Enfield. [1635]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [10799]

**CALTHORPE**, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1671]

**CALTHORPE-J.A.P.**, 1916, 2½ h.p., Enfield 2-speed, new, but slightly shop-soiled; special bargain, £34.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1668]

**CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [10815]

**CALTHORPE**, 1915, 2½ h.p., 2-stroke, 2-speed countershaft, variable ignition, reliable, just overhauled, perfect running order, owner (naval officer) has bought combination; 20 gns.—54, Forest Hill Rd., Honor Oak, S.E. [1680]

**CALTHORPE-J.A.P.'s**, 2½ h.p. with Enfield gears, 36 gns.; three actually in stock; deferred payments, exchanges; also two 1916 2-speed J.A.P. models, £34/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1688]

## Chater-Lea.

**NO. 7 Chater-Lea** and sidecar, 3 speeds, fitted with latest 8 h.p. J.A.P. engine, thoroughly overhauled and re-enamelled.—24, Gwendolen Av., Putney, S.W. [1898]

## Chater-L.M.

**CHATER-L.M.** 2-stroke, 1915, Bosch, B. and B. tyres and belt new, Saxon forks.—N. Platts, 18, Bolebridge St., Tunworth. [1776]

## Clyno.

**PETROL** Free with 1912 Clyno Combination; 33 gns.—Troward, 78, High St., Hampstead. [1773]

**Clyno** and sidecar, 6 h.p., 2 speeds, free; £30, complete; reason sale, called up.—Page Hall, Park. [X6939]

## Connaught.

**CONNAUGHT**, 1914, 2-speed gear box, perfect; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1259]

**1914 Connaught**, 2½ h.p., 2-stroke, 3-speed, accessories, 140 m.p.g.; £25.—Box L2,115, c/o The Motor Cycle. [1914]

**P. J. EVANS**, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models; prices from £28/17/6.—87-91, John Bright St., Birmingham. [X7413]

## De Dion.

**DE DION**, accumulator; nearest 24; wants adjusting.—Broadway, 2a, East Sq., Farnborough. [X7123]

## De Luxe.

**DE LUXE**, 1916, 2½ h.p., 2-stroke, perfect; bargain.—19, W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1257]

## Douglas.

**TWO 1915 2½ h.p. Douglas**, £40 and £42.—Lambert's, Theford. [X7365]

**1914 T.T. Douglas**, complete, lamps, etc.; £34.—Cross, Effingham Sq., Rotherham. [X7399]

**DOUGLAS**, 1915, 2-speed, new condition, with accessories; £45.—Pickering, Mardol, Shrewsbury. [X7021]

**DOUGLAS**, 2½ h.p., first to view will purchase; £15, no offers.—14, Doddbrook Rd., West Norwood. [1541]

**2½ h.p. Douglas**, 1914½, 2 speeds, perfect condition, very fast; £36.—Seldon, Beaumont Park, Huddersfield. [X7447]

**DOUGLAS**, 2½ h.p., 1915, fully equipped, spares, £42.—Pte. Huyle, Belsize Section, M.T. Depot, Balford. [1746]



## MOTOR CYCLES FOR SALE.

## Douglas.

1915 2-speed Douglas, Amac carburettor, machine in perfect running order; 38 gns.—Julian, Broad St., Reading. [X7359]

DOUGLAS, 1915, 2½ h.p., W.D. model, accessories, perfect condition; £45.—Lieut. Field, R.A. Mess, Bulford, Salisbury. [X7496]

DOUGLAS, 2½ h.p., War Office model, all accessories, excellent condition; £40, no offers.—New Ship Garage, Brighton. [1731]

DOUGLAS, late 1913, 2½ h.p., 2-speed, clutch, kick start, good condition; £33.—Williams, 56, Ainslie St., Barrow-in-Furness. [X7276]

DOUGLAS, 2½ h.p., 1915, War Office model, lamps, horn, speedometer; £43, bargain.—Garner, 11, Palmyra Sq., Warrington. [X7458]

1914 Douglas, model W, 2½ h.p., 2-speed, clutch, kick start, in perfect condition; £36/10.—Watson, Sudell Rd., Darwen, Lancs. [X7346]

1915 Douglas Model W De Luxe, clutch, kick starter, etc., including spares; bargain, 44 gns.—Address, Coles, Radway, Kineton, Warwick. [X7403]

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 1914, 2½ h.p., 2-speed, kick starter, T.T., just overhauled, fine condition; £40.—Hucklebridge, 133, Sloane St., London, S.W. [X7466]

DOUGLAS, 1914, 2½ h.p., 2 speeds, clutch, speedometer, excellent condition; £36.—H. Williams, 322, Canterbury St., Gillingham, Kent. [X7351]

DOUGLAS, 1914, splendid trim, all on, 2-speed, clutch; owner joined up; £35.—Main, Gothic Works, Angel Rd., N. Tel.: 41 Tottenham. [1678]

DOUGLAS, 1912, 2½ h.p., 2-speed, splendid condition; £20, take good Auto-Wheel and cash.—Radnor, 24, Milton Rd., Westham, Weymouth. [X7280]

DOUGLAS, 1914½, 4 h.p., semi T.T., electrically equipped; 59 gns.; exchange G.P. Morgan.—Vesugar, Elm Lodge, Queen's Rd., Teddington. [X7388]

1914 Douglas, 2½ h.p., 2 speeds, new Dunlop tyres and belt, in splendid order throughout; £32/10, offers.—3, The Mews, Victoria Rd., Clapham, S.W. [1727]

COLMORE Depot, Birmingham, Manchester, Leicester and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

1914 Douglas, 2½ h.p., model W, clutch, kick start, head lamp set and horn, just overhauled, engine guaranteed perfect, condition excellent; £40.—Robinson's Garage, Green St., Cambridge. [1850]

4 h.p. Douglas 3-speed Model, fitted with coachbuilt sidecar; an excellent machine; with severe trial given; with accessories, 70 gns., guaranteed.—Wauchope's, 9, Shoe Lane, London. [1752]

1915 Douglas, 4 h.p., 3-speed gear, kick starter, Lucas lamps, Stewart, electric horn, with coachbuilt Swan sidecar, wind screen, hood; £60, a bargain.—S. Woolford, 53, Elvstoe St., Chelsea. [1721]

DOUGLAS, 1914, 2½ h.p., 2-speed, T.T., special mudguards and long exhaust pipe, Lucas horn and lamps, complete kit of tools and spares, beautiful condition; £38.—D. Collins, 11, Blandford Rd., Ealing, W. [1897]

DOUGLAS 1915 Combination, 4 h.p., 3 speeds, coachbuilt sidecar, kick starter, speedometer, indistinguishable from new, £70; Douglas, 1916, 2½ h.p., T.T., 2 speeds, £54, as new; Douglas, 1915, 2½ h.p., T.T., 3 speeds, in exceptional nice condition, £48.—6, Warrier St., London. [1832]

DOUGLAS, 2½ h.p., 1915, Colonial model, 3 speeds, footboards, Sneyray carburettor, Stewart speedometer, brand new tyres and tubes, spare petrol tank, Long horn, recently thoroughly overhauled; bargain, £43; write appointment view.—Smith, 25, Hodford Rd., Golder's Green. Phone: Gerrard 1584. [1718]

DOUGLAS Motor Bicycles, 2½ h.p. models; deliveries are almost impossible to obtain. We are large Douglas agents. If there is any possibility of immediate deliveries, we can in all probability assist you. We suggest you write us your requirements. Douglas specialists.—Robinson's Garage, Green St., Cambridge. Tel.: 328. Telegrams: Bicycles. [1842]

## Eagle.

1915½ Coventry Eagle, 2½ h.p., Villiers 2-stroke, lamps, Spanton horn, and accessories, excellent condition; £21.—A. Wilmott, 28, Queen's Rd., Old Fletton, Peterborough. [X7486]

## Elswick.

1915 2½ h.p. Elswick, 2-stroke, engine recently overhauled, good tyres, in perfect condition, lamps, horn; £15/10.—Robinson's Garage, Green St., Cambridge. [1840]

## Enfield.

3 h.p. Royal Enfield, 2-speed; £28/10.—Chilton, 199, High St., Watford. [X7436]

1914 Enfield Combination, lamps, hood, screen; cheap.—Lambert's, Thetford. [X7366]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ENFIELD 6 h.p. Combination, 1916; any severe trial; 70 gns.—2, Badsworth Rd., Camberwell Rd., S.E. [1871]

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## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD, 1914, 3 h.p., lamps, generator, horn, complete; £27.—Kirwin Evers, Yarnbrook, Trowbridge. [X71]

ENFIELD Combination, July, 1914, in excellent condition; a bargain, £56.—K. Prior, East Woodthorpe, Newbury, Berks. [16]

ENFIELD 6 h.p. Combination, 1915, perfect condition; price £65.—Joseph, 15, Cornwall Garden, Preston, Brighton. [1]

ENFIELD 3 h.p. Twin, lamp, tools; overalls, dynamo, some petrol; £34 cash; going overseas.—Lieut. Yeadon, 2a Camp, Larkhill, Salisbury. [X74]

ENFIELD 1916 6 h.p. Combination, latest model just arrived from works; 90 gns.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [16]

2½ h.p. 1916 Enfield, 2-stroke, 2-speed, latest model with 2 Lucas lamps and horn, in stock, ready for the road.—Robinson's Garage, Green St., Cambridge. [18]

1915 Enfield, 3 h.p. twin, in splendid condition off the works, 1,200 miles careful riding, with speedometer and all accessories; £45.—Francis, Pharmacist, Clifton, Bristol. [X73]

1916 6 h.p. Enfield Combination, 90 gns.; 1916 3 h.p. twin, 55 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [08]

ENFIELD, 1916; immediate delivery of latest 6 h.p. combination, now in stock; 90 gns.; make sure, this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [16]

ENFIELD, 1912-13, 2½ h.p., 2-speed, every conceivable accessory, like new throughout, low mileage; absolute bargain, £26/10.—3, The Mews, Victoria Rd., Clapham, S.W. [16]

ENFIELD Combination, 1915, complete with lamp set, horn, speedometer, rear light, wind screen, etc., good condition; £72.—Elee and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [05]

ENFIELD, 3 h.p., 1916, latest model, just arrived from works, immediate delivery; make sure, this now; 55 gns.; we are Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [16]

ENFIELD 6 h.p. Combination, late 1913, lamps, speedometer, horn, tools, new tyres, brand new lamp wheel and cash drive, just overhauled makers; £52, offers.—Winter, 80, Craven Park Rd., Harlesden, N. [X71]

2½ h.p. Twin Enfield, 2-speed, cash drive in latest 4 wheel, just overhauled, new cover on back, perfect running order, easy starter, fast, and good hill climber; price £20.—Taylor, 27, Oxford Rd., Windsor. [X74]

ENFIELD 6 h.p. Coachbuilt Combination, late 1913, Lucas lamp and horn, electric and acetylene lighting, speedometer, electric horn, excellent oversize tyre spares, will run on paraffin; £44.—Paymaster Tunn, H.M.S. Thames, Sheerness. [17]

1916 Enfield, 6 h.p., and sidecar, 2-speed gear, handle clutch, handle starter, tyres perfect, Stewart horn, Miller lamp, machine in lovely running order, and absolutely as new; 66 gns.—Julian, Broad St., Reading. [X73]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-89, John Bright St. Immediate delivery all models including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, 3 h.p. standard and sporting models, and 2½ h.p. stroke; prices from 42 gns. [X74]

ENFIELDS, 8 h.p., 6 h.p. combinations (3 in stock) and 3 h.p. lightweights actually in stock; also 1915 electric model, with hood, screen, and speedometer £89/10; also 1915 3 h.p. 2-speed kick start model, £4 and 1913 6 h.p. combination, £47/10; deferred terms for arrangement and exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [16]

## Excelsior.

N.S.A. Excelsior, 7 h.p., twin-cyl., 2-speed, in perfect running order, good all-round bargain for £25, with sidecar.—W. R. Delaney, Serge, Mess, Napier Barracks, C.A.S.C., Shoreham. [X73]

AMERICAN Excelsior, late 1915, 7-9 h.p. combination, electrically equipped, coachbuilt sidecar, speedometer, lamps, and all accessories, excellent condition only does 300 miles sole runner for sale, or still away on active service abroad; £75, or near off.—P. Crowley, Royal Hart, Ashford, Middlesex. [X71]

## Fafnir.

FAFNIR, 6 gns., 3½ h.p., m.o.v., Bosch, B. and overhauled, good order.—Railway Garage, Stain. [19]

5-6 h.p. Twin Fafnir, m.v., Bosch mag., B. and D. and spring forks, 3-speed, with Montgomery sidecar; trial; bargain, £26.—Smith, 141, High St., Merton, S.W. [16]

3 h.p. Fafnir, perfect condition, new Dunlop belt, Michelin tyre and B. and B. carburettor, lamp, and separate generator, re-bushed throughout, makes this season, new Helleson battery; bargain, £25/10.—Clark, Garage, Long Melford. [18]

## F.N.

F.N. 2½ h.p., 3-speed, good running order; £16.—1 Boundary Rd., Walthamstow. [18]

PETROL Free with F.N., 5-6 h.p., 1913; 17 gns. Troward, 78, High St., Hampstead. [17]



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## NEW MODELS.

MORGAN de Luxe, M.A.G. engine, hood...	£127 0
WILLIAMSON Cy-cl-ca, W.C. Douglas eng.	£126 0
RITZ 4-cylinder Light Car...	£145 0
OVERLAND, 4-seater, 12 h.p., (tax £4 4s.)	£225 0
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed	£39 10
U.S.A. EXCELSIOR, 3-speed countershaft	£75 0
REX, 6 h.p., kick-start, and Rex Sidecar	£71 0

## 1916 (U.S.A.) EXCELSIOR,

7 h.p., 3-speed model, 84×89 countershaft gear, chain drive, mechanical and hand lubrication, high-tension magneto, multiple-disc clutch with dual control, kick starter, 2 gallons petrol capacity; £75. Or with electrical equipment; £85.

A few late 1915 new 7 h.p. 3-speed twin Excelsiors, with electrical equipment, at pre-tax price; £71 10s.

Exchanges quoted. Easy Payments 2½ per cent. extra.

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to suit B.S.A., SUNBEAM, and other machines, Dunlop tyre, body finished black and gold; £12.

## SOLO MACHINES.

1915 2½ h.p. 2-speed VILLIERS, 2-stroke	£27 10
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1914 2½ h.p. single-speed DOUGLAS	£26 10
1913 2½ h.p. 2-speed DOUGLAS	£34 10
1912 4 h.p. 2-speed INDIAN	£27 10
1912 3½ h.p. ZENITH-GRADJA	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£26 10
1912 3½ h.p. 2-speed ALLDAYS MATCHLESS	£25 10
1912 3½ h.p. 2-speed HUMBER	£25 10
1912 HUMBER Magneto Lightweight	£15 10
1911 3½ h.p. T.JRPEO-PRECISION	£17 10
1911 3½ h.p. 3-speed TRIUMPH	£26 10
EXCELSIOR, 3½ h.p., 3-speed, Druid forks	£16 10
N.S.U., 3½ h.p., 2-speed, free engine	£18 10
F.N., 2-speed, magneto, lightweight	£17 10
TRIUMPH, magneto, new tyres	£16 10
S.P.K., 3½ h.p., 3-speed countershaft	£24 10
REX, 3½ h.p., magneto, spring forks	£11 15
DOUGLAS, 2½ h.p. Twin Lightweight	£15 10
TRIUMPH, 1909, 3½ h.p. 2-speed, free engine	£24 10
TRIUMPH, 1906, tourist	£19 10
TRIUMPH, 3½ h.p., clutch model	£21 10

## SIDECAR COMBINATIONS.

REX 6 h.p., coachbuilt Sidecar, new	£71 0
1915 5-6 h.p. 3-speed COVENTRY EAGLE, with high coach Sidecar and accessories	£72 10
1914-15 (new) REX 2-speed Sidecar	£71 0
1914 7-9 h.p. 2-speed (red) INDIAN Combn.	£53 10
1913 6 h.p. REX Sidecar, very smart	£43 10
1913 7-9 h.p. QUADRANT and Sidecar	£42 10
1913 3-speed countershaft Twin HAZLEWOOD, coach sidecar, screen, and apron	£42 0
1913 7 h.p. ARIEL, chain drive; and Sidecar	£42 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1911 3½ h.p. 3-speed TRIUMPH and Sidecar	£28 10
1909 3½ h.p. 2-speed TRIUMPH and Sidecar	£26 10

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RITZ 4-cyl. 2-seater Light Car, shop-soiled	£130 0
MORGAN, 1913, lamps, horn, screen, etc.	£57 10
RENO 15 h.p. 4-cylinder Touring Car	£65 0
PREMIER, 7-9 h.p. 2-seater Light Car	£57 10
1915 FORD 20 h.p. 2-seater Car	£89 10
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New Mechanical Horns	17/6
At Midscure, cost 21/-, take	10/6
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Large size Lucas Horn	14/6
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WANTED.—Second-hand MORGAN RUNABOUT, and 1916 8 h.p. SUNBEAM Combination.

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4-CYL. F.N., 5-h.p., latest improvements, perfect; £20, offers.—25, Bulstrode Av., Hounslow. [1709]

CALLED Up.—F.N., 2-speed, free engine, 100 m.p.g., little used; £18; payments taken; seen any time. —Miller, 62, Hampstead Rd., N.W. [1726]

F.N., 1914, 5-6 h.p., 4-cyl., 2 speeds, clutch, Jones speedometer, Stewart horn, tyres practically new, splendid condition; £35.—Harris, 73, Queen Victoria St., E.O. [1888]

F.N., 5-6 h.p., fast, in excellent condition, just overhauled by makers, good tyres, guaranteed, and with all accessories; £25, or near offer.—79, Queen's Rd., Richmond, Surrey. [X7291]

Grandex.

GRANDEX-PRECISION, 2½ h.p., extra cylinder, new tyres, 115 m.p.g.; £15.—L2,114, c/o The Motor Cycle. [1913]

Harley-Davidson.

BRAND New Harley-Davidson Sidecar Combinations. —See below.

MODEL F, 7-9 h.p., 3-speed, coachbuilt sidecar, enamelled to match; £90.—Below.

MODEL J, 7-9 h.p., 3-speed, with dynamo lighting outfit, 2 rear brakes, and other 1916 improvements, coachbuilt sidecar; £97.—Below.

BRAND New, complete with full tool equipment, instruction handbooks, etc.; 12 months' full guarantee; no easy payments at these prices. To be obtained only from The Premier Motor Co., Aston Rd., Birmingham. [1445]

1916 Harley-Davidsons in stock; exchanges.—Parker and Son, St. Ives; Hunts. [1856]

7-9 h.p. Harley-Davidson Combination, 1916, in stock.—Pickering, Mardol, Shrewsbury. [X7020]

HARLEY-DAVIDSON'S, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

HARLEY-DAVIDSON, late 1915, scarcely used, 11 F. runs 75% paraffin; bargain, 50 gns.—Cooper, Baker, Windsor. [1748]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

7-9 h.p. Harley-Davidson, 3-speed, Bosch mag. model, with rounded tank, magnificent condition, original tyres, uncut, horn, 9 in. head lamps; £59.—Crow Bros., Guildford. [1397]

HARLEY-DAVIDSON, 7-9 h.p., 3-speed, in perfect condition, little used, tyres unpunctured, complete with tools, as listed; £65.—4, Camberley Parade, Tunbridge Wells. [X7122]

HARLEY-DAVIDSON, late 1915, 7-9 h.p., 3 speeds, Montgomery sidecar, disc wheel to match, lamp set, outfit as new; £70, or near offer.—8, Stockwell Park Walk, Brixton. [1732]

GENUINE Bargain.—Last year's Harley-Davidson combination; £80, complete; payments taken; nearly new; called up; seen any time. 'Phone: North 1519.—Miller, 62, Hampstead Rd., N.W. [1645]

HARLEY-DAVIDSON 1916-7-9 h.p. Model 16F Combination, lamp set, horn, rear light, as new, only done about 400 miles, perfect condition; £88.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0551]

HARLEY-DAVIDSON (1915), dynamo model, with Mills-Pulford sidecar, fitted with wind screen, in splendid condition.—Apply, Glendower Motor Co. Ltd., Glendower Place, South Kensington. 'Phone: 558 Ken. [1638]

1915 Harley-Davidson and Coachbuilt Sidecar, storm apron, lamp, horn, tools, etc., purchased from officer now abroad, done about 4,000 miles.—12, Canterbury Terrace, Maida Vale, W. 'Phone: Paddington 3214. [1302]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

HARLEY-DAVIDSON Combinations, with their newest sidecars, actually in stock, £101/15, and £110; deferred payments if desired; liberal exchanges; also a 1915 electrically equipped combination, £68/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1693]

HARLEY-DAVIDSON (1915 model 11F), with very handsome Mills-Pulford coachbuilt sidecar, painted green, in splendid running order and appearance, almost equal to new; cash price £75, or on deferred payments 2½ extra; deposit £16/10, and 12 monthly payments of £5.—William Whiteley, Ltd., Queen's Rd., London, W. [1226]

Henderson.

HENDERSON, 1916, 2-speed, 4-cyl. model, beautiful order; £73/10; deferred payments if desired; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1700]

HENDERSON, 4-cyl., late 1915, short wheelbase, Millford Empress sidecar, hood, screen, speedometer, numerous spares, in perfect order; owner bought car; £75.—Russ, 25, Beaumont St., W. 4808 Mayfair. [1735]

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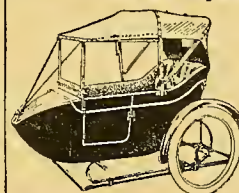
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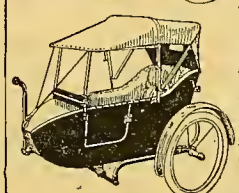
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2½ h.p. twin ENFIELD, chain drive, 2-speed £20 0

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3½ h.p. HUMBER, 2 speeds, handle starting, fine goer ..... £22 0

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1915 2½ h.p. WOLF, 3-speed, done 900 only £25 0

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1909 3½ h.p. REX de Luxe, 2-speed, handle starting ..... £17 0

1913 6 h.p. A.C. Sociable, fine condition .. £44 0

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Dropped Top Tube Frame, new ..... £3 0

Pair S. Hand 26 x 2½ Wheels, Tyres, Belt Rim £1 5

N.S.U. 2-speed Gear, complete with controls 65/-

Lycett's 1916 La Grande Saddle, soiled only 15/-

Pair 1915 A.J.S. 6 h.p. spring forks ..... 39/-

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Latest Mechanical Horns, black and nickel .. £1 0

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## MOTOR CYCLES FOR SALE.

## Hobart.

1916 1/2 Hobart, 2-speed, 2-stroke, drip feed, 300 miles, like new, spares, guaranteed; £32.—Moore, 1, Cambridge St., Coventry. [X7495]

1914 2-speed 2-stroke Hobart, good order, accessories; £25; exchanges considered.—Scuta, Fairseat, Uxepout, near Farnborough, Hants. [1717]

## Humber.

HUMBER, 2 1/4 h.p., 1912, Bosch, fast, reliable, smart; £12.—Percy Clark, Sudbury, Middlesex. [1632]

1913 Humber, 3 1/2 h.p., 2 speeds, speedometer, watch, etc.; £25.—Winn, High St., Rochdale. [X7418]

3 1/2 h.p. Humber, 2-speed, splendid condition; £21.—W. 32 and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1254]

1915 3 1/2 h.p. 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]

3 1/2 h.p. Humber Motor Cycle, mag., clutch re-bushed, 32 nearly new tyres and belt; £12.—Smith, 16, Haverstock Hill, Chalk Farm. [1826]

HUMBER, 1912, 2-speed, free, and sidecar, in exceptional condition; any trial; £20, no offers.—14, Dedbrooke Rd., West Norwood. [1546]

HUMBER, 3 1/2 h.p., splendid condition, can be ridden away; £10, no offers; seen after 6, side entrance.—52, Upper Tulse Hill, Brixton Hill. [X7423]

1912 3 1/2 h.p. 2-speed Humber, with coachbuilt sidecar, in good order; £32/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

HUMBER, 3 1/2 h.p., 2-speed, Venns coachbuilt sidecar, P.H. head lamps, Cowey speedometer, Stewart mechanical horn, accessories; any trial; £35.—18, Lewis Rd., Welling. [1738]

HUMBER, 1911-12, 3 1/2 h.p., all new tyres, sidecar, handle starting, 2-speed, absolutely reliable, fast, perfect order; £30, or near offer.—Ray, Robinson, Vicarage, Seaton, Devon. [1744]

## Indian.

7-9 h.p. Indian, clutch model; £33.—Lambert's, Thetford. [X7367]

INDIAN, 7-9 h.p., late 1915, in exceptional nice order and condition; £45.—6, Warren St., London. [1830]

PETROL Free with £13 5-6 h.p. Indian, T.T. does 70, perfect; 27 gns.—Troward, 78, High St., Hampstead. [1764]

1914 Headee Special, with Middleton C.B. sidecar; £58, lowest.—Letters only to 5, Western Rd., Mitcham, S.W. [1674]

1915 Indian Combination, 7 h.p., new condition, less than 1,500; £65.—Apply after 6 p.m., 93, Grove Lane, Handsworth. [X7133]

INDIAN, 7 h.p., 2-speed, 1914, with practically new sidecar to match, recently overhauled; £45.—Munro, 14, Falcon Sq., Inverness. [X7317]

INDIAN Combination, 7-9 h.p., late 1914, 2 speeds, electric equipment, speedometer, coachbuilt sidecar; £58.—65, Pennyfields, Poplar, E. [1704]

INDIAN, 1914 1/2, 7-9 h.p., spring frame, 2-speed, 1916 sidecar; 52 gns.; exchange G.P. Morgan.—Vesugar, Elm Lodge, Queen's Rd., Teddington. [X7389]

7-9 h.p. 1914 Indian, 2-speed gear and kick start, electric lighting set, speedometer, vice smart machine; £46, guaranteed.—Wanchope's, 9, Shoe Lane, London. [1753]

1913 Indian, 7-9 h.p., 2-speed, kick start, clutch, spring frame, nearly new coachbuilt sidecar, new parts and tyres just fitted; £39.—H., 22, Bramah Rd., Brixton. [X7390]

INDIANS, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X7411]

INDIAN 1916 Powerplus Model, with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £80.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]

1915 T.T. Indian, 3-speed gear and clutch, kick starter, electric lighting set, Lucas horn, Dunlop studded tyres, as new, machine in perfect condition; 48 gns.—Julian, Broad St., Reading. [X7358]

INDIAN Powerplus, 7 h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X7408]

7-9 h.p. India, with £18/1s coachbuilt sidecar, as new, run 1,200 miles, special large head lights, and all spares; price £75, bargain; open to any trial or examination.—W. Cox, Shillingstone, Dorset. [X7310]

BIRMINGHAM Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5 h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X7409]

NEVER Again.—Genuine late 1914 Indian, 7-9 h.p., spring frame, electric lighting, 2 speeds, clutch, 28x3 tyres, very powerful hill-climber; £35 secures, or with £35 Gloria sidecar £48, lowest.—Millards, Chesterfield. [X7344]

## MOTOR CYCLES FOR SALE.

## Indian.

7-9 h.p. 1912 Indian, 2-speed, clutch, just back from makers after complete overhaul, newly enamelled and plated, with O.B. sidecar, in splendid condition; £36; photo; would exchange less power.—C/o J. Green, Timber Merchant, Rotherham. [X7422]

P. J. EVANS, Birmingham and Midland India Agent.—All models in stock for immediate delivery; 5 h.p. 3-speed model, £70; 7 h.p. T.T. Powerplus, £75; 7 h.p. 3-speed, spring frame, and electric light, £78; special de luxe 7 h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X7406]

## Ivy.

1915 2 1/4 h.p. Ivy, 2-stroke (lady's), has only run 200 miles, excellent condition, all accessories; £30.—Miss B. Ford, Henbury, Gloucester. [1627]

## Ixon.

IXION Lightweight, 1914 model, 2 1/4 h.p., Villiers 2-stroke engine, Albion countershaft 2-speed gear, new Dunlop tyres, finished Ixon green, and in perfect condition, Lucas head lamp, tail lamp, and horn; £22.—The Premier Motor Co., Aston Rd., Birmingham. [1446]

## James.

JAMES No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

COLMORE Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

JAMES, 4 1/2 h.p., 1916, 3-speed countershaft combination, coachbuilt Canoelet sidecar; cost with accessories £90; in perfect order and condition; £68; trial by appointment any time.—C.B., 3, Victoria Mansions, Hanwell. [1661]

JAMES, 1916 (May), 4 1/2 h.p. electrically equipped combination, hood, screen, speedometer, electric horn, ridden 1,500 miles only, £74/10, great bargain; 1915 2 1/4 h.p. 2-speed 2-stroke lightweight, with Lucas accessories, £34/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1699]

## Kerry.

1912 3 1/2 h.p. 2-speed Kerry-Abingdon, in good order; £21/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0843]

## Lea-Francis.

LEA-FRANCIS, 1915, 3-speed gear, F.R.S. lamp, mechanical horn, 1916 light coachbuilt sidecar, match machine, all splendid condition, new tyres this season; £65.—Fletcher, Highfield, Long Eaton. [X7426]

## Levis.

LEVIS, 2 1/4 h.p., 1915 Popular, all accessories; £22.—Kingford, 22, Platts Lane, Hampstead. [1810]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

LEVIS Popular, new; special bargain; cannot repeat; £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

LEVIS, 1916 Popular model, 2 1/4 h.p., new, but slightly soiled; special bargain; £28.—Wilkins, Simpson and Co., 11, Hammer Smith Rd., London. [1673]

LEVIS, 2 1/2 h.p., 1915, Bosch, Amac, lamps, tools, horn, perfect; any trial; £22, or near offer.—Urban, 98, Addison Gardens, London, W. [X7321]

LEVIS, 2 1/4 h.p., 1915, perfect condition, aluminium footboards, variable mag., new back tyre, new butt-end tube; £26.—Apply, Box 749, c/o The Motor Cycle. [X6893]

LEVISES, Populars £32, model E with 2-speed gear, rustless runs, £47/10; deferred payments, exchanges; also model E, one month old, 40 gns.; and 1915 Popular and accessories, £24/10; both like new.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1689]

## Lincoln-Elk.

1914 Lincoln-Elk, 4 1/2 h.p., countershaft gears, kick starter, and sidecar; a bargain, £28, offers.—46, Alfred St., Islington, N. [1737]

## M.A.G.

PETROL Free with 1913 M.A.G. 3 1/2 h.p. twin, E-field gears, clutch, kick start; 29 gns.—Troward, 78, High St., Hampstead. [1762]

## Martin.

1915 2 1/2 h.p. 2-speed Martin-Jap, very little used; £21.—Springett, Billericay, Essex. (D) [1736]

## Matchless.

1915 Matchless, 6 h.p. J.A.P., clutch model, Canoelet sidecar, new tyres, all accessories; £55.—Curzon Hall Coffee House, Birmingham. [X7420]

MATCHLESS, 4 h.p., 2-speed, free engine, Lucas lamps, T.T. bare, runs on petrol substitute; £39; see advert. for sidecar.—S.G., Oakhurst, Eastrop, Basingstoke. [1890]

MATCHLESS-J.A.P., 1913, 8 h.p., and Canoelet sidecar, all accessories; bargain, 45 gns.; deferred terms if desired; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1692]

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## Matchless.

**MATCHLESS** (Collier's 1913 twin belt drive), 7h.p., 2-speed and kick starter, Lucas head and rear lamps, Cowey speedometer, coachbuilt sidecar and apron, in very good going order and splendid appearance; cash price £45, or on deferred payments 2% extra; deposit £11/18, and 12 monthly payments of £2/16/8.—William Whiteley, Ltd., Queen's Rd., London, W. [1225]

## Metro.

**METRO**, 1915½, 2½h.p., ridden 300 miles; sacrifice £24 for quick sale.—18, Binsey Lane, Oxford. [11] [X7290]

## Motosacoche.

2h.p. Motosacoche, B. and B. mag., good running order; £29.—Prior, East Woodhay, Newbury, Berks. [1680]

**MOTOSACOCHE**, 1912, 2½h.p., variable gear and free engine, Bosch, Druids, good tyres, T.T.; £10/10.—Box 766, c/o *The Motor Cycle*. [X7312]

## New Hudson.

**1916 New Hudson**, 2-stroke, only run 200 miles; £26.—20, Potternewton Lane, Leeds. [X7273]

**1915 New Hudson**, 2-stroke, engine excellent, Lucas lamp; £21.—Battling, Rotherwick, Hants. [1708]

**NEW HUDSON**, 1914, 4h.p., 3-speed, free engine, coach sidecar; £42.—1, Queen's Av., Winchmore Hill. [1902]

**NEW HUDSON and Sidecar**, grand order and condition, tyres and belt almost new; £29.—Hall, 47, Rupert St., Bolton. [X7416]

**2½h.p. New Hudson**, 1914, grey, 3-speed, clutch, perfect condition; £25.—21, R.F.C. Quarters, Lynchford Rd., South Farnborough. [1710]

**1915 New Hudson**, 2½h.p., 2-stroke, 2-speed, splendid condition, accessories; owner killed in action; £25.—Beever, Station Rd., Holmfirth. [X7492]

**NEW HUDSON**, 2½h.p., 2-stroke, 2-speed gear; £38; several of these machines in stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [10840]

**NEW HUDSON, J.A.P.**, 3½h.p., 1913, 3-speed, free engine, lamp, speedometer, horn, and tools, also spare tube, cover, belt, and valves, in excellent running order; £27/10.—J. Weir, Ocean Works, Kent St., Hull. [X7472]

**NEW HUDSON 4h.p. 1916 6B Combinations**, 3-speed countershaft, little used, Lucas lamp, Watford speedometer, bargain, £65; also just arrived 6h.p. model 9B combination, fawn finish, and 1912 2½h.p. J.A.P., new tyres, £21; deferred terms by arrangement; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1694]

## New Imperial.

**NEW Imperial-Jap**, latest models in stock; £38 and £44/8.—Crow Bros., Guildford. [1262]

**COLMORE Depots**, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**NEW Imperial**, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [0765]

**1915 New Imperial-Jap**, 2½h.p., splendid condition; best cash offer.—Laybourn, Wolsingham, Co. Durham. [X7448]

**NEW Imperial-Jap**, 2½h.p., 3 months old, perfect, lamp, horn, etc.; officer going abroad; £50, or near.—Cpl. Burrow, 3/2nd London Signal Co., Hitchen. [X7277]

**NEW Imperial-Jap**, 2½h.p., 1916, 2-speed, clutch, kick start only, shop-soiled, £38/10, usual price £44/8, bargain; deferred payment if desired; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1697]

**P. J. EVANS**, Birmingham Agent.—Immediate delivery of all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X7412]

**NEW Imperials**, the handy lightweight, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool districts, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## Norton.

**T.T. Norton**, just arrived; first cheque £54/12 secures it.—Plastow, Grimsby, Plastow. [X7387]

**NORTON**, 1914½, Brooklands special, exceptional machine, just been overhauled and, tuned by experts, 100 m.p.g., grand order; 39 gns.; appointment.—Brookman, 29, Oakhill Rd., Putney. [1923]

**BIG Four Norton Combination**, 7 weeks old, model 15, chain drive, makers' guarantee; better than new; cost £96/10, accept first offer of 80 gns.; ill-health cause of selling.—Lister, Manor, Willenhall, Staffs. [X7415]

**NORTON**, 1916, 3½h.p., Brooklands racing special, Brooklands certificate, 70 m.p.h., Phillips pulley, and all accessories, run 500 miles; £67/10.—Cass's Motor Mart, only address 5, Warren St., Euston Rd., W. Museum 623. [1822]

## N.S.U.

**N.S.U.**, 2-speed, F.E., good running order; £10.—162, Boundary Rd., Walthamstow. [1808]

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**A.J.S.**Sole District Agents for Galthorpes.  
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1916 6 h.p. **A.J.S. Combination**, new, just delivered ..... **£102 18**

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Aluminium finish, best quality, holds 3 pints, complete with drain tap ..... price 10/6  
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Black Sheeting Macintosh, unlined, button close at neck, deep collar, Raglan sleeves, straps on cuffs, belt all round waist, two pockets at sides, 25/6.

Brown or Drab Rainproof Twill-cotton Coats, unlined, single-breasted, two vertical pockets, Raglan sleeves, 19/0

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Black or Yellow Sou'-Westers—Black, 2/9; Yellow, 3/9.

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**ROVER SIDECAR**, with brake, soiled only, cost £17 17s. .... **£15 0 0**

**B.S.A. - CANOELET SIDECAR**, new, with luggage grid ..... **£17 10 0**

**A.J.S. SIDECAR**, for 6 h.p. machine, new ..... **£19 18 0**

**COACH-BUILT SIDECAR**, suit 3½ h.p. machine ..... **£5 5 0**

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1916 **A.J.S. SIDECAR BODY**, luggage grid, new ..... **£9 9 0**

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## MOTOR CYCLES FOR SALE.

## N.U.T.

N.U.T. 1914, 3½ h.p. twin, 3-speed, clutch, and kick starter, complete with lamp set, rear light, horn, speedometer, etc. £30.—Ede and Co., 15-16, Bishopsgate Av., Cannon St., E.C. [0492]

## O.K.

1914 2½ h.p. 2-speed O.K., splendid condition; £20.—Parker and Son, St. Ives, Hants. [1857]

O.K. 2-speed Lightweight, new May, 1916 (£40), unspratched, done 125, overhead valve, fast; £27/10.—19, Monmouth, Prestwich. [X7474]

O.K. Junior, 4-stroke, in splendid condition, little used; only reason for sale, owner called away; £22.—Slatter, Cemetery Rd., Tunbridge Wells. [X7320]

1916 O.K. Junior, 2-speed, horn, tools, etc., absolutely only done 150 miles, as brand new; owner just bought light car; any trial; £33/10.—W. W. Ravenscroft, 72, Cowley Rd., Oxford. [1862]

## Omega.

PETROL Free with Omega, 3 h.p., 2-stroke; 18 gns.—Troward, 78, High St., Hampstead. [1769]

OMEGA, £25, 2-speed, 2-stroke, complete with accessories, ready for riding.—Premier Depot, 20, Holborn Viaduct. [1837]

## P. and M.

P. and M., 2-speed, wicker sidecar, perfect condition; £32.—J. Newman, Parkgate, Rotherham. [X7318]

P. and M. 1911 2-speed Combination, perfect, reliable, smart; £27/10.—41, Ashford Rd., Cricklewood. [1782]

PETROL Free with P. and M., 3½ h.p., 2-speed, clutch; 16 gns.—Troward, 78, High St., Hampstead. [1772]

## Premier.

PREMIER, 3½ h.p., 2-speed gear, almost new tyres; £22, or offers to exchange.—W. Winch, Burnham, Bucks. [1884]

1915 Premier, 3½ h.p., 3-speed countershaft, perfect order, 95 m.p.g.; £47/10.—Gee, Sutton-in-Ashfield, Notts. [X7379]

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, T.T. model, Philipson pulley, all accessories, very fast; any trial; £28.—C.S., 497, Old Ford Rd., Bow. [1703]

PREMIER, 1914, 2½ h.p., new condition, fully equipped; £15.—Pte. Osborn, A.S.C., M.T., Bulford Camp, Salisbury. [1865]

1915 2½ h.p. Premier, Grado Multi pulley, accessories, splendid condition; cost £40, offers wanted.—Cossbam, Shipham, Wincobae. [X7470]

1914 3½ h.p. Premier, Grado Multi pulley, new back tyre, easy to handle; £18, or offer.—Hall, 80, Milton Rd., Waterloo, Liverpool. [X7439]

PREMIER 4 h.p. Twin, Bosch mag., Gradna gear, B. and B. carburetter, running order; bargain; £20.—15, Bullace Lane, Dartford, Kent. [X7349]

1913 2½ h.p. Premier, just renovated and overhauled, new Dunlop tyre, belt, rings, valves fitted; approval; £16.—12, Beaconsfield Rd., Coventry. [X7487]

LATEST Model 1916 3½ h.p. 3-speed Premier; £64; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

PREMIER, 3½ h.p., 1914, 3-speed, just overhauled by makers, perfect running order; £40, with sidecar; £45; reasonable offers considered.—L2, 093, c/o The Motor Cycle. [1641]

PREMIER, 3½ h.p., 3-speed, late 1913, Watsonian sidecar, as new, just overhauled, new piston, rings, bushes, gears fitted with new parts, perfect order; bargain, £35.—Horner, 5, Lowesmoor Place, Worcester. [X7156]

## Quadrant.

QUADRANT, 4½ h.p., 1913; £16; for immediate sale.—65a, Rosendale Rd., Dulwich. [1877]

QUADRANT, 3 h.p., Bosch, Amac, Dunlops, variable pulley, good running order; £13.—Cullen, Foxhall, Didcot. [X7473]

1912 Quadrant, 4½ h.p., 3 speeds, and sidecar, in good going order; offers.—Marshall's Garage, Kinglassie, Fife. [X7431]

## Rex.

REX, 5-h.p., almost new; £16.—65a, Rosendale Rd., Dulwich. [1878]

REX, 5-h.p., Scroale engine, new tyre on back; bargain, £5.—1, Chandos Rd., Tottenham, N. [1733]

REX, 3½ h.p., Bosch mag., Amac carburetter, good order; £10.—4, Pedworth Rd., Rotherhithe. [1896]

REX, 3½ h.p., good tyres, and going order, spring forks; £7/10.—Stanley, 17, York St., Walworth, S.E. [1658]

REX, 1913, 5-h.p., 2-speed, Canoelet sidecar, lamp, horn, foot pump, accessories, and spare tubes, etc.—Edwards, Gwendon, Aberystwyth. [X7272]

REX, 5-h.p. twin, T.T. clutch model, tyres and belt new, machine in splendid condition; £20.—14, Dodbrooke Rd., West Norwood. [1543]

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3 Enfield, Mods. 140 & 150	55	"
2 2-stroke Enfield .....	42	"
5 Indian, Model B, 3-sp.	£70	0
7 Indian, Model G, 3-sp.	£75	0
7 Indian, Model C .....	£78	0
Indian, 2-stroke .....	£49	10

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THE	4	B.S.A., Model H .....	£64	0
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STARTER	2	Calthorpe, 2-str., 2-sp. ....	£32	11
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PETROL	2	Excelsior, 2-str., 2-sp. ....	£44	2
SUBSTI-	2	O.K. Junior, 2-speed ..	£31	10
TUTES.	2	O.K. Junior-Jap, 2-sp. ....	£36	0
	2	O.K. Junior, 2-stroke ..	£25	10
EASILY	2	" " 2-sp., M.A.G. ....	£40	0
FITTED TO	2	Levis Popular .....	£32	0
ANY MAKE	2	Levis de Luxe, 2-speed ..	£47	10
IN A FEW	2	Diamond, 2-stroke .....	£31	10
MINUTES.	2	Sparkbrook, 2-speed .....	£40	0

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5 h.p. 1916 INDIAN, 3-sp., used 40 miles .....	£61	0
1915 ROYAL RUBY, 2-stroke, as new .....	£24	0
1916 2½ h.p. INVICTA, 2-sp., soiled only .....	£37	0
1916 ENFIELD 180 Combination, 8 h.p. engine, used few miles only .....	£82	0
7 h.p. 1914 INDIAN, 2-speed, and Scar .....	£48	10
3 h.p. EDMUND, spring frame .....	£38	0
2½ h.p. 1915 DOUGLAS war model .....	£46	0
7 h.p. INDIAN and Sidecar, spring frame .....	£45	0
3½ h.p. B.S.A. 1913, 2-speed .....	£30	0
3½ h.p. TRIUMPH, 2-speed .....	£20	0
3 h.p. ENFIELD, almost new .....	£44	0
1915 NEW RYDER, 2-stroke .....	£20	0
3½ h.p. PREMIER .....	£12	10
3½ h.p. 1913 RUDGE-MULTI .....	£35	0
4 h.p. BRADBURY, 2-speed .....	£23	0
1913 3½ h.p. TRIUMPH, free engine, speedometer, lamp, horn .....	£26	0
1915 5 h.p. INDIAN, 3-speed .....	£50	0

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## MOTOR CYCLES FOR SALE.

## Rex

REX 1912 6 h.p. Combination, 2 speeds, free engine, splendid condition and running order; £30, bargain.—Murray, 37a, Charles St., Hutton Garden, Holborn. [X7582]

REX 1912 Coach Combination, 6 h.p. twin, Bosch, 2 speeds; £26/10 cash, easy terms quarter down, monthly payments.—Wandsworth Motor Exchange, Elmer St., Wandsworth (Town Station). [X7405]

1914 Rex 6 h.p. Twin, 3-speed combination, with 2-seater sidecar, complete with accessories, in first rate order; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [1974]

## Rex-Jap.

1913 8 h.p. Rex-Jap 2-speed Combination, new condition; sell cheap.—29, St. Leonard's St., Bow. [1814]

## Rover.

ROVER, 2½ h.p., B. and B. carburetter, U.H. mag., accessories; £11, nearest offer.—Ratcliffe, 9, Florance St., Hendon. [1864]

ROVER, late 1914, 3½ h.p., T.T., Philipson pulley, speedometer, horn, lamps; bargain, 32 gns.—5, Wiltshire Rd., Brixton, S.W. [X7123]

ROVER, 1914, 3½ h.p., 3 speeds, free engine, unused for past year, owner in army; excellent order.—Karslake, Coxson, Lime Grove, New Malden. [X7287]

1912 Rover, 3½ h.p., free engine, B. and B. carburetter, Bosch mag., excellent condition, with good tyres and engine; £20.—Robinson's Garage, Green St., Cambridge. [1841]

ROVER, 3½ h.p., late model, free engine, 3-speed gear, Dunlops, Lucas horn and lamp set, grand machine; £52/10.—Murray, 37a, Charles St., Hutton Garden, Holborn. [X7581]

ROVER, 1913, T.T. model, with accessories, very fine machine; £32/10; deferred payments if desired; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1695]

ROVER, 1913, 3-speed, 8,000 miles, re-bored, re-bushed by makers, good tyres, £29/10; consider exchange 2-speed lightweight; 1909 Triumph and sidecar, needs repairs, £10.—Jesse Hall, Louth. [1785]

BIRMINGHAM Agent, P. J. Evans, 87-91, John Bright St., has all Rover models in stock for immediate delivery; countershaft T.T., with fixed gear; also semi T.T. model, with h.b.c. Philipson; prices from £52. [X7414]

ROVER, 3½ h.p., 3-speed, T.T. model, perfect condition, with nearly new Montgomery coachbuilt sidecar, new heavy Dunlop tyres, B. and B. carburetter, Bosch mag., P. and H. head light, Lucas rear, Brooks saddle, new footboards, tools, and spares; 50 gns.; machine only, 40 gns.; or exchange with cash for late Grand Prix Morgan.—Davis, Belmont, Wollescot, Stourbridge. [X7475]

## Royal Ruby.

ROYAL Ruby, 2-stroke, 2-speed, Stewart trip speedometer, nearly new Avons, all accessories, reliable machine, in first-class order, runs on paraffin; £23.—143, Percy Rd., Shepherd's Bush. [1676]

ROYAL Ruby 1916 2-stroke Lightweight, Villiers 2½ h.p. engine, Albion countershaft 2-speed gear, Moseley tyres, footboards, twin silencers, large filler caps, head lamp, tail lamp and horn, condition as new; £28.—The Premier Motor Co., Aston Rd., Birmingham. [1448]

## Rudge.

3½ h.p. Rudge Multi, excellent condition; £35.—Parker and Son, St. Ives, Hants. [1858]

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

1913 3½ h.p. Rudge (free engine), sidecar; £30; good condition.—Richardson, 4, Foregate, York. [X7361]

1913 Rudge, clutch, thorough condition; £18/10.—Butcher, Epsommore Mews, S. Kensington, S.W. [1741]

RUDGE and Sidecar, speedometer, disc wheels; £36.—W. and H. Motor Co., Ltd., 287, Demingsgate, Manchester. [1258]

RUDGE, 2-speed, clutch, 1913, new chain, good condition; £24, offers.—Gerard, 3, Waltham Terrace, Queenborough. [1685]

1913 Rudge Multi and light sidecar, just overhauled, new belt, etc.; £30.—Smith, 16, Haverstock Hill, Chalk Farm. [1824]

1915 Rudge Multi, 3½ h.p., splendid order; full particulars given; bargain, £35.—Owen, Dolyer, Whitland, S. Wales. [X6608]

3½ h.p. New 1916 Rudge Multi's from stock, free engine and semi-T.T. bars; £58/18.—Wauchope's, 9, Shoe Lane, London. [1754]

1914 3½ h.p. Rudge, very fast, splendid condition; £28; must sell, owner going on active service.—Annisat, Alford, Lincs. [X7370]

RUDGE Multi, 1914, in fine condition, speedometer, fully equipped, equals new, Palmer tyres; £36.—6, Warren St., London. [1834]

RUDGE, 3½ h.p., N.S.U. 2-speed, free engine, new belt, tyres nearly new, extra tank; £25, or offer.—Turnpenny, Shipton, York. [X7483]

RUDGE, 1913, N.S.U. 2-speed, cane sidecar, armoured accessories, splendid condition, little used; £34.—34, Forest Hill Rd., Honor Oak, S.E. [1881]



**MOTOR CYCLES FOR SALE.**

**Rudge.**

- 19** 15 Rudge Multi, 5-6 h.p., coachbuilt sidecar, fully equipped, trip speedometer, spares, perfect order; £46, quick sale.—111, Malden Rd., New Malden. [1707]
- R**UDGE Multi, late model, complete, lamps, new Dunlop cover and belt, good condition, runs on paraffin; must sell; accept £23/10.—Edwardes, 208, Camberwell Rd., S.E. [1750]
- R**UDGE Multi, 1915, 3½ h.p., splendid condition, used very little, and Gloria sidecar; £45, complete (or separate); must be sold.—Thorneloe, Tailor, Abington St., Northampton. [X7289]
- 19** 14 T.T. Rudge, Miller lamps, tyres, engine condition, appearance as new, 60 m.p.h. guaranteed, 100 m.p.g., easy starter, Philipson pulley; sacrifice £29/10; trial.—S. Biss, Waltham Abbey. [1780]
- R**UDGE Multi, 3½ h.p., 1916, done about 1,500 miles, just overhauled, perfect condition, over 100 to the gallon; £50; or exchange 1915 6 h.p. twin.—Write, Wilson, 101, Hatton Garden, E.C. [1687]
- 19** 13 3½ h.p. Rudge, free engine clutch, with h.c.e., Sensapray carburettor, Dunlop and J.P. tyres, recently overhauled and re-enamelled, guaranteed in perfect condition throughout; £28.—The Premier Motor Co., Aston Rd., Birmingham. [1447]

**Scott.**

- C**OLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [0806]
- S**COIT, 3½ h.p., excellent condition; £25; owner on active service.—Main, Heswall, Cheshire. [X7459]
- T**.T. Scott, winner 1912 race, engine still perfect; will sell cheap.—120, Derby Rd., Nottingham. [X7454]
- 19** 14 Scott and coachbuilt sidecar, in excellent condition, just been overhauled; £40.—Lt. Box, 7, Finchley Av., Church End, Finchley. [1860]
- 19** 14 Scott, recently overhauled, B. and B. carburettor, condition excellent; bargain, sell at low figure.—120, Derby Rd., Nottingham. [X7455]
- S**COIT and Sidecar, Binks carburettor, all accessories, and in excellent condition throughout; £30.—Cass's Motor Mart, 5, Warren St., Easton Rd., W. Museum 623. [1823]
- S**COIT, 3½ h.p., water-cooled, 2-speed, recently overhauled by makers, new August, 1915, little used, owner active service, France; cheap quick sale.—Mellingham, Hayden, Cheltenham. [X7441]

**Sarolea.**

- 6** h.p. Twin Sarolea, Chater frame, Matchless spring forks, Mabon speed gear, free engine, handle starting, Bosch waterproof mag., B. and B. car tyres on back, Avon Sunstone front, new Dunlop belt, nearly new coachbuilt sidecar, adjustable wind screen, luggage carrier, with cord tyre, engines just been done up at cost £4/11 (receipt shown); £25; or offer; seen any time.—73, High St., Merton, S.W. [1723]

**Singer.**

- 2** 1 h.p. Singer, free engine, splendid running order; £23.—Driver, Barrington, Barford, Oxon. [1312]
- S**INGER, 3 h.p., mag., B. and B. tyres nearly new, fine condition; £10/10.—Houghton, Walton, Luttrethworth. [X6986]

**Sparkbrook.**

- S**PARKBROOK, 2-stroke, latest model; £35; immediate delivery.—20, Holborn Viaduct. [1838]
- S**PARKBROOK, 2-stroke, Dunlops, Bosch mag., 2-speed countershaft, new; what offers?—No. 768, c/o The Motor Cycle. [X7355]

**Sun**

- S**UN, 2-strokes; all models from stock from £29/10.—Colmore Depot, 261, Deansgate, Manchester. [0828]
- 19** 15 Sun V.T.S., 2 speeds, lamps, horn, etc., done 500 miles.—Marshall's Garage, Kinglissie, Fife. [X7429]
- C**OLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [0807]

- 19** 15 Sun V.T.S., and accessories, in good condition; £24, offer; seen at any time.—1, Margaretta Terrace, Chelsea. [1629]

- 19** 14 Sun-Villiers, footboards, drip feed, new tyre and belt, lamps, horn, etc., first-class order.—Marshall's Garage, Kinglissie, Fife. [X7430]

- 19** 16 Sun, 2½ h.p., 2-stroke, 2-speed, Dunlop tyres, really soiled only, under 50 miles; exceptional bargain, £30.—Robinson's Garage, Green St., Cambridge. [1843]

- 2** 1 h.p. Sun-Villiers, 2-stroke, 2-speed, 1916, in new condition, only ridden 150 miles; cost with accessories £41, will sell £35; an absolutely perfect mount, speed 3 to 45 m.p.h., easily average 30 m.p.h.; any trial given.—E. P. Symons, Corn Exchange, Beverley. [X7432]

**Sunbeam**

- 19** 14 3½ h.p. Sunbeam, in good order; £49.—Lambert's, Thetford. [X7363]
- S**UNBEAM, 1914, 3½ h.p., with Gloria sidecar, Stelastatic tyres; £62.—C. 31, Reli Rd., Peckham. [1559]

**T.D.C.**

- 3** 1 h.p. T.D.C., 1915, 3-speed, Bosch, B. and B., all accessories, in fine condition; real bargain, £30.—Box 773 c/o The Motor Cycle. [X7450]

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to buy your new machine is through the SERVICE CO. We give BEST TERMS for CASH; most liberal allowance on your present Motor Cycle in part exchange, and the EASIEST Extended Payment terms. We can arrange Exchanges and Extended Payments combined, i.e., our allowance on your present Motor Cycle can stand as deposit, and the balance arranged in 12 monthly instalments. Get in touch with us at once, and send for particulars.

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**ENFIELD, HAZLEWOOD, JAMES, and AMERICAN EXCELSIOR COMBINATIONS.**

**ENFIELD 3 h.p., and JAMES 3½ h.p. MEDIUM-WEIGHTS.**

**O.K. JUNIOR, NEW IMPERIAL, ALLDAYS ALLON, SUN, CONNAUGHT, ROYAL RUBY, COVENTRY EAGLE, J.H. CAMPION, and WOLF LIGHTWEIGHTS, etc., etc.**

**SIDECARS.—SERVICE, WATSONIAN, MILLFORD, CANOELET, and IVY Coachbuilt Models.**

**RIGID, coachbuilt, splendid condition.... £5 0**

**And Second-hand SERVICE lightweight, coachbuilt, almost new..... £7 10**

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**Brand new COVENTRY EAGLES, with Villiers Engine and 2-speed gear, 42 guineas.**

**Single gear, 35 guineas.**

**NO EXTRA for Extended Payments.**

**SECOND-HAND MACHINES.**

Stock No.	h.p.	Specification.	Price.
181.	2½	WOLF, 1915, 2-stroke, very slightly used.....	£20 0
282c.	2½	ENFIELD, 2-speed.....	£20 0
78.	2½	ALLDAYS MATCHLESS, 1914.....	£19 0
947.	2½	O.K.-PRECISION.....	£16 0
179.	2½	VELOCETTE, 1915, 2-sp., chain drive.....	£28 0
276.	2½	LEVIS, Popular model.....	£25 0
242.	2½	ALLDAYS MATCHLESS, 1916.....	£24 0
288c.	3½	ROVER, 1914, T.T. model.....	£35 0
599.	6	CLYNO, 1914, chain drive, No. 6 Sidecar, hood and screen, lamps, etc.....	£65 0
226.	3½	BRADBURY, 1915, 3-sp., chain drive.....	£42 10
286c.	3½	LEA-FRANCIS, twin, 3-speed.....	£40 0
222.	3½	PREMIER, 1914, 3-speed, countershaft, Canoelet S. decar.....	£48 0
97.	4	TRIUMPH, 1914, N.S.U. gear, Gloria Sidecar.....	£42 10
267.	4	DOUGLAS, 1915, T.T., fine order.....	£35 0
265.	4	DOUGLAS, 1913, and Sidecar.....	£42 10
259.	4	ALLON, 1916, 2-sp., clutch, Watsonian Sidecar.....	£40 0
247.	4	ALLON, 1915, 2-sp., clutch, splendid condition.....	£34 0
258.	4	HARLEY, 1916, done 1,000 miles, brand new, Sidecar to match.....	£75 0
	4	CLYNO, 1913, No. 6 Sidecar, spare wheel, many accessories.....	£55 0

**LIGHT CARS IN STOCK.**

Stock No.	h.p.	Specification.	Price.
125.	11	LAGONDA, 1915, 4-seater, fine order.....	£145 0
127.	10	BAYARD, 4-seater, dynamo lighting, almost new condition.....	£225 0
123.	10	CALTHORPE Minor, 1914.....	£145 0
126.	6-8	BABY PEUGEOT, splendidly fitted, very slightly used, 1916.....	£155 0
104.	20	FORD Van, 1916, new, delivery London.....	£134 0
95.	20	FORD, 2-seater, 1915, done 3,000 miles.....	£95 0
12	12	OVERLAND, 5-seater, brand new, just in.....	£225 0
		BUGATTI, 1913, 2-seater, good order.....	£200 0

**The Service Co. (London) Ltd.**

292-293, High Holborn, London, W.C.

Telephone—6430, Holborn.

**MOTOR CYCLES FOR SALE.**

**Triumph.**

- L**ATEST Model Baby Triumph; £35.—Lambert's, Thetford. [X7364]
- 19** 13 Triumph, clutch, sidecar, full outfit, perfect; £40.—Liddell, P.O., Rochford, Essex. [1526]
- 19** 10 Triumph, 3½ h.p., good condition, all complete, and sidecar; £25.—Taylor, High St., Ledbury. [X7293]
- T**RIUMPH, 1913, 3-speed; bargain, £34.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1266]
- 19** 14 4 h.p. Triumph, 3-speed, lamps, horn; bargain, £38.—O.C., Sanitary Section, Flinton Park, Suffolk. [X7319]
- T**RIUMPH, 3½ h.p., tyres and speedometer nearly new; bargain, £20.—Carr, 35, Arlington Rd., Camden Town. [1734]
- T**RIUMPH, 1912, 3½ h.p., speedometer, lamps, good running order; £25.—162, Boundary Rd., Walthamstow. [1806]
- 19** 12 3½ h.p. Triumph, free engine, perfect running order; £24; write or call.—48, Lyndhurst Rd., Edmonton. [1719]
- T**RIUMPH T.T. 3-speed Combination; must sell quickly; bargain, £38.—Webster, Warwick Rd., Kenilworth. [X7440]
- T**RIUMPH, late 1911, Brampton gear, in very good order; £23.—H. M. Lawrence, Killyree, Clough, Co. Antrim. [X7368]
- T**RIUMPH, 1913, 3½ h.p., 3-speed, and new coachbuilt sidecar, will go anywhere; £45.—20, Wellington Rd., Rhyl. [X7121]
- T**RIUMPH, 3½ h.p., 1912, fast, reliable; £18; evenings after 7, or Saturday after 3.—143, Bedford Hill, Balham. [1659]
- T**RIUMPH, about 1910, fine order, new belt, new tyres, etc.; 18 gns.—Smith, 16, Haverstock Hill, Chalk Farm. [1825]
- 19** 12 Triumph, Brampton variable gear, engine just re-bushed, dropped handle-bars; £30.—Salter, Dry Sandford, Abingdon. [1749]
- 3** 1 h.p. Standard Triumph, everything in new and perfect condition; £20, lowest.—Blenkarn, 58, Cromwell Rd., Beckenham. [X7494]
- C**OUNTERSHAFT 3-speed 4 h.p. Triumph, War Office model, perfect condition, all accessories; £63.—Willson, 22a, Princes Sq., Bayswater. [1811]
- T**RIUMPH, 1914, 4 h.p., 3-speed, coachbuilt sidecar, nearly new tyres, excellent condition; £50.—Winters, Leazesend Rd., Watford. [1720]
- T**RIUMPH, 3½ h.p., 1909, in good running order; £15/10; exchange Auto-wheel or lightweight.—Robins, 97, Latchmere Rd., Battersea. [1789]
- T**RIUMPH, 1910-11, 3½ h.p., tearing model, splendid condition throughout; bargain, £15/10.—3, The Mews, Victoria Rd., Clapham, S.W. [1634]
- 19** 14 T.T. Roadster Triumph, 4 h.p., 3 speeds, excellent condition, and Millford cane built sidecar, many spares; £40, no offers.—Morgan, Felsted, Essex. [X7347]
- 19** 15 Junior Triumph, 2-stroke, 2-speed, Dunlops, Brooks saddle, in excellent order throughout, engine perfect; £36.—Robinson's Garage, Green St., Cambridge. [1844]
- 19** 12 Triumph, 3½ h.p., free engine, semi T.T. bars, perfect engine, very good tyres, 2 lamps, horn, spare belt, tools, etc.; £25.—Robinson's Garage, Green St., Cambridge. [1845]
- L**ATE 1914 4 h.p. 3-speed T.T. Triumph, Cowey, Lucas lamp and horn, knee-grips, numerous spares, £45; with 1916 Rover coachbuilt sidecar, £55.—Smith, 8, Lower Bridge St., Dublin. [X7424]
- T**RIUMPH, 1914, 3-speed, Swan sidecar, many valuable spares, tip-top order; £47/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [1701]
- T**RIUMPH, 1908, free engine, new Philipson pulley, 1916 B. and B. carburettor, tyres as new, machine in perfect running condition, new belt, Dunlop; bargain, £28.—Dow, Motor Agent, Callander. [X7120]
- T**RIUMPH, 1913-14, 3½ h.p., with coachbuilt sidecar, Grado Multi gear, new heavy Dunlop tyres, Stewart speedometer, and tools complete; £35; appointment by letter.—A. F. Smart, 65, Grosvenor Rd., S.W. [1722]
- 3** 1 h.p. Triumph, late 1913, 3-speed gear, Fulford 3½ coachbuilt sidecar, overhauled and re-painted March, in practically new condition, very little used, 3 lamps and spares, 2 new tyres; £50.—Huxley, Friary Brewery, Guildford. [1662]
- T**RIUMPHS.—Two 1914 4 h.p. coachbuilt combinations at £48/10 each; and a 1913 coachbuilt combination £37; all three in perfect condition throughout, and complete with accessories; will accept exchanges on either machine.—Newham, 223, Hammersmith Rd., W. [1874]
- 19** 12 3½ h.p. Triumph, free engine model, completely dismantled, re-enamelled and re-plated, engine, etc., overhauled, appearance and mechanical condition guaranteed as new, lamp, horn, and tail lamp; a bargain, £32.—The Premier Motor Co., Aston Rd., Birmingham. [1449]

**Trump.**

- T**RUMP-J.A.P. 5-6 h.p. Canoelet Sidecar Combination, 3 speeds, free, handle start, Bosch, B. and B., new condition, new tyres every imaginable accessory; bargain, £35.—14, Dodbrooke Rd., West Norwood. [1542]



## MOTOR CYCLES FOR SALE.

## Tyler.

PETROL Free with 1915 Tyler, 2½h.p., 2-stroke; 18 gns.—Troward, 78, High St., Hampstead. [1770]

## Williamson.

WILLIAMSON, 8h.p., 1914, air-cooled Douglas engine, chain drive, wicker sidecar; £52, near offer.—12, Myddleton Rd., Bowes Park. [1660]

## Win-Precision.

WIN-PRECISION, 3½h.p., and semi-torpedo sidecar, good tyres and condition; £20.—14, Dodbrooke Rd., West Norwood. [1545]

## Wolf.

1916 2½h.p. 2-stroke Wolf, lovely machine; £22, or nearest.—Winn, High St., Rochdale. [X7417]

WOLF, 2½h.p., 4-stroke, reliable machine, in excellent condition; bargain, £16/10; exchange with coach for recent combination.—Newham, 223, Hammer-smith Rd., W. [1873]

## Zenith.

3½h.p. Zenith, with variable gear; £20.—Chilton, 199, High St., Watford. [X7434]

1913 Zenith-Gradua with 1914 4h.p. J.A.P. engine, perfect, and sidecar; £25.—H. Broughton, 39, Market Place, Banbury. [1784]

1913-14 Zenith-Gradua, 4h.p. J.A.P., coachbuilt sidecar, good tyres, new belt, lamps, complete; any trial; £34.—57, High St., Hampton Wick. [1790]

ZENITH-GRADUA, late 1911, 3½h.p., Portland S.E. sidecar, 3 lamps, 2 brakes, horn, mirror, etc., in good order; £30; after 6 p.m.—61, Peckham Rye, S.E. [1886]

ZENITH, 1914, 8h.p., semi T.T. bars, lamp set, horn, speedometer, with sporting Canoelet sidecar; luggage grid, etc., complete; £52.—Ede and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [1491]

## Ladies' Motor Cycles.

LADY'S Calthorpe, 2½h.p., 2-stroke, 2-speed, 1916—Pickering, Mardol, Shrewsbury. [X7024]

PETROL Free with 1915 3-speed Hobart Lightweight, 24 gns.; also new 1916 Calthorpe, 2-speed, 24 gns.—Troward, 78, High St., Hampstead. [1763]

DOUGLAS, 1912, lady's, with Cowey speedometer, £25; X'all large pan saddle, 35/-; exchange ordinary saddle; Douglas-Amac, 7/6; Whittle belt, 10/-.—Johnson, Sancreed, Ashton-under-Lyne. [1867]

## Miscellaneous.

COLLIER'S Motorcycles for cash bargains or exchanges.—Address, Deal St., Halifax.

COLLIER'S—1916 7h.p. American Excelsior and coach sidecar, only done 500 miles; £69/10.

COLLIER'S—Triumph, mag., new tyres, £15/10; Clyno, 6h.p., 3-speed countershaft, interchangeable wheels, £35/10.

COLLIER'S—1909 2-speed Triumph and sidecar, £26/10; 1911 3-speed Triumph and sidecar, £27/10.

COLLIER'S—Royal Ruby, 2½h.p., 2-speed, 2-stroke, slightly shop-soiled, £31/10; Douglas magneto lightweight, £12/10.

COLLIER'S—1912 3½h.p. 2-speed Alldays, £25/10; Excelsior, 3½h.p., 3 speeds, free engine, spring forks, £16/10.

COLLIER'S—1913 2½h.p. 2-speed Douglas, £34/10; 1912 3½h.p. 2-speed Premier, £22/10; sidecar, £3/10 extra.

COLLIER'S—1912 magneto Humber lightweight, £15/10; 3½h.p. S.P.K., countershaft 3-speed, chain drive, £26/10.

COLLIER'S—1912 3½h.p. Zenith-Gradua, £24/10; 1913 3-speed free engine Triumph, fine condition, £35.

COLLIER'S—Rex brand new 6h.p. sidecar combination, £71, offers wanted; new Rex sidecar, £12/10.

COLLIER'S—1914 2½h.p. Douglas, £26/10, fixed gear; 2½h.p. 2-speed F.N., shaft drive, £17/10.

COLLIER'S—1914 2½h.p. 2-speed Douglas, £37/10; 2½h.p. 2-speed Douglas, wants little attention, £18/10.

COLLIER'S—1913 Rex twin sidecar combination, £43/10; 1914 combination, very slightly shop-soiled, £69/10.

COLLIER'S—1913 7-9h.p. Quadrant and coach sidecar, £45/10; Royal Ruby, 2-speed, 2½h.p. J.A.P. engine, slightly shop-soiled, £33/10.

COLLIER'S—N.S.U. 3½h.p., 2-speed, £17/10; 5h.p., kick start, 1913 twin Hazlewood, 3-speed countershaft, £36/10.

COLLIER'S—3½h.p. free engine Rudge, £19/10; 3½h.p. free engine Triumph, special valve, £19/10.

COLLIER'S—1914 7h.p. 2-speed Indian combination, £52/10; 2½h.p. Minerva, wants attention, £3/18/6.

COLLIER'S quote the keenest exchanges. Send for full list.—Address, Deal St., Halifax. [10826]

4½h.p. mag., B. and B., Dunlops, first-class condition; £10.—Bucknall, Mayfield Rd., Acock's Green. [X7383]

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CONTINENTAL.	Our Price.	List Price.
26×2½×2½ T.T., basket pattern	21/6	28/9
26×2½×2½ Rub. studded, hvy.	25/6	38/6
26×2½ Standard	14/-	22/6
26×2½ T.T., basket pattern	16/6	26/6

PIRELLI.		
26×2½ Ex. heavy rub. studded	25/-	39/-
26×2½ Britannic hvy. rub. stud.	21/6	35/-

MIDLAND.		
26×2½ Hy. ribbed and studded	15/9	26/-

CLINCHER.		
26×2½ De Luxe heavy	23/6	30/8
26×2½ De Luxe extra heavy	25/6	34/6

26×2½ Ex. heavy de luxe.	25/-	36/6
26×2½ De Luxe	21/-	32/-
26×2½ Dreadnought	32/6	40/-

26×2½ A Won, rubber studded	19/6	32/-
26×2½ A Won, rubber studded	22/6	32/-
26×2½ A Won, ribbed	14/6	27/6

KEMPSTALL.		
26×2½ Heavy anti-skid	22/6	32/6
26×2½ Heavy non-skid	30/-	42/-

26×2½ Anti-skid	23/6	37/6
26×2½ Heavy non-skid	39/-	48/-
28×2½ Heavy racing	30/-	48/3

NICHELIN.		
26×2½ Heavy Trident	22/6	28/6
26×2½ Wired-on for F.N.	21/-	30/6

WOOD-MILNE.		
26×2½ Grip-ribbed heavy	22/6	32/9
(for 2½ rims)		

26×2½ Grip-ribbed heavy	20/-	31/6
(for 2½ rims)		
26×3 Grip-ribbed heavy	25/-	36/6

(for 2½ rims)		
HUTCHINSON.		
26×2½ Passenger, ribbed	28/6	42/-

26×2½ Passenger	29/6	45/-
Special Lines for Indians, etc.		
28×3 Dominion (special for driving wheel)	50/-	—

28×3 Clincher de Luxe	35/-	48/-
Wood-Milne, grip-ribbed	27/6	44/-

## TUBES.

CONTINENTAL, ELITE, etc.		
24×2	4/3	6/-
26×2	4/6	6/9

26×2½	6/6	7/9
26×2½	5/9	8/3
26×2½×2½	6/9	8/9

26×2½	6/6	8/9
26×3	7/6	9/6
28×2½	7/6	9/3

28×3	9/6	11/9
Butted, 1/6 extra.		

## BELTS.

CONTINENTAL.		
8ft. 6in. × ½in. lengths only, 1/- per belt;		
list price 13/9.		

PEDLEY.		
per ft.		
½in. section .. 1/3	1 in. section .. 1/11	

¾in. section 1/5	1½in. section .. 2/4	
¾in. section 1/8.	15% allowed for old belt.	

## RETRADING.

Special Heavy 15/-, Heavy 12/6, Medium 10/-, Studded or Ribbed Retreads. Sections on application. Time required, 3 days from receipt of cover.

## ELITE RUBBER CO., LTD.,

266, Vauxhall Bridge Road,

VICTORIA, S.W.

Phone—Victoria 6553.

## MOTOR CYCLES FOR SALE.

## Miscellaneous.

1½h.p. Lightweight, good condition, ride away; £7/10. 12 —1, Abbey Garden, S.W. [1777]

EXCELSIOR, shop-soiled model only, £68; also Harley-Davidson.—Turpin, 22 and 29, Preston Rd., Brighton. [10716]

LONGMAN BROS. have a good selection of second-hand machines and combinations at bargain prices. Write, 'phone, or call, and be convinced for yourself.—1, King St., Acton. 'Phone: 1578 Chiswick. [1852]

2-STROKE Lightweights.—We have a stock and can offer delivery of Sun, Calthorpe, Diamond, Wolf, Lewis, all models; cash or exchange.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [10816]

RIDER TROWARD has in stock Allon, Brough, Bradburs, Clyno, Douglas, F.N., Hobart (lady's), Indian, Motosacoche, Omega, P. and M., Sunbeam, Tyler, Zenith, Calthorpe (lady's), and others. See separate advts. Free petrol. 'Phone: 5392.—78, High St., Hampstead. [1765]

BARGAINS: Must Clear.—Rex 2½h.p. lightweight, Bosch, Senspray, £9/15; 1915 4h.p. Lerk-Jap, T.T., red, almost new, £19/10; 1914 8h.p. Waverley-Jap combination, underslung Zeppelin sidecar, red, £28/15; 1914 Grand Prix Morgan, actual racer, almost new, £84/7; no offers; must clear. Call 9 to 7.—Liquidator, 6c, Lansdowne Hill, West Norwood, S.E. (See cars.) [1919]

1916 2½h.p. 2-speed Revere, almost new, £52; 1914 3½h.p. 3-speed Premier and Millford sidecar, £42; 1915 3½h.p. T.T. Norton, very fast, £27/10; 1914 2½h.p. Royal Ruby, lamps and horn, in good condition, £20; 1915 B.R.S. Norton, Phillips pulley, Lucas lamps and horn, £48; 1916 3½h.p. Alldays Allon Model de Luxe, not done 50 miles, £35.—Wilkin and Co., 635, Ecclesall Rd., Hunter's Bar, Sheffield. [X7396]

## SIDECAR ATTACHMENTS.

MILLFORD £20 Red Sidecar, for spring frame Indian; £12.—Crow Bros., Guildford. [1818]

GOOD Wicker Sidecar, complete; a bargain, 35/-.—Smith, 16, Haverstock Hill, Chalk Farm. [1828]

PHENIX Cane Sidecar, side door, waterproof apron; £22/10.—S.G., Oakhurst, Eastrop, Easingstone. [1891]

WICKER Sidecar, fitted with side door, light, good condition; 40/-.—30, Talbot St., Burnley. [X7461]

BASTONE'S for valve in sidecars. See last week's adverts.—228, Pentonville Rd., King's Cross, London, N. [1921]

MILLS-FULFORD Cabrio Cane Sidecar, in excellent condition; cost 18 gns., take £7, bargain.—Bush, Wells Rd., Bath. [X7313]

NEW Indian Swan Sidecar, beautifully sprung, and all refinements; cost £24, accept £15, lowest.—Millard, Chesterfield. [X7343]

CANOELET, wind screen, hood, luggage grid, sound tyre, newly re-painted; £6/12/6.—34, Forest Hill Rd., Honor Oak, S.E. [1882]

RIDER TROWARD has light wicker sidecar, £2/2; another, 35/-; coachbuilt, side door, £3/10; another, £5.—78, High St., Hampstead. [1766]

SIDECARS.—Several bullet-shaped coachbuilt bodies, with or without chassis, cheap.—Write, Stokes and Holt, Ltd., Belgrave Rd., Leicester. [10718]

GROSVENOR Sidecars, special sporting model lightweight sidecar for Douglas, and similar machines; £9/15. Catalogue free.—Grosvenor Motor Co., Bradford St., Bolton. [17574]

WATSONIAN and Juno Sidecars, 9 models, immediate delivery; cash, prices from £6/13/6; gradual payments from 12/3 monthly.—Juno Works, 248, Bishopsgate, London. [8919]

SPECIAL Sidecars to suit American Excelsior and Harley-Davidson; Cape hoods 30/-, wind screens 17/6; splendid value in lightweight model at £8.—Melville Sidecars, Halifax. [X1034]

SIDECARS for any machine, bodies, chassis, hoods, and screens, supplied separately, inspection invited, or write, stating requirements, to T. Williams and Co., Sidecar Manufacturers, Collyhurst St., Manchester. [1278]

SIDECARS, touring, sorting, lightweights, for all motor cycles, including Indian, over 100 designs in stock; chassis and hoods and screens supplied; a few shop-soiled models in stock; bargains.—Burbury Sidecar Works, Farm St., Birmingham. [X6984]

## SIDE-CARRIERS AND PARCEL-CARS.

K.B.I.T. 16-20h.p. Light Van, in perfect order; £65.—Marshall, Castle St., Cambridge. [1301]

MILLS-FULFORD Commercial Sidecar, loose trays, coach body, new; £12.—Campion Garage, London Rd., Derby. [1684]

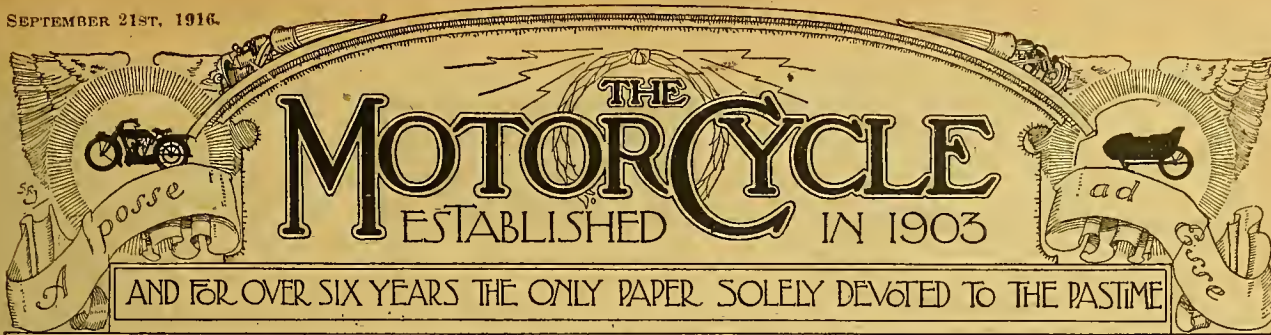
MILLS-FULFORD Tradesman's Sidecar, cheap, or exchange lady's and gent's cycles.—127, London Rd., King's Lynn. [X7489]

## BODIES.

ZEPP Cigar Torpedo Sports Coach Bodies, upholstered and finished; 50/-.—Venus Car Co., Seven Sisters Rd., N. [1866]

COACH Bodies, latest; great sacrifice, 25/-; brand new.—Venus Sidecar Co., 746, Seven Sisters Rd., Tottenham. [13723]





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## The Use of Petrol Substitutes.

**T**HERE has been excitement in certain quarters during the past week concerning the use of petrol substitutes, which happened in this way. As briefly announced in our last issue, the Conway magistrates decided that it was illegal to run a char-à-banc on a petrol substitute, after taking into consideration the new regulations in which motor spirit was defined 'as an inflammable hydro-carbon, and any liquid containing hydro-carbon which was capable of being used for providing reasonably efficient motive power for a motor char-à-banc. An interfering evening paper then went to see the Petrol Committee on the subject, and one of the officials was alleged to have said that anything used as motor spirit in a motor car was liable to the duty, even water used in a carburettor if it could be consumed.

The very next morning the Petrol Committee denied having ever made such a statement, and ordinary motorists and motor cyclists were relieved to see it stated that there was no restriction whatever on the use of petrol substitutes, and that the Order only applied to chars-à-bancs. This chars-à-bancs Order has, however, been interpreted in various ways throughout the country. In the West, for instance, one morning a policeman was stationed on the high road to tell motorists to go home and put their cars away, as they might not use them for private purposes. The same thing happened in North Wales, where all motor vehicles were stopped. This was, of course, entirely unauthorised, and motor cyclists are still entitled to use petrol substitutes if they can get them. Again at Bourne-mouth the owners of a char-à-banc were fined, not for using paraffin, but because they employed methylated spirit for starting up the engine.

By dint of great persuasion our sister journal, *Motor Traction*, elicited a declaration from the Board of Trade concerning this use of motor spirit and petrol substitutes, and this reads as follows: "While they (the Board of Trade)

have no authority to interpret the regulations, it appears to them that, in considering whether any particular vehicle is one to which the regulation applies, regard may rightly be paid to the question whether it is being used for excursions or trips in the way chars-à-bancs are ordinarily used, *but that taxicabs or cars of the nature of ordinary private cars, even if hired from a garage, would not in any case come within the operation of the regulations.*" Notice of appeal has been given in both the cases referred to above, and the Commercial Motor Users' Association will support the Conway appeal, which will be regarded as a test case.

In conclusion, it may be observed that if the limitations of the supply of petrol are solely in order to ensure an adequate supply for the needs of the Services and munitions work, as we have been led to understand, there can be no objection whatever to the use of substitutes.

## Purchase Oil in Drums.

**O**NE of the leading oil companies has again drawn the attention of the motoring public to the control of tin-plate by the Government. This the average reader may consider a minor matter from his point of view, but as a real matter of fact the question affects him more directly than he supposes. Motor cyclists are in the habit of purchasing small quantities of oil—usually quart, half-gallon, or gallon tins. Almost without exception these tins are not used again, and it is with the object of preventing the unnecessary use of tin-plate that the appeal is made. Now, quite apart from the prevention of waste, it is distinctly more economical to purchase oil in bulk, say in five-gallon drums, than in comparatively expensive small tins. It is not only the user to whom this appeal is addressed; motor agents and dealers throughout the country can and should assist by suggesting to their clients the desirability of purchasing their oil in drums.





### From the Front.

I have just had one of Dr. Lindsay's chatty epistles from the Front. He is evidently aggrieved at being deprived of his Norton, and when he gets his next leave he proposes to call on the designer of the spring fork which he is now compelled to ride, and to take a gun with him. He comments violently on the folly of the War Office buyers, who began by specifying machines with "sit-up" handle-bars and footrests to suit. They tardily discovered that full T.T. bars were the goods for dodging shell holes, but lacked the gumption to alter the footrest position to suit. Dr. Lindsay agrees with Mr. Burnard anent the appearance of the new Scott sociable, and opines that the combination mudguard and petrol tank will soon be eliminated, first by gateposts and finally by the designer.

### About Spring Forks.

I informed my readers some months ago that I intended to try out every rear-sprung frame on the market, and I have nearly completed my wading through the list. I need hardly say that I am more convinced and enthusiastic on the main point than ever I was. I do not wish to ride another rigid rear frame so far as long distance work is concerned, and I imagine that the cruder type of frame will be practically confined to the cheapest and lightest machines when the war allows manufacture to be recommenced on the normal basis. Oddly enough, the subsidiary points have all come to me as surprises. In particular I have realised the noisiness and inefficiency of the average front fork of repute. I have used certain front forks without complaint for years past, and imagined that they were tolerably satisfactory articles. The jars received from them were as nothing in comparison with the much heavier shocks administered by the old rigid rear frame; and any noise created by the front fork was drowned in the clatter of the tool-kit, as it shivered under the concussions received from the rear wheel. But when I take out a rear-sprung model no concussions accrue from behind, and the tool-bag and other back-hamper are dead silent. As a consequence, one's critical faculties are instantly concentrated on the fore half of the bicycle, and one notices the noise and the bumpiness thereof. As soon as rear springs become standardised, and work into universal ownership, we shall get a clamour for better and quieter front forks, so here is an opening for inventors.

### Decarbonisation.

I do not want to reopen this controversy; but rather to underline one or two of its main features. An experienced rider of many makes states his views in a letter to me as follows: "The average small twin requires cleaning every 400 miles, the 3½ h.p. single every 600 miles, and the 6 h.p. twin every 1,000 miles." I should describe these averages as

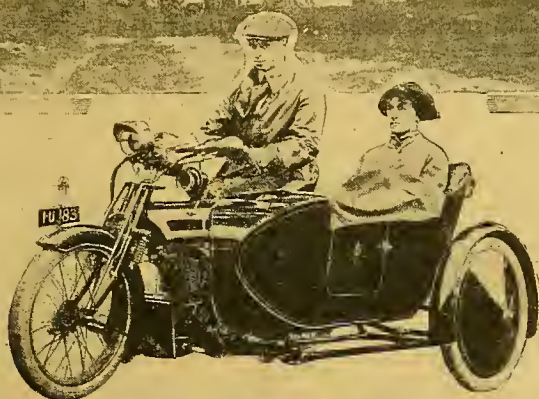
exaggerated, and applying only to a rider who was as inaccurate in his oiling as he was fastidious about engine tune; but the real point of his letter follows: "A 3½ h.p. water-cooled engine, of which very few riders have experience, evinces no signs of carbonisation in running after 2,000 miles." Parallel testimony comes from a lubrication expert, whose name would be familiar to all my readers if I gave it. He bought a well-known 10 h.p. light car, which has rather a reputation for being under-cooled. As delivered to him, its oil consumption averaged 400-500 m.p.g. He finally undertook some alterations which improved the cooling, and a gallon of oil now regularly lasts him 1,000 miles. The car has run 12,000 miles, and was decarbonised after each 4,000 miles, the quantity of deposit being practically identical on all three occasions. During the first two running periods of 4,000 miles each, the oil consumption was between eight and ten gallons; during the last period of 4,000 miles, the oil consumption was exactly four gallons. Yet the carbon deposited in each of the three periods was identical, and in each case was almost wholly oil deposit. Has any reader a theory which will reconcile these two opposed experiences? The one points towards cooling as a vital element in retarding deposit, the other indicates that cooling has little direct effect.

### Sight Feed Oilers.

More often than not, the description "sight-feed" as applied to drip-glasses, whether on cars or cycles, is more of a practical joke than a terminological exactitude. I don't know whether the real culprit be capillary attraction, or condensation, or vibration, but the fact remains that on most motor vehicles these glasses are usually so thickly smeared with green oil inside that they would not be less transparent if they were made of steel tube. Still, there are happy days when the oil confines itself to a thin central trickle, instead of slinging itself about wholesale, and on these occasions one usually wonders if the designer concerned is a recluse highbrow, who has forgotten the real construction of the human neck, and imagines it is as long as a giraffe's, and has a universal joint every millimetre; for twist and crane as you may, you can seldom see the oil trickle. Hats off—in this respect amongst others—to the 1916 Douglas. Its green trickle is shown against a white opaque background in a banjo-shaped-case, tilted backwards at an angle of about 45°, and mounted as far forwards as possible on the top tube—just under the steering head, in fact. You can see what is going on, whenever the oil and the weather and your own pump management permit the front glass to be transparent. On another machine in my stable, you have to thrust your head down on the near side of the tank, and push it through a convenient gap between the exhaust pipe and the cylinder, if you wish to watch the oil glass!



## SALISBURY PLAIN AND ITS SURROUNDINGS.



A Run Through  
Interesting Country to Visit  
a Friend in Training.

The writer and his A.J.S. sidecar.

**S**ALISBURY Plain being a great centre of military training and the temporary home of many thousands of men, visits to that neighbourhood have been of frequent occurrence by those having relatives stationed there. An impression of a recent trip may be of interest to some who have perhaps rather a remote idea of that vast tract of undulating chalk country which has been aptly likened to the surface of the ocean when heaving after a storm. There is a choice of routes from the West of England, the one most frequently used being through Bath to Melksham on the left bank of the Avon, with its mile long mail coach road from London forming the main street. Melksham is a clean and not over busy town, once a centre of the West of England cloth making industry, but now reviving on account of the extensive manufacture of motor and cycle tyres. Devizes, an ancient and well-known market town, is a few miles beyond, and is an outpost of the Plain. The main street of this place is wide and spacious, and ornamented by a cross erected by Lord Sidmouth in 1814 as a mark of esteem for the borough of which he had been Recorder for thirty years, and which he had represented at Westminster for six successive parliaments.

### An Historic Inn.

It was at "The Bear" Hotel, Devizes, that the father of Sir Thomas Lawrence, the painter, was landlord, and here it was that the youthful artist at the age of seven first learned to draw likenesses and to repeat poetry for the entertainment of customers. A worthy and public-spirited host must Mr. Lawrence have been, for at his own expense in 1770 he set up tall poles every half mile along the road from Devizes to Salisbury. These have now given place to ordinary milestones, but the pioneer of civilisation should not be forgotten. Another interesting feature of Devizes and worthy of passing notice is the Kennet and Avon Canal, which, after taking eleven years to construct at enormous cost, is carried over the hill upon which the town is built in a series of twenty-nine locks. Of the remains of the castle behind the "Bear" not much is to be seen beyond a mound of a keep with surrounding ditch.

Running out of the town by way of the Brittox, a street so-called from the fact that once a Bretesque

or wooden tower stood upon its drawbridge, the right hand road to Andover is taken, and Roundway Hill, which rises immediately from Devizes, is ascended. This hill, or "Runaway hill," so styled by the Royalists, was the scene of the Cromwellian Forces being put to flight in 1643. After the Battle of Lansdown, near Bath, the Royalists retreated to Devizes under Lord Wilmot, who with 1,500 horsemen engaged the Roundhead Army, capturing some 2,000 killed or prisoners. Beyond Roundway Hill, Salisbury Plain proper is entered, still a bleak expanse, although at the present day much has been reclaimed and fields of ripening corn gladden the eye, and clumps of trees are to be seen on almost every hill, planted chiefly as a shelter for game. The great bulk of the land is still occupied as sheep walks, and farm buildings are seldom out of sight. But the Plain still presents much the same aspect in the main as when "Thomas Goldsby" wrote:

"O Salisbury Plain is bleak and bare,  
At least so I've heard many people declare,  
For I fairly confess I never was there;  
Not a shrub, nor a tree,  
Nor a bush can we see:  
No hedges, no ditches, no gates, no stiles,  
Much less a house or a cottage for miles;  
It's a very sad thing to be caught in the rain  
When night's coming on upon Salisbury Plain."

### A Lioness on Salisbury Plain.

There are, however, several comfortable inns on the Plain, the "Bustard," a good and well-kept house, and so-called from the fact that the Great Bustard was formerly common on the Wiltshire Downs, but is now never seen, the last pair of these rare and interesting birds being captured some sixty years ago. The "Pheasant Inn," which we pass further on, is another famous house of call. It was here that the jaded Londoners, Charles and Mary Lamb, often came for rest and quiet, and would walk twenty miles a day enjoying the "quiet delicious lazy holiday." One dark night in October, 1816, so the inn records inform us, a curious and unexpected incident occurred at the "Pheasant." The Exeter Mail, on its road to London, had just pulled up, when the off leader was seized by a lioness. Great was the uproar which immediately sounded over the solitary Plain. Two of the affrighted passengers rushed into the inn and



### Salisbury Plain and its Surroundings.—

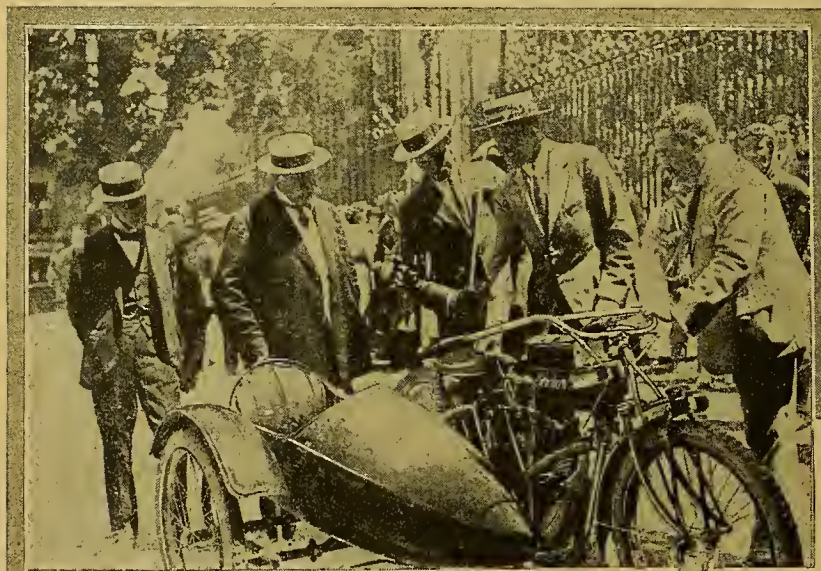
locked themselves into an upper room. In the meantime a large mastiff had bounded to the rescue, but paid the penalty of its temerity. The lioness left the horse, which had fought with great spirit, and pursued the dog, which it killed within forty yards. The keeper of the lioness now arrived, and at considerable risk drove it into an outhouse and there secured it. It had escaped from a caravan on its way to Salisbury Fair.

Continuing our road towards Everleigh, numerous tumuli or barrows and remains of early British camps and villages are noticed on the surrounding hills, and authorities state that no tract of country is richer in these early remains than that between Everleigh and Amesbury. In one tumuli recently opened near here were found the remains of a dog and that of its master, buried together with a circular wreath of horns of the red deer and five beautiful arrow heads cut out of flint. Thus we learn that the profession of the Briton here buried was that of a hunter from the mute inanimate memorials to prowess in the chase. We neared Upavon, the object of our ride, a snugly placed village of 500 inhabitants nestling at the foot of several hills. Here our thoughts, which had been carried back probably four thousand years, receive a rude awakening as we approach the Royal Flying

Schools. About a mile of steady rising road from the village brings us to the aerodromes.

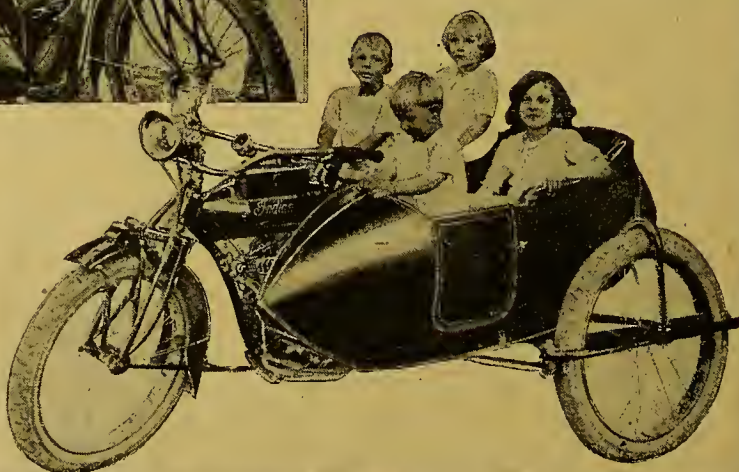
Here were ten aeroplanes all-in flight at the same time. With a swing of the propeller to start the engine, the airman, with as much *sangfroid* as one would mount a bicycle, would seat himself, and after a short run be soaring skywards in a moment. Notices at the roadside warning pedestrians and others to "beware of aeroplanes" struck me as peculiar, but as I was still pondering, a huge battle-plane, which had been practising short runs on the grass, rose about six feet in order to avoid me on the road, passing within a foot or so of my head. The shock was so great that I nearly lost my equilibrium, which fact seemed to greatly amuse the airman, who returned and accompanied me along the road overhead for half a mile, whilst I involuntarily ducked to avoid the propeller which seemed to me to be in unpleasant proximity to my head. With a sudden lift my friend left me, and with spirals and bankings was soon a mile above me. The graceful evolutions of the machines were most interesting to watch, with the sun glinting on the white planes and polished aluminium bodies. Practice with machine guns, the gunner perched in a seemingly precarious position, was most thrilling to see.

After a rest and a few calls to look up friends our ride was continued to the great military camps of Windmill Hill and Perham Downs, near Ludgershall. Matters of a personal nature now interested us, and at 6 p.m. the homeward run was commenced, which proved to be a non-stop run of two hours, thanks to the trusty A.J.S. sidecar, which, as usual, ran faultlessly and economically. I discovered I had only used about  $1\frac{1}{2}$  gallons of my monthly allowance during the 110 miles trip. The roads, too, were undoubtedly the best ridden on this season, having recently been entirely remade. "BONA SATIS."



### THE KING OF SPAIN'S INTEREST IN MOTOR CYCLES.

We announced last week that King Alfonso had purchased an Indian sidecar for his children. The lower illustration shows them ready to start for a ride. In the upper picture His Majesty is seen inspecting another Indian, his interest in the sporting sidecar body being very apparent.





# 1,500 MILES WITH A 1916 TRIUMPH.

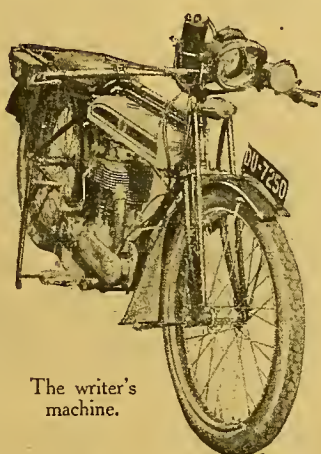
Road Experience of a Machine identical with those used by Despatch Riders.

**N**O matter what theatre of war a British motor cyclist may visit, there he will find motor cycles rendering yeoman service, scurrying hither and thither with important despatches. And just as certain as one is to find motor cycles, one will see the Coventry-made Triumph, a machine represented in its thousands throughout the different war zones, as a result of continuous productive effort on the part of the manufacturers since the outbreak of war. Chatting with despatch riders, as it is the writer's constant privilege, many will urge that in winter in particular the even pulling twin-cylinder mount—as light as compatible with safety—is ideal; in summer, when ability to keep upright is not so forcibly engrained upon the rider's mind by the state of the roads, reliability is the outstanding desideratum. And it is in reliability particularly where the Triumph excels—why, whereas in the days of hub gears it was no unusual thing for a despatch rider to have a new mount every month or six weeks, we have lately heard D.R.'s expressing in the most affectionate terms how many months (sometimes over a year) their present "bus" has served them.

During the spring and summer it has been our good fortune to possess a 1916 model Triumph, so that we are able to speak of it from personal experience. It has huge flat bars just as supplied to the Army, and the riding position provided by these semi-T.T. bars is very comfortable, but, above all, increases appreciably one's feeling of safety and controllability over the machine. On long runs, however, a touch of back-ache is not unknown to riders who are not out regularly.

## Some of its Mechanical Features.

The 4 h.p. Triumph of 1916 is practically identical with the 1915 design, detail improvements only having been effected. One of these is the adoption of a new type of decompressor, of which more later. For many years the Triumph Co. pinned their faith to the "square engine," a bore and stroke of 84×86 mm. and 85×88 mm. having been retained for a considerable period. But a couple of years ago an entirely new design of long stroke engine was adopted, having a ball bearing crankshaft, roller bearings to the connecting rod big end, and single timing wheel formed in one with its external cams, including the decompressor cam. The capacity of the new engine is 550 c.c.,



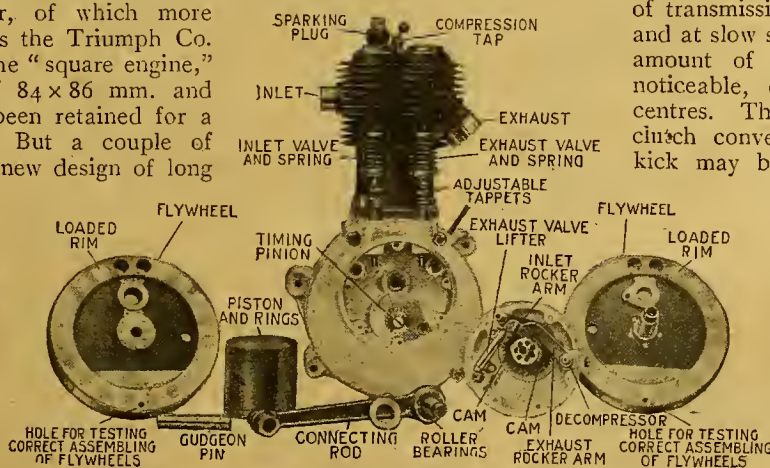
The writer's machine.

the bore and stroke being 85×97 mm. respectively. The operation of the valves is effected by horizontal rockers which lap over the cams, enabling a direct lift of the adjustable-headed tappets. In every respect the engine is more sturdy and substantial than its predecessors. The valve heads, for instance, are 1½ in. diameter (they have flat tops), whilst the springs are of generous dimensions, the coils being of large diameter, and so assisting in the dissipation of heat. The cylinder is a clean job, and the ports naturally considerably larger than heretofore, with air passages behind to assist cooling.

The 1916 Triumph is not excessively fast—for that matter, it is geared too low to show up its best paces. The real merit of the latest Triumph is in its ability to maintain a high rate of speed without complaint and without trouble ensuing. High averages on the old 3½ h.p. models were possible, but sooner or later a valve gave out, and, drive you never so cautiously, a hill would be encountered which would suddenly slow the machine and cause excessive knocking. The difference with the "four" is that one may punish it severely, and yet, after the end of a fast non-stop run, accelerate speed on a really severe hill and fly over the top with the greatest ease. The complaint of "drying up" with the 1916 engine is unknown so far as our experience goes.

## The Transmission System.

In addition to the new type engine, 1915 marked another real departure in Triumph practice, and that was the adoption of combined chain and belt transmission and the fitting of a countershaft gear. Thus transmission troubles were swept aside, for with large diameter pulleys belt breakages are entirely unknown (the belt is a rim. section), and the enclosed chain is well able to look after itself. But this system of transmission is remarkably rigid, and at slow speeds there is a certain amount of disagreeable snatch noticeable, due to the short belt centres. Thanks to a first-class clutch conveniently controlled, the kick may be softened until really under way, and the clutch does not seem to mind such severe treatment. Originally, our machine was geared 5 to 1, but, finding that we never had recourse to the two lower ratios, we prevailed upon the Triumph Co. to fit a larger sprocket on



1916 4 h.p. Triumph engine and its component parts.



### 1,500 Miles with a 1916 Triumph.—

the engine-shaft. As a result, the machine has been a good deal more pleasant to handle in open country, but, of course, the snatch at slow speeds has been accentuated. One may be excused for surprise at the fitting of such a low standard gear as 5 to 1 on a 4 h.p. bicycle, but it may be well to explain here that the Triumph experts consider that the positive drive provided by large pulleys, as adopted in the case of chain-cum-belt transmission, does away with all slip, unnoticeable with direct belt drive, but which is nevertheless present. In their judgment, and from our experience we concur, a 5 to 1 ratio with chain-cum-belt transmission is equal to a  $4\frac{1}{2}$  to 1 gear with direct belt drive.

The Triumph carburetter is a magnificent instrument. It enables consistently easy starting—indeed, we have amazed many riders who have been in trouble at different times with engines that start sluggishly by the manner in which our machine has started from dead cold at the second push of the pedal. Never once have we found it necessary to prime the engine. One simply turns on the petrol, gives a single press of the plunger of the float chamber (this operation involving the sealing of the chamber and ensuring petrol reaching the jet without waste), a dig at the kick starter with the air lever wide open and the throttle lever  $\frac{1}{2}$  in. open, and the engine regularly responds.

### On the Road.

At all ordinary speeds the new Triumph holds the road beautifully, and, thanks to the excellent clutch fitted to the Sturmey-Archer gear and its convenient method of operation by lever on the left handle grip, one may pursue a tortuous course in traffic with every feeling of safety. On the open road there is something very nice in being astride a powerful machine. Twenty miles an hour with the throttle but a quarter open, and the engine longing to be let out, as proved by the way it jumps ahead when the throttle lever is opened but a fraction. Devouring hills on top gear is probably the most exhilarating experience, and one can indulge in any amount of this sort of thing without complaint from the engine. We have used the Triumph of which we are speaking a good deal in connection with our recruiting work, finding it more convenient, not to say

faster, on occasion! On a journey to Nottingham, via Leicester and Loughborough, we could not resist the temptation to turn the machine round at the foot of Bunny Hill and try its paces. Not that the hill is steep, but because of our old associations. During the past fourteen years, the writer has pushed, been pushed, run alongside, and pedalled on the various

machines used on this hill. Consequently there is an inward gratification in being able to make fun of Bunny Hill on such a machine as the 4 h.p. Triumph. The gradient was deserted, and suffice to say that the machine showed no perceptible falling off in speed even to the summit. Would that Countisbury and Lynton Hills could be dropped nearer the Midlands! An easy ascent of the Old

Wyche at Malvern on second gear convinced us that the Somersetshire and Devonshire terrors would be easy prey to the new "four."

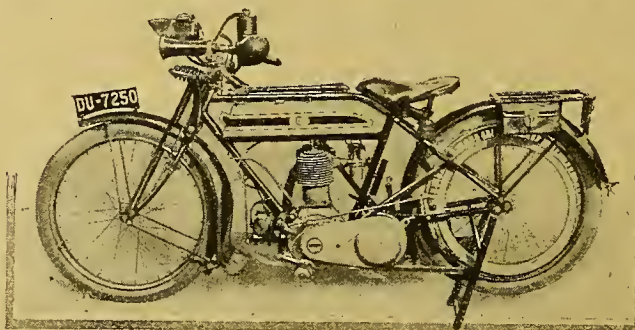
### Comfort and Road Surface.

Occasionally one yearns for the comfort of a spring frame, for our roads are deteriorating at an alarming rate, due to the abnormal traffic in certain centres and the small amount of road repair work now possible. In consumption our Triumph has gradually improved. Originally it did 65 m.p.g., but latterly, on summer roads, the figure has been nearer 80. We have already recorded our appreciation of the Sturmey-Archer countershaft gear. The various changes of speed are effected with remarkable ease, though we are not surprised that despatch riders have adapted the gear control to be operated by the foot, for in the top gear position the knob-ended lever is apt to chafe on the rider's thigh. If this excellent gear has a fault

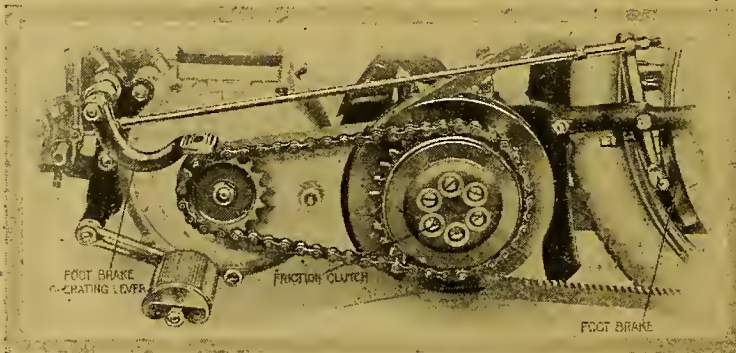
it is in the noise emanating from the box on the two lower ratios, both when driving and when the machine is propelling the engine by its own momentum.

Our experience with the Triumph extends to about 1,500 miles, including some fast work. For that matter, what is the use of a steady 4 h.p. mount built for speed, and with dropped

handle-bars too, unless one may be allowed to toy with the throttle lever? One run of sixty-two miles along the Fosseway in pouring rain was accomplished without a dismount. Only once has the engine ceased firing involuntarily, caused by the waterproof terminal jumping off the sparking plug due to striking a pot-hole violently at speed. Incidentally, the experience



The 1916 model 4 h.p. Triumph referred to in the accompanying article.



An enclosed chain conveys the power to the three-speed S.A. countershaft gear.



**1 500 Miles with a 1916 Triumph.—**

gives some idea of the shocks a fast moving machine has to sustain in these days of pot-hole stretches. The Triumph, however, is well able to withstand them. Not a nut has shaken loose on the machine from start to finish. By the way, one day we had rather a shock. Not having had occasion to use the lamp and generator set, and assuming that all was well, seeing that the machine is a duplicate of those supplied to the War Office, we had not observed that the King of the Road lamp was of the swivelling variety, and rendered it liable to confiscation and the rider to be fined. The experience is all the more amazing as the War Office Clynos have exactly the same type of lamp (supplied to War Office specification), and recently the High Wycombe police authorities distinguished themselves by stopping one of these khaki-finished machines, seizing the lamp and fining the driver.

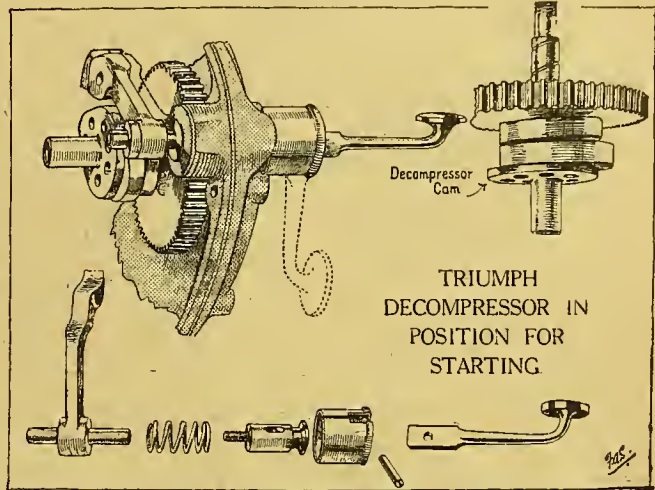
**An Improved Decompressor.**

On later models than that illustrated a small improvement in detail has been made, the method of operating the decompressor being replaced by a novel form of trigger control.

It will be noticed from the accompanying sketch that there are two positions for this trigger, and no midway position is possible. When the lever is set down the exhaust rocker arm is in normal position and engine at full compression. When the lever is pulled up to the horizontal position the rocker is pushed inwards about  $\frac{1}{4}$  in. or  $\frac{3}{8}$  in., and engages with an extra cam set alternate with the exhaust cam. This has the effect

of lifting the exhaust valve for a short period during each compression stroke, thus allowing a portion of the charge to escape, and so reduce the compression.

To start, the rider sets the lever horizontally and



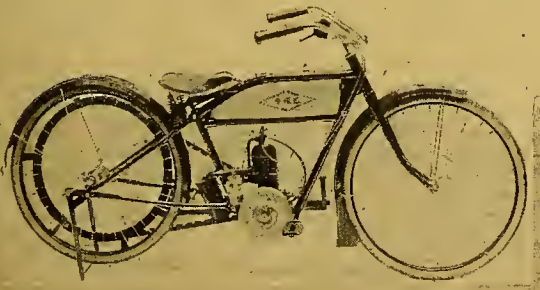
The normal position of the rocker and trigger is shown by dotted lines. The component parts of the fitting are shown below, viz. from the left: Rocker arm actuating spring, sleeve and thrust pin (a small buffer spring is placed inside), dust cover, and operating levers.

either pushes off or kick-starts on half compression; when started and seated, a touch with the foot, and it springs to the lower position, giving full compression. It is neatly made and quite simple in its action.

## THE S.M.C. LIGHTWEIGHT.

**A Novel American Lightweight with Engine Dimensions of 64 mm. x 64 mm. = 206 c.c.**

THE motor cycle trade in America has, as is fairly well known on this side of the Atlantic, concentrated on heavyweight high-powered twins, and in connection with which it has undoubtedly achieved considerable success. Until quite recently lightweights of any kind have not interested either the American trade or public, so it is not altogether surprising to find that what lightweights do exist do not conform altogether to British ideas of perfection. But of late two-stroke lightweights have begun to interest the manufacturers, and we now have several American examples, among them the S.M.C., which is the latest model produced by the Schickel Motor Company, of Stamford, Connecticut. It will be remembered that this firm make a 6 h.p. single-cylinder two-stroke.



An American two-stroke lightweight, the S.M.C.

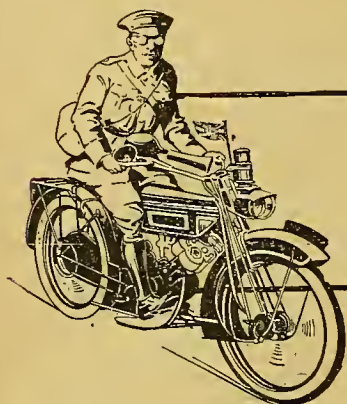
The S.M.C. lightweight is a new production, and is a curious mixture of American ingenuity and simplicity which amounts almost to crudeness in design. The frame is pleasing in appearance, and follows English lines to some extent. The awkward way in which the exhaust pipe is conducted away behind the saddle tube, and the manner in which the exhaust pipe enters the silencer, practically at right angles, hardly conform to English ideas. It will also be noticed that the machine is single geared, and has solid forks.

The details to hand are not particularly lucid, but from them we learn that the engine is lubricated on the petroil system, and that the chief novelty lies in the magneto.

The magneto is very similar to that employed on Ford cars, that is, incorporated in the flywheel. This dynamo-magneto as fitted to the S.M.C. was illustrated and described in *The Motor Cycle* of June 22nd. The carburetter is of the automatic type, the automatic single-lever carburetter having received far more attention in America than it has in this country.

As regards the engine. The cylinder is cast integrally with the crank case, provision being made for the introduction of the crankshaft, piston, and connecting rod. The cylinder head is separate. It is attached by means of a thread which permits of its ready removal and replacement, while the joint is made permanently gas-tight by means of a copper and asbestos washer.





## A SOUTH AFRICAN DESPATCH RIDER IN "GERMAN EAST."

WE are able to give our readers this week more impressions of the German East African campaign from the motor cyclist's point of view. Our issues of August 24th (page 160) and August 31st (page 180) contained the experiences of English motor cyclists now serving in light armoured motor batteries, whereas the following is from a South African despatch rider operating in the same war zone. The writer (D. Leslie) was at one time very keen upon coming home to enlist in the Motor Machine Gun Section, and wrote the Editor for particulars. However, he was so anxious to do something that he did not wait for particulars to be sent out to him, and so enlisted in the South African Despatch Riders' Section.

Roads, as we understand at home, hardly exist in German East Africa, and even Colonials find the jungle tracks very trying. Hence it is only to be expected that minor troubles were experienced with motor cycles intended for English or ordinary Colonial service. It is a remarkable testimony that the machines with which the South African despatch riders are equipped have stood up so well under conditions exactly the opposite for which they were designed.

The following is Leslie's own account of his experiences:

"The South African Motor Cycle Corps consists of mounted infantry, and the men were recruited from all the different districts of the Union.

"We were sent up to Potchefstroom, in the Transvaal, and here we were put through hard training. When the corps was up to full strength we were all put through another test and the best fifty men picked out as despatch riders, and named the S.A. Despatch Riders. After a month's training these fifty D.R.'s, who must not be confused with the motor cycle infantry, left Potchefstroom en route for Durban, where they embarked on an auxiliary cruiser.

### Tuning Up Motor Cycles at Sea.

"We were told that we would be required immediately we landed at Kilindine (British East Africa), so the officer in charge made arrangements with the commander of the ship to have our machines brought up out of the hold on deck. We spread large tarpaulins on the fore-castle deck and commenced the somewhat unique task of fitting up fifty-seven motor cycles in mid-ocean.

"As soon as we landed we were packed into the train and taken within a few

miles of the firing line—about 200 miles inland. Here we unloaded our machines, filled them with petrol and oil, and sat across the saddles for the first time. Next day we were attached to various units, and were hard at work in one of the least known districts of British East Africa only just over a week from the date of leaving Potchefstroom.

### Mud Half Way up Crank Case.

"The South African country roads are certainly not of the best, even among bad roads, but we never expected anything like the tracks we have had to ride over here—there are no roads at all. We just followed motor lorry tracks across the veldt, and when these did not take one to the right destination we turned off and rode across country, through bushes, long grass, over ant heaps, and through dongas. This portion of the country abounded with game of every description. Large herds of antelopes could be seen grazing on the grassy plains, while every now and again the noise of our exhausts would disturb a troop of zebras or a number of ostriches; also several rhinos and giraffes were seen, and of the rhinos one had to be very careful.

"We did not have much trouble with our machines until the rainy season set in, making the roads one big swamp, and quite impassable even to ox waggon transport let alone motor cycles. I have read a lot about the mud in the French war zone, but I greatly doubt if it could touch the stuff we had. If a motor cyclist could average the same speed as another man on foot over some stretches he was doing well. It is no exaggeration to say that on many occasions I have had my machine ploughing through mud that reached half-way up the crank case, which eventually brought it to a standstill and required the strength of three natives to lift it out again.

### Sleeping in the Rain.

"For the best part of three months we never had a roof over our heads, nor shelter of any kind, but spent night after night sleeping in the open, and often in rain. At first it was not very nice, but we soon got so used to it that it made no difference at all. We must have been in excellent physical condition; no one went down with a cold, though some contracted fever. Now that the rainy season is over, and the roads are dry again, our trouble is not mud but sand. For miles around Kondoa the road lies in a dry river bed, and is at least six inches deep in sand. The best way to get through this is to put in second gear, open the throttle wide, and charge the sand as hard as possible, trusting to the speed to carry one through; but

if the sandy patch is too long or too deep, put in bottom gear, get the wheels in a deep waggon rut, balancing oneself by putting the feet out on either side, and go through slowly—at walking pace. The latter will take one through anything.

"We have travelled about the country for nearly six months without spares or tools other than our tool-kit. The nearest mechanics or workshop are at the base—nearly 200 miles away. Whenever a machine gave in with some part broken we had to pull a good machine to pieces for spares, or keep the damaged one until another creak came along, when we would make one good cycle out of the wrecks. When we started out, all we were supplied with was a repair outfit, spare tube, gaiter, and plug, not even a punch or belt fastener!

### Some Troubles Experienced.

"We are all mounted on  $4\frac{1}{2}$  h.p. B.S.A.'s, and a stronger machine and more powerful engine would be hard to find, but one thing they need for this kind of work is a hand-controlled clutch. Of course, they have their weak spots for work in this part of the world, but with the conditions described the same would apply to any machine.

"The clearance is far too low for cross-country riding. Front spring, front spindle, and saddle-pillar were no doubt designed for home use, and require to be stronger out here. The kick-starter should be enclosed, as sand and dirt get in and clog the ratchet; the spring also breaks very easily. We have all had trouble with the American magnetos, especially during the rainy season, when they were constantly going wrong owing to water and mud getting into them.

"Both rims and spokes could be greatly strengthened. Another item that could receive a good deal of attention is the mudguarding. There is not nearly enough clearance for the tyre. We all had to remove the side pieces of both front and back guards, and, in some cases, the whole mudguard. I may add that the Dunlop tyres are splendid. After five months' running they are still in excellent condition, and good for a thousand miles more. We have had very few punctures."

### ENFIELD OUTFITS FOR NEW ZEALAND POST OFFICE.

Messrs. J. B. Clarkson, the Wellington (N.Z.) agents for Royal Enfield motor cycles, have recently supplied twelve 6 h.p. Enfield sidecar outfits to the Post and Telegraph Department of New Zealand. This is the third order for this make of machine from this department, which speaks well for the behaviour of the machines previously supplied.



# THE MOTOR CYCLE IN CEYLON'S SUNNY ISLE.

Experiences of a Missionary who uses a Motor Cycle in his Work.

**M**OTOR cycling in Ceylon, as a general rule, is no "tea party." In most cases the surface of the main roads is good, but practically all the roads are very narrow—fit for traffic in only one direction. Therefore, on meeting any vehicle which cannot be seen some distance ahead there is always a risk of a collision, for want of elbow room on the road. Then, again, in many parts of the island the roads are very mountainous, abounding in appalling hairpin corners, with a potential disaster at every blind curve. And on such occasions a smash is apt to be serious, as there is probably a fall of anything from a score to a thousand feet to be contemplated should one go over the edge.

## Ceylon Livestock.

But far worse than hills, hairpins, narrowness of roads, and occasional bad surfaces, is the number of livestock everywhere. The ride from Kandy to Colombo is like going through a seventy-mile farmyard, and is typical of thousands of miles of riding throughout the colony. First and foremost there is the eternal and ubiquitous bullock cart, with its two bulls and a "buffalo" of a driver. If the cart were driven along the left-hand edge of the road it would not be so intolerable, but, by some inscrutable design of the Evil One, a cart is always on the wrong side of the road. Often enough the driver will stop by the wayside to have a glass of tea, or a rice cake, or a gossip while his cart goes ahead. Sometimes he goes to sleep in the cart, and trusts that the bells on the bulls' necks will clear the traffic on the road.

I think most of us here would agree that the Ceylon carter is "the limit." If it is possible to have *two* limits probably the pariah dog would be given the questionable honour of equalling the nuisance of the cart. Then there are the fowls, which live on the roads, for the sake of the pickings consequent on the traffic. Besides this, there are innumerable cattle strolling about to find pasture along the sides of the roads. Then there are the pigs,

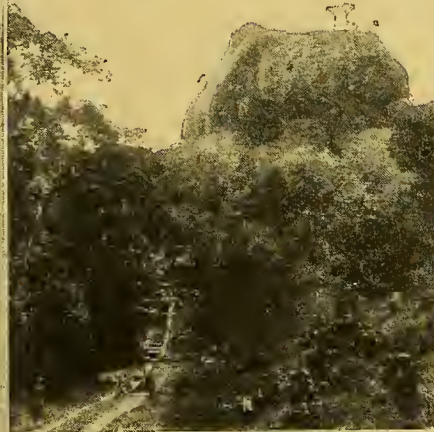
the elephants, the rickshaws, the racing hackeries, babies playing by themselves on the road, stupid men, and still more stupid women—all obsessed with the one conviction that they are the sole possessors of the King's highway, and that no motors need be expected for at least another year.

I fancy comparatively few people in Ceylon motor for pleasure, but, as there are so few railways, a great number have cars or motor cycles as a practical necessity. For myself, I rarely visit a railway station, except to correct my watch! The other day I saw my wife off at Kandy and met her again at the station in Colombo. It would be a disgrace to be beaten by a Ceylon train, even on a seventy-mile journey.

Last year I did over 7,000 miles, in all weathers, over all kinds of roads. I kept several hundreds of engagements, and never missed one. The 7,000 miles cost me just under Rs. 400, or less than 1d. a mile, including a good bit of sidecar work. This includes every item of expenditure except depreciation. Without the motor cycle I could not have fulfilled half my engagements. My predecessors had two horses, and could not cover the ground nearly as well. Not only do I get through much more work, and thoroughly enjoy the exhilaration of the rapid travelling (when there is not too much livestock in the road), but I save my employers £30 a year on travelling allowance—a considerable saving.

## Big Climbing.

My district runs up from 1,500 feet to about 6,500 feet. I think nothing of climbing 5,000 feet to keep an engagement, and coming back again for dinner. Once last year I rode up to Nuwara Eliya and back (involving a climb of 5,000 feet in the fifty-mile outward journey), kept an engagement, and returned for a late breakfast—12.45 p.m. Had I gone by train I could not possibly have got back before the next day, and should have spent at least £1 more than it actually cost me, including wear and tear of machine, etc., at 1d. a mile.



## SCENES IN CEYLON.

(Top) Ancient rock fortress and royal city, Sigiriya. 1,500 years ago this was the rocky stronghold of the regicide king of Ceylon.

(Centre) The author's Brough sidecar in the heart of the jungle.

(Bottom) Ancient stairway at Sigiriya.



### The Motor Cycle in Ceylon's Sunny Isle.—

After riding a motor bicycle since 1912, I am perfectly satisfied that it is the only vehicle for a busy man, between the ages of seventeen and seventy, who has out-station work. A car is too slow—I do not mean that one should "blind," but on these narrow roads the two-wheeler can slip past the carts, while a car is held up indefinitely, waiting for a chance to get through. Not only so, but on these long hills there is no question about which is the better vehicle for solo work. One of the rides in my district includes a rise of about 3,000 feet in ten miles, along a narrow road, abounding in the sharpest hairpins, with dangerous precipices over the side. This is the Rambada Pass up to Nuwara Eliya—a fine sporting ride that would delight the hearts of the D.R.'s and thousands of others in England and at the Front.

### Practical Experiences of Different Makes.

Now a word about the motor cycles out here. The 7 h.p. Indian is a great favourite with the planters up country for both solo and sidecar work. It is powerful, accelerates well on the hills, and is not too expensive. Indeed, it seems to fill the bill for very many men. Personally, I have never ridden one. But from my own experience, and that of friends, a word may be said as to the suitability of other machines. For solo work the 2¾ h.p. Douglas is well-nigh perfect, except in very hilly country. It starts easily (and that is a great consideration in a climate where one perspires even at the thought of physical exertion), but its two speeds are insufficient for the long grinds and necessity for quick acceleration after the dead slow negotiation of a hairpin. Also, in a drenching monsoon rain, I have found that the belt slips on bad hills. The James 3½ h.p. twin is a beautiful solo machine for any kind of weather and country. But the frame needs to be stronger, and the ground clearance is insufficient. Indeed, this may be said with truth of every

machine I have tried out here. The A.J.S. 2¾ h.p. and the Sunbeam 3½ h.p., by reason of their enclosed chains and the clutch, are also first class. The Triumph is, of course, a great favourite, because of its absolute reliability and power of picking up after slowing down for corners and traffic. The B.S.A. and P. and M. are also very well spoken of. Doubtless there are other machines with good records, but as I have no experience of them others must testify to them.

For serious sidecar work at least 6 h.p. is necessary in this hilly country, but in the low country anything from 3½ h.p. upwards will do, provided change speed gears are incorporated. I think most men would agree that for Ceylon the best sidecar machines would include the 6 h.p. A.J.S., the 6 h.p. Enfield, the 6 h.p. Sunbeam, the 6 h.p. Clyno, and the 7 h.p. Indian. An emergency gear is very necessary, a clutch that can be really declutched and yet which will not slip, and chain drive for climbing mountains in wet weather. We need strong frames also, in addition to the better ground clearance mentioned earlier.

The action of the Home Government as regards exports of motor cycles is, I think, open to criticism. Generally speaking, it is very difficult, if not quite impossible, to get either a motor cycle or a car out from home. (This, I hear, does not altogether apply to the B.S.A.) Personally, I have been waiting for a new mount for about nine months, and there are no signs of it yet. The market here is being flooded with American mounts, and as for cars, if it were not for Overlands and Fords our firms in Colombo would have to shut down their import departments, as I was informed by one head salesman. As *The Motor Cycle* urged some time ago, the Government should mount its D.R.'s on foreign machines, and release the home article for home and foreign consumption. It is true that that would be sending money out of the country, but it would be a temporary disability. A.M.W.



The writer of the accompanying article, the Rev. A. M. Walmsley, photographed on a Douglas. This machine gave good service while in Mr. Walmsley's possession.



MOTOR CYCLES ON A TOBACCO FARM.

These pictures were taken on a New England, U.S.A., tobacco farm, where the growers find motor cycles extremely useful for getting about quickly. The left-hand picture shows tobacco leaves strung on a lath. The machines are twin-cylinder Pops.



# Indian

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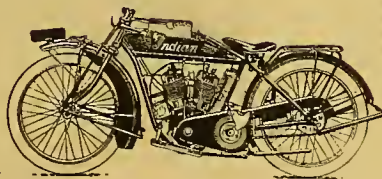
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# MILITARY NOTES.



## THE CONNECTING LINK OF THE CONVOY.

A convoy of British lorries bringing back to rest billets, men who had taken part in the fight for Guillemont. As usual, a motor cycle is in the picture, the two-wheeler proving invaluable for escorting the convoys and keeping the drivers in touch with those in command.

(Official photograph issued for Press Bureau.)

## THE ROLL OF HONOUR.

**E**ACH week it is our regretful duty to record the death, in the service of his country, of some well-known motor cyclist, and this week three men, the names of whom will be familiar to many readers, have to be included.

Lt. F. C. Sangster, Royal Warwicks Regiment, died of wounds received in France on September 6th. He was the

eldest son of Mr. and Mrs. Charles Sangster, of Moseley, Birmingham, and at the outbreak of war he was with the Dunlop Rubber Co., Ltd. He was a keen motor cyclist, his favourite mount being an Ariel, on which he fol-

lowed many trials, and is consequently well known among readers. Sangster joined the ranks in September, 1914, and received a commission at the end of the same year. He was twenty-two years of age.

Lt. George Bax, a well-known Scott rider, and connected with Godfrey and Applebee, Ltd., in more peaceful times, was killed in action on the 7th inst. He was in the M.M.G.S., and had been out at the Front since January, 1915.

We have mentioned Flight-Lt. C. W. Graham, R.N.A.S., once or twice in these columns, and now the announcement has been made that he has been accidentally

killed off the coast of Belgium. We have already recorded how Graham was with the Bosch Co. at Stuttgart at the outbreak of war, and how he was subsequently allowed to leave via Switzerland, his Triumph motor cycle being kept by the Germans at the frontier. He was well-known in Coventry, being a member of the local club, and spent some time at the Triumph works. He was the son of Mr. C. Graham, a director of Brown and Barlow, Ltd.



The late Flight-Lt. C. W. Graham, R.N.A.S.

## TRANSFERS.

**A**CCORDING to a recent Army Command no man may transfer from one regiment to another for his own benefit, but only where it is in the interests of the country.

## HEAT IN MESOPOTAMIA.

**I**N the course of a long letter to his relatives at Tunbridge Wells, Cpl. A. J. Sproston, writing from a hospital in South India of his experiences in Mesopotamia, says that the heat was so terrific that the handle-bars became almost too hot to touch, and the saddle burned the body.

## TECHNICAL CORPS' REQUIREMENTS.

**A** LARGE number of applications from motor cyclists have reached us as a result of the photograph published a fortnight ago showing men in line regiments being tested on a P. and M. motor bicycle with a view to transfer to the R.F.C. Since the photograph was taken, recruiting for motor cyclists has closed, but we are informed by Sec.-Lt. G. E. L. Woodhouse, the officer in charge of the Trade Testing Party stationed at Curzon Hall, Suffolk Street, Birmingham, that men of all engineering trades are required. The pay in each case is approximately 2s. per day. Application may be made to the different centres at which Trade Testing Parties of the R.F.C. are stationed, or direct to the above address.



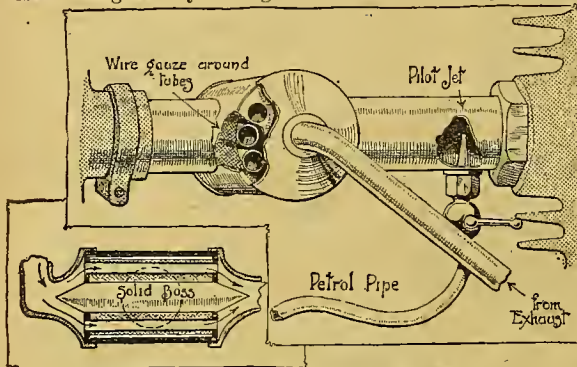
# Obtaining Best Results from Petrol Substitutes.

## MORE SUGGESTIONS FROM READERS FOR THE EFFICIENT VAPORISATION OF HEAVY FUELS.

**A**MONG the many suggested methods of using heavy fuels sent to us by our readers is a rather novel vaporiser designed by George Mitchell, of

once warmed up the heat will be sufficient entirely to vaporise the paraffin before it reaches the jet, in a similar way to that employed in paraffin blow lamps.

thoroughly heated into the float chamber. To start from cold the petrol is turned on, and after running about 200



Vaporiser designed by George Mitchell.

Sunderland, which has been used, we are told, with success for a considerable time on both cycles and cars. The device consists of a circular chamber let into the induction pipe, through which the gas passes on its way to the engine. Through this chamber runs a number of  $\frac{1}{4}$  in. copper tubes, which are connected to a by-pass from the exhaust, and are consequently heated. These hot tubes form a baffle through which the charge has to pass, and any un-vaporised particles of fuel are soon changed into gas. In order to render the vaporising effect more efficient, the tubes are surrounded by a band of gauze.

Mr. Mitchell tells us that he has used the system of introducing petrol via a drip feed valve into the induction pipe for starting purposes for a very long time, but he finds that it is more satisfactory to have a small pilot jet, as shown in the sketch, the supply of petrol being turned on or off at will, the small jet regulating the quantity.

### Another Suggested Paraffin Vaporiser.

Another suggestion for satisfactorily converting paraffin into a perfect vapour has been sent to us by E. W. Hayes, of Sandford Road, Dublin. His idea is that the fuel should issue from the jet in the form of vapour, and not as an un-vaporised spray which must be converted into vapour as well as mixed with air some time between leaving the jet and entering the cylinder. As the latter is somewhat difficult to ensure in so short a distance, the chances are that quite a considerable proportion of the heavy paraffin spray reaches the cylinder without having been vaporised.

Mr. Hayes's plan is to separate the spray and float chamber of the carburettor, and re-assemble the two units in their correct relative positions on each side of the exhaust pipe. The fuel is then led from the float chamber via a copper pipe, which is coiled a number of times round the exhaust pipe, to the jet situated in the usual mixing chamber. The idea is that when the engine is

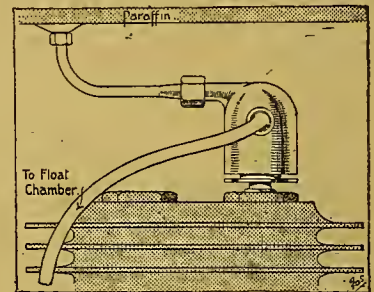
The paraffin vapour thus obtained is then converted into a proper explosive gas by mixing with air in the usual way. All the air should be drawn from the neighbourhood of the exhaust pipe, and the inlet pipe lagged with asbestos to prevent heat radiation and consequent condensation. The engine is started by means of petrol from an auxiliary tank, or the vaporiser coil may be heated from an outside source, such as with a blow lamp. It is also

suggested that the float chamber could be done away with altogether and the fuel supply regulated with an adjustable needle valve, as in some vapour lamps.

### In Place of the Exhaust Valve Cap.

The next device is one devised by an officer in the R.F.C.—Sec.-Lt. E. B. Morgan—and a correspondent, E. W. Plumridge, has tested it for about 1,000 miles on a 1914 Triumph sidecar.

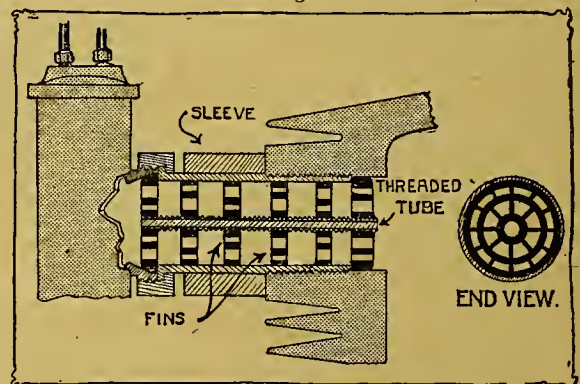
The exhaust valve cap is removed, and the vaporiser, a small gunmetal chamber, takes its place. A small tank to hold petrol is placed upon the top tube, the ordinary tank being filled with paraffin; the two supplies are fitted with Y copper tubing to the carburettor. The paraffin is taken from the main tank into the vaporiser, and then passes



Sec.-Lt. E. B. Morgan's design.

yards it is turned off, and the machine runs on paraffin.

The only alteration made other than the fitting of the vaporiser and tank is that the ignition has been retarded.



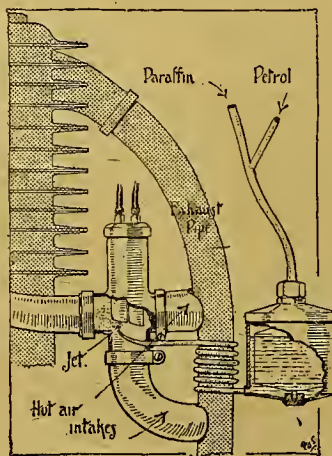
Heavy fuel vaporiser patented by our correspondent, W. Parker. (See description on this page.)

The oil in the crank case has been tested several times, and there was no suspicion of paraffin having leaked past the piston rings. Furthermore, upon removal of cylinder there appeared no more carbon deposit than if petrol had been used. A consumption test of thirty-five miles was made, when the average miles per gallon on paraffin worked out to 99, against 75-80 on petrol.

### A Device giving Good Results with 75% Paraffin.

The vaporiser shown above consists of a threaded tube, on which are screwed fins. It is then inserted in the induction pipe, the two end fins gripping the ends of the pipe, and so keeping it in position. Each set of fins is fixed out of line with the previous one to split up the fuel. There is a sleeve on the induction pipe to conduct heat from the engine. A hot air intake pipe is used.

W. Parker, who is responsible for the design, tells us that he has tested the vaporiser for a considerable time with satisfactory results with all paraffin and various mixtures, finding 70% to 80% paraffin an excellent fuel.



A suggestion by E. W. Hayes.



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It's

# RELIABILITY

that counts !

Perfect and unfailing reliability under adverse weather conditions, over rough tracks and uneven road surface, even on desert sand—such is the reliability of the TRUSTY TRIUMPH, a fact fully appreciated by the British War Office, and the War Offices of our Allies.

TRIUMPH CYCLE Co., Ltd., COVENTRY.

# TRIUMPH

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# SUNBEAM

## MOTOR CYCLES

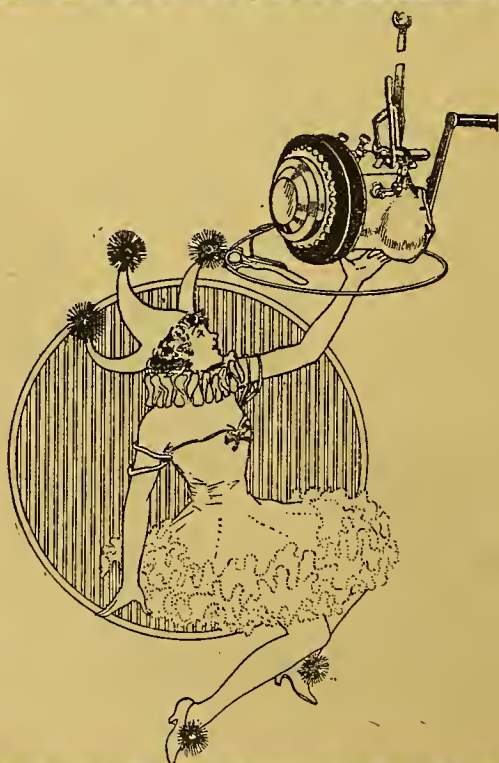
### PERFECT TRANSMISSION.

The entire output of the above is at present required for War Purposes.

Prospective buyers are therefore advised to purchase any that are left in stock among the various Sunbeam Agents throughout the country, or apply to have their names put upon our Waiting List.

*Catalogue and full particulars sent on receipt of postcard to —*

**JOHN MARSTON, LIMITED — 11, Sunbeamland — WOLVERHAMPTON.**



## STURMEY ARCHER

COUNTERSHAFT GEAR

The  
Very  
Last  
Word  
in  
Gears.

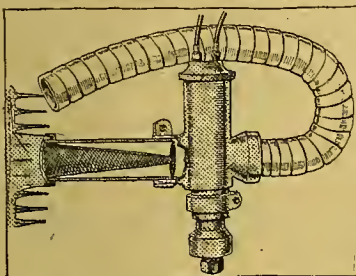
After the war there will be no other:  
Ask the boys at the front, who are  
using it to-day?

**STURMEY-ARCHER GEARS  
LIMITED, -NOTTINGHAM.**



# Obtaining Best Results from Petrol Substitutes.

Another correspondent, "BI 172," sends a sketch (reproduced herewith) of a device which has given satisfaction with a mixture of two-thirds petrol and one-third paraffin. He writes: "I made a hollow cone of copper wire gauze and soldered a flat circular piece of gauze on to the small end of it. The large end of the cone is slipped into the inlet pipe (in which it is a good fit), and the flat circular piece of gauze, which is the same diameter as the out-

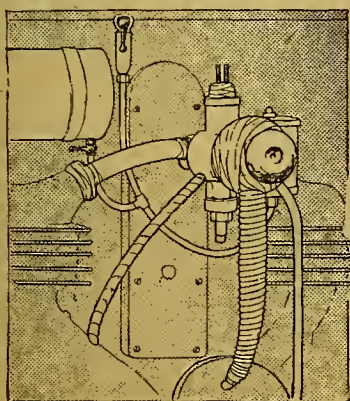


The method adopted by "BI 172" for using heavy fuel.

side of the pipe, butts against the end of the latter, and the carburettor holds it in place. I have removed the gauze screen from the air intake on the carburettor and used an old piece of flexible brass motor horn tubing to bring warm air from the engine.

"The carburettor is a B. and B. variable jet, semi-automatic, and I have made no alteration to the level or jet: it is exactly as sent out by the makers. I find I can get about 160 miles to the gallon of mixture (two-thirds petrol and one-third paraffin), or at the rate of about 240 miles per gallon of petrol. The machine runs as well as with all petrol, except, perhaps, a slight tendency to knock on hills and rather poorer acceleration. The carburettor is no doubt set somewhat on the economical side, but there is ample power for ordinary use. I usually run about a couple of miles on petrol, and when warmed up turn on the mixture.

"The machine is an Edmund spring frame with 2½ b.p. J.A.P. engine, and the double tank and two-way cock; standard on this machine, make it very convenient for heavy fuel tests."

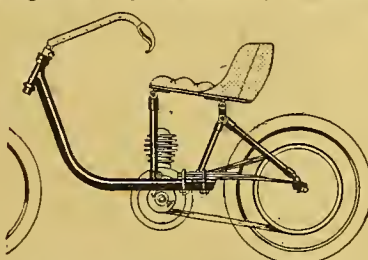


A Douglas engine adapted to run on petrol substitutes. See description on page 225 of our last issue.

# A NEW SPRING FRAME.

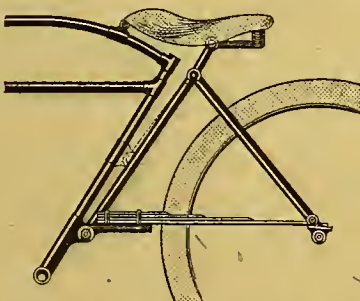
## A Departure from the Ordinary Type.

WE have repeatedly called attention to the need for spring frames and encouraged their development by describing the systems devised by our readers. *The Motor Cycle* campaign, though heartily received by the riding



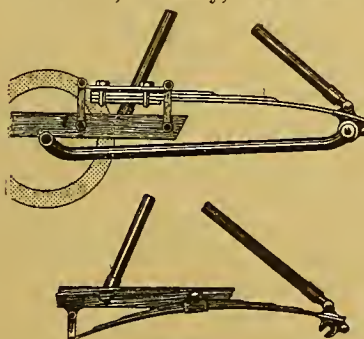
A novel machine designed by J. C. Maude incorporating rear springing in which the laminated springs form the chain stays.

public, makes slow progress among manufacturers. During the past two and a half years we have published details of no fewer than eighty-two designs of spring frames, and many of these have been worthy of more than casual attention; still manufacturers, with few exceptions, ignore the great demand for increased comfort.



Maude system of springing adapted to an ordinary type of frame.

We illustrate a design patented and protected under Patent No. 11,968, by Mr. J. C. Maude, Coventry, which embodies



Alternative methods of rear springing patented by J. C. Maude. (Upper) Where the spring is not mounted rigidly to the main frame, but is carried on two links, giving "parallel ruler" motion. (Lower) Ordinary cantilever suspension.

several drastic departures from the usual pattern of frame. It will be seen to consist of a kind of cradle of two tubes, sloping downwards from the head, to carry the engine between them; a vertical support for the front of the seat and a triangular back fork, the base of which is a cantilever spring, the apex being a pivoted support for the back of the seat. An alternative method of springing is shown, where a grasshopper type of spring takes the place of the cantilever. In this instance two hinged torque rods are incorporated, which should greatly improve the rigidity of the frame.

The inventor already has a machine of this design running on the road, and the further developments will be watched with interest.

## Average Prices OF Second-hand Machines.

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within five weeks.

Make.	Year.	H.P.	Average for last week.	Latest average week obtainable.
A.J.S. ....	1914	6 3-sp. sidecar ..	£61	—
" .....	1916	2½ 3-speed. ....	—	£52
" .....	1915	6 3-sp. sidecar ..	—	£90
Allon .....	1915	2½ 2-sp. 2-stroke ..	—	£27
Bat. ....	1913	8 sidecar. ....	—	£40
Bradbury ..	1913	4 3-speed. ....	£28	—
B.S.A. ....	1916	4½ 3-sp. sidecar ..	—	£93
" .....	1915	4½ 3-sp. sidecar ..	£61	—
Chater Lea ..	1914	6 sidecar. ....	—	£45
Calthorpe ..	1915	2½ 2-sp. ....	£23	—
" .....	1916	2½ 2-sp. 2-stroke ..	£30	—
Clyno .....	1914	6 3-sp. sidecar ..	—	£50
Connaught ..	1914	2-sp. 2-stroke ..	£25	—
Douglas .....	1915	2½ 3-speed. ....	—	£47
" .....	1915	2½ 2-speed. ....	£43	—
" .....	1915	4 3-sp. sidecar ..	£66	—
" .....	1914	2½ 2-speed. ....	£37	—
Enfield. ....	1916	6 2-sp. sidecar ..	—	£75
" .....	1915	6 2-sp. sidecar ..	£68	—
" .....	1915	3 2-speed. ....	£39	—
H. Davidson ..	1915	7-9 3-sp. sidecar ..	£70	—
Humber. ....	1913	3½ 3-sp. sidecar ..	—	£28
Indian .....	1915	5 3-speed. ....	—	£47
" .....	1916	Powerplus sidecar	£80	—
" .....	1914	7 3-sp. sidecar ..	£52	—
J mes .....	1914	4½ 3-sp. sidecar ..	—	£40
" .....	1916	4½ 3-sp. sidecar ..	£71	—
Levis .....	1915	Popular. ....	£23	—
Matchless ..	1915	8 3-sp. sidecar ..	—	£74
New Hudson ..	1915	2½ 2-sp. 2-stroke ..	£27	—
" .....	1915	4 3-sp. sidecar ..	—	£55
New Imperial ..	1915	2½ 2-sp. ....	—	£24
P. & M. ....	1914	3½ 2-sp. sidecar ..	—	£41
Premier .....	1914	3½ 3-sp. sidecar ..	£45	—
Rex .....	1914	6 2-sp. sidecar ..	£45	—
Rover .....	1914	3½ T.T. ....	—	£35
" .....	1914	3½ 3-sp. sidecar ..	—	£45
Royal Ruby ..	1915	2½ 2-sp. 2-stroke ..	£25	—
Rudge .....	1915	3½ Multi sidecar ..	£43	—
" .....	1915	3½ Multi gear ....	£38	—
Scott .....	1914	3½ 2-sp. sidecar ..	£40	—
Sunbeam .....	1914	6 3-sp. sidecar ..	—	£71
" .....	1914	3½ 3-sp. sidecar ..	—	£62
Triumph .....	1915	2½ 2-sp. 2-stroke ..	£35	—
" .....	1914	4 3-sp. sidecar ..	£45	—
Williamson ..	1915	8 3-sp. sidecar ..	£52	—
Zenith .....	1913	6 Gradua sidecar ..	—	£35
" .....	1915	8 Gradua sidecar ..	—	£62
" .....	1914	4 Gradua .....	£30	—





## TIME TO LIGHT LAMPS

"SUMMER" TIME.

Sept. 21st	...	...	7.31 p.m.
" 23rd	...	...	7.27 "
" 25th	...	...	7.22 "
" 27th	...	...	7.18 "

### Taking Motor Cycles to Ireland.

We are informed by the Touring Department of the Royal Automobile Club that there are no restrictions, and never have been any, concerning the shipment of motor cycles to Ireland, and there is no difficulty about bringing them back again into this country. This point was raised by a military reader of *The Motor Cycle*.

### Analysing Petrol Substitutes.

It is reported that the Petrol Control Committee has taken samples of many petrol substitutes, and is having them analysed. If it were discovered that a substitute contained petrol, it would be interesting to know who would be liable to a fine. The purchaser could not be blamed unless it could be proved that he knew it contained petrol.

### Prospective Mayor of Coventry.

Mr. A. S. Hill, chairman and managing director of the Coventry Chain Co., Ltd., and chairman of Bluemel Bros., will fill the office of Mayor of the City of Coventry for the ensuing year. It is only fitting that the principal motor manufacturing centre of the country should have as its civic chief a man closely in touch with the city's principal industry.

### Carburation. What is it?

Every motor cyclist knows that when his engine goes faster or slower he has to open or close the air lever to suit the speed. Many know why this has to be done, but all are not so conversant with the phenomenon of carburation. In yesterday's (Wednesday's) issue of *The Light Car* is an article which explains the action of a single lever automatic carburettor, and shows the difference between this type and the two lever pattern fitted to nearly all motor cycles.

### Something Not New.

Under the heading, "A New Motor Engine," *The Times* printed the following paragraph the other day: "According to the *Nationaltidende*, an inventor named Ellesammer has succeeded in constructing a carburettor making it possible to use benzol instead of petrol for motor engines." We congratulate *The Times* on this wonderful discovery. It seems possible that alcohol is meant, and that the inventor is probably Elleham, who manufactures the only motor bicycle turned out in Denmark.

B12

## SPECIAL FEATURES

1,500 MILES WITH A 1916 TRIUMPH  
A SOUTH AFRICAN DESPATCH RIDER IN "GERMAN EAST."  
OBTAINING BEST RESULTS FROM PETROL SUBSTITUTES.

### No Regulations Against Substitutes.

It was officially announced at the end of last week that the Petrol Control Committee has no intention at present of making any restrictions in the use of petrol substitutes.

### Steam Rollers to Spare.

It is reported that there are in Warwickshire twenty-five steam rollers lying idle, as drivers cannot be obtained. This is a pity, for we know of many roads where their services could be employed.



### A SEA-BATHING DIVERSION—A FAIR AMERICAN AUTO-PEDDING ON THE SANDS AT LONG BEACH.

The Auto-ped, an American idea, is not unknown to our readers, as it was illustrated in these pages some twelve months ago. It is propelled by a small single-cylinder engine, and the machine illustrated will be seen to be complete with head and tail lamps and warning bell. It resembles in general outline the motor "skicycle" described and illustrated in *The Motor Cycle* of July 20th last.



**Motor Cyclists Killed.**

Three well-known motor cyclists must be added to the growing Roll of Honour. Their names appear on our Military Page.

**A Government Type Mount.**

Our experiences with a War Office model Triumph—one of the first produced with the new type semi-T.T. handle-bar—over a distance of 1,500 miles appear in this issue.

**The "Hush Hush" Brigade.**

Since our last issue appeared the new heavy armoured cars have been in action and proved, according to General Sir Douglas Haig, of considerable utility. The men manning these cars were recruited through the columns of this journal.

**Wonderful Vehicles.**

All the men have technical knowledge. The "tanks"—as the soldiers call them—are destroyers on wheels, and, of course, a petrol engine is the motive power. It was mentioned in these columns three weeks ago that H.M. the King and Mr. D. Lloyd George had witnessed a private demonstration of the section. A great deal more will be heard of these cars.

**Petrol Substitutes—Possible Restrictions?**

It is wonderful what carburettors will vaporise. We never dreamed a year ago that our engines would consume anything but No. 1 or No. 2 petrol. Taxibus was sniffed at, but these days we are glad to get anything to help eke out the meagre allowance of efficient fuel the Petrol Committee allows us. And now there is talk of taxing all that is left to run on, and of not allowing us to buy our white spirits or paraffin—which is no spirit at all—without first entering the sale on our petrol tickets. And the reason for this state of affairs is mostly due to the meddlesome interference of certain half-penny evening papers.

**New Australian Records.**

We are informed that Jack Booth, the crack Victorian rider, has set up near Melbourne new times for the one, five, and ten miles records. Booth usually rides a Castrol lubricated Indian, and further particulars will be awaited with interest.

**Admiral Arbuthnot Trophy Fund Closed.**

The Admiral Arbuthnot Trophy Fund, which now amounts to a total of £212 2s., has been closed. The latest subscriptions to be received are the following:

Swift Cycle Co., Ltd.	£5	5	0
A Medical Motor Cyclist in Mesopotamia	10	6	
Sec. Lieut. Glynn Rowden, R.F.C.	5	0	

**Illusive Orders.**

For the last few weeks rumours have been current in the Midlands regarding tenders for thousands of motor bicycles for some mysterious Government. The matter got further than a tender last week, an order for thousands, we were seriously told, having been placed with a leading Coventry firm. Enquiries of the firm named revealed the fact that the suggestion was as great a surprise to the directors as the new heavy armoured cars were to the Germans!

**The Jutland Battle Honours.**

We note with pleasure that His Majesty the King has been graciously pleased to approve of the posthumous honour of Knight Commandership of the Most Honourable Order of the Bath being conferred on the late Rear-Admiral Sir Robert Keith Arbuthnot, Bt., C.B., M.V.O., killed in action on May 31st, 1916, in recognition of his services mentioned in the despatch relating to the Jutland battle. Coupled with Sir Robert's name is that of Rear-Admiral Hood. Referring to these two gallant gentlemen, the *Daily Mail* of Saturday says: "Who, friends in life, were not divided in death, and both fell setting an immortal example to their country."

**Selecting a Second-hand Light Car.**

Any reader who may think of purchasing a light car would do well to read an article on the subject in *The Light Car* published yesterday (Wednesday). In it useful advice is given on the points to examine for wear.

**Shows of Second-hand Machines.**

All arrangements are now complete for the holding, during the coming winter, of shows of second-hand motor cycles and cars in London and Manchester, and it is expected that similar shows will be held next spring in Scotland and Ireland. Particulars appear on page 255 of this issue.

**The Principal National Funds.**

At the week-end the principal war funds stood as follow:

Prince of Wales's National Relief Fund (£3,463,925 distributed)	£5,953,938	0	0
The Queen's Work for Women Fund	170,547	0	0
Tobacco Fund	114,074	0	0
Red Cross Fund	4,359,518	11	7
Lord Kitchener Memorial Fund	289,000	0	0

**Improved Roads on Salisbury Plain.**

That some roads have improved of late is indicated by the writer of the article on page 239 of this issue, describing a visit paid recently to Salisbury Plain. According to the writer in question, it will be noted that many of the roads in this quarter have been re-made and are now in first-class condition.

**A Sweep in Western Australia.**

We are informed that H. V. Norton, a name well known in Western Australian motor cycling circles, has recently won in four consecutive events the track championship, petrol consumption trial, two days' reliability trial, and hill-climb. Norton used the same machine (B.S.A.) for each competition.

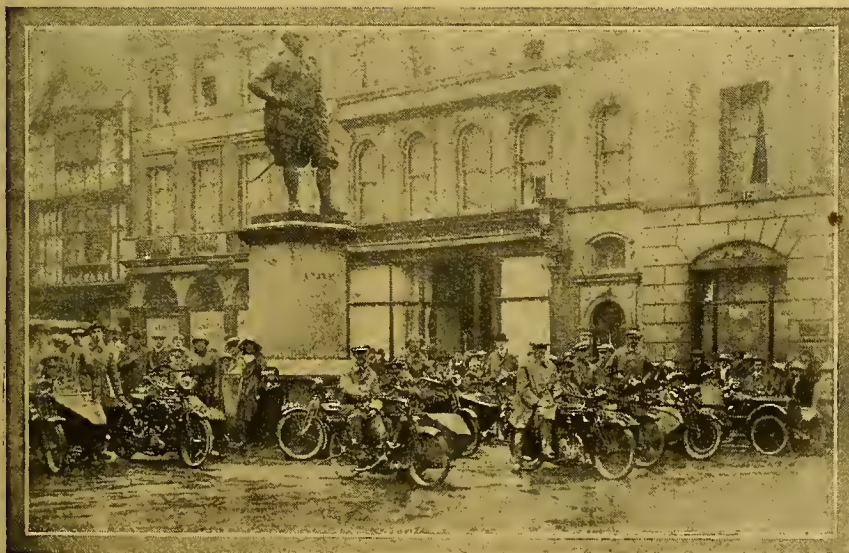
**Birmingham Chamber of Commerce.**

The Midland Metropolis has always been known for its keen business instincts, and one of the best schemes it has launched is the recently inaugurated Chamber of Commerce development scheme. £50,000 is required for the establishment of a big house of commerce worthy of the city and district. Towards this sum over £22,000 has been subscribed, and further donations should be addressed to the President and Council, Chamber of Commerce, Winchester House, Victoria Square, Birmingham.

**Birmingham Wounded Soldiers' Outing.**

A number of Birmingham motor cyclists entertained about thirty wounded soldiers from Lightwood Hall to another sidecar outing on Sunday last. The trip was to Stratford-on-Avon, where a steamboat trip was arranged, after which tea was provided. The return journey was undertaken in the rain, but was nevertheless successful.

A further outing has been arranged for next Sunday, 24th inst., and Stratford has, by special request, again been selected as the objective. A start is to be made from Lightwood Park at 10 a.m. It is proposed to have an outdoor lunch, which will be provided by the hospital, while the motorists will arrange for the tea. All motorists who would like to assist are welcome, and should arrive at Lightwood Park by the Beet Lanes entrance.

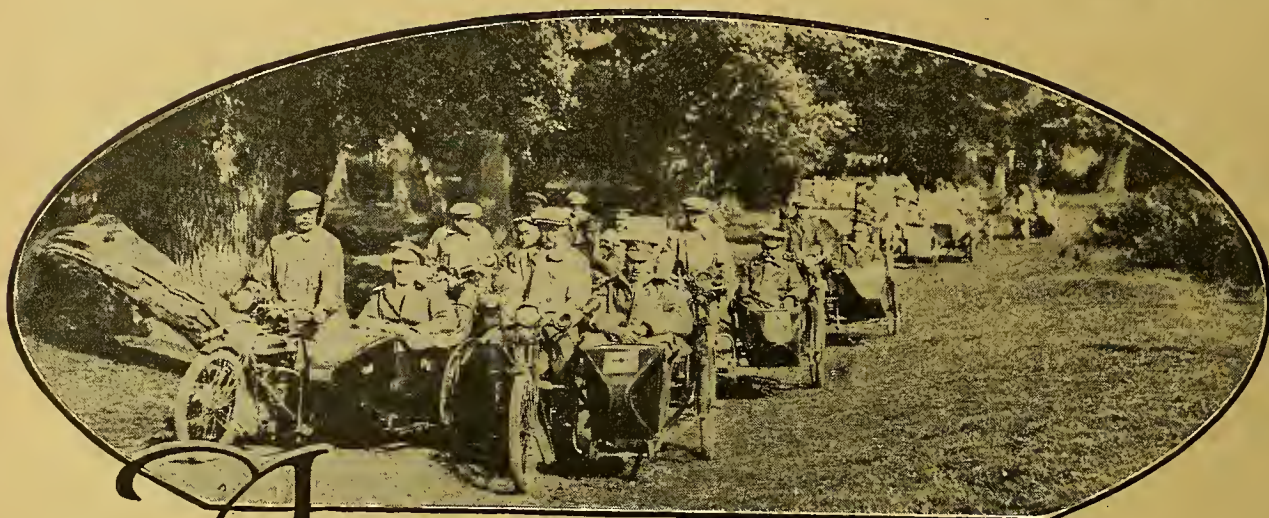


**SHREWSBURY WOUNDED SOLDIERS' SIDECAR OUTING.**

Photograph taken on the occasion of the third fortnightly Sunday run organised by Shrewsbury motorists. About sixty convalescent men were taken in sidecars and cars for a very enjoyable run.



## Wounded Heroes Enjoy a



Some of the sidecars in a pretty setting in Stoneleigh Park.

ARRANGED by the staff and employees of the Triumph Cycle Co., Ltd., the outing for wounded soldiers injured in the Somme battle, held on Saturday last, proved highly successful. The day was an exceptional one, brilliant sunshine following two or three days cold. Needless to remark, the pleasant atmospherical conditions added considerably to

the enjoyment of the wounded heroes and the success of the whole affair.

After picking up the passengers at the different local hospitals, the motorists assembled on an open space adjoining the Triumph Works, and, after the photograph had been taken, the imposing procession of vehicles, consisting of over fifty sidecars and fifty cars, departed for a twenty mile trip in different directions through the lanes of Warwickshire,

arriving about four o'clock at the old Deer Park, Stoneleigh. The use of the park had been granted by the Right Hon. Lord of the Triumph Co. Leigh addressed a f



READY TO START FROM COVENTRY. A huge fleet of sidecars and cars—about fifty of each—were used, the



## in Wooded Warwickshire.



Group of the wounded soldiers for whose benefit the trip was arranged.

who is chairman  
the marquee Lord  
of welcome to

the soldiers, expressing his confidence in a  
thorough victory for the Allies. From the  
knoll on which the marquee was placed a

magnificent view of the Abbey grounds was  
obtained. Leading to the knoll was a grass  
bank having a gradient of about 1 in 4, and

testers of the Triumph Co.,  
who had patrolled the route  
covered by the cars and  
assisted in minor troubles,  
besides politely showing the  
way, sustained the interest  
of the soldiers by showing  
what a modern motor cycle  
can do on such a precipitous  
bank. First one, then two,  
and finally three passengers  
were carried, while, to the  
great delight of the lookers-  
on, two of the men rode up  
standing in the saddle, and  
another actually attempted  
to ride his machine up  
backwards. He got half  
way, having difficulty in  
steering a straight course on  
the rough track. Subse-  
quently a number of games  
were held, the men taking  
part with zest. A start for  
home was made at seven  
o'clock, the trip having been  
greatly enjoyed, and likely  
to be remembered.



being arranged by the workpeople and staff of the Triumph Cycle Co., Ltd



## THE NEW ARMoured CARS.

Some Details of the Twenty Ton Caterpillars used in the Somme Battle.  
Men Recruited and Examined by the Editor of this Journal.



Some men of the Heavy Section, Machine Gun Corps, who have given the Germans such a surprise with their armoured cars.

**T**HE secret is out! The British official communiqué on Friday afternoon last contained this statement:

"In this attack we employed for the first time a new type of heavy armoured car, which has proved of considerable utility."

The vehicles referred to are of secret construction, but they are of particular interest to readers of *The Motor Cycle*, as they form the equipment of the Heavy Section Machine Gun Corps. This section was recruited through the columns of *The Motor Cycle*, and many readers have friends attached to it. It is only three weeks ago that we referred to the fact that H.M. the King and Mr. D. Lloyd George had made private inspections of the section. As stated above, the vehicles forming the equipment are of secret design, and when it is possible to lift the veil men with mechanical instincts will be immensely interested. Suffice it to say that they can best be described as travelling forts. The men on the cars are entirely enclosed and protected by thick armoured plate, from which shrapnel and machine gun bullets bounce off harmlessly. The forts simply bristle with machine guns, and, as *The Times* says, one can imagine the feelings of the German infantry in their shell-battered trenches when in the uncertain light of dawn they see advancing upon them an array of unearthly monsters cased in steel, spitting fire and crawling laboriously but ceaselessly over trench, barbed wire, and shell crater. The cars, which are known as "tanks" and "Willies" among the men who handle them, are propelled by a very powerful petrol engine.

When it is mentioned that the armoured cars weigh well over twenty tons, it will be gathered what amount of petrol is disappearing. Naturally, ordinary wheels would never be able to perform satisfactorily over stretches of ground shell torn, roadless, and intersected with trenches. The armoured cars in question move on Caterpillar wheels, adding to their awesome appearance. It is marvellous to see them operating; they climb up a hill just like a caterpillar, poise on the top, and come down the other side like a thing of life. Should a tree, or even a house, stand in their way, the car simply fells it and tramples over the debris.

Hats off to the men of the Heavy Section Machine Gun Corps for their successful *début*, and for having already earned the praise of General Headquarters!

### Whose Idea?

"What about the new 'tanks?'" Mr. Lloyd George was asked by a pressman as he was leaving the War Office yesterday.

"Well," replied the War Secretary, "we must not expect too much from them, but so far they have done very well."

"And don't you think," he continued, "that they reflect some credit on those responsible for them? It is really to Mr. Winston Churchill that the credit is due more than to anyone else. He took up with enthusiasm the idea of making them a long time ago, and he met with many difficulties. He converted me, and at the Ministry of Munitions he went ahead and made them."

"The Admiralty experts were invaluable, and gave the greatest possible assistance. They are, of course, experts in the matter of armour plating. Major Stern, a business man at the Ministry of Munitions, had charge of the work of getting them built, and he did the task very well. Col. Swinton and others also did valuable work."

"You see," remarked Mr. Lloyd George, in conclusion, "the enemy has by no means a monopoly of inventive ingenuity."

We give below some press correspondents' descriptions of the new armoured cars in action:

Mr. Percival Phillips, in *The Yorkshire Post*:

I heard the fragment of one conversation as a grievously wounded man was lifted out at a casualty clearing station . . . and he says, "Lord, there was one of them iron boxes strolling down the high street of Flers like it was Sunday afternoon." The man who invented these new and efficient machines of destruction deserves much of the Army, if for no more than he has made it laugh as it fought—not the laughter of ridicule, but of admiration.

*Pall Mall Gazette*:

Truly amazing is the story of the part played by the new heavy armoured cars, or "tanks," as they are called, in the recent British advance on the Somme front. The feats they accomplished sound like incidents from fairy tales.

Here in brief are some of the accomplishments as described by various correspondents:

It "leant" against a broken wall until it fell, and then crawled over the debris.

It went irresistibly through High Wood, the trees smashing like matchsticks before it.

It went up to machine gun emplacements, "crushed the gun under its ribs," and passed on, spitting death at the demoralised Germans.

It "stamped" down a dug-out as though it were a wasps' nest.

It "sat on" heaps of ruins and fired down a village street.

It went right through the old German trenches.

It crashed through broken barns and houses, "straddled" a dug-out, and fired enfilading shots down German trenches.

It put a battery and a half of guns out of action near Flers.



## THE LATEST DUNLOP. Combination Steel and Rubber Studded Tyre.

THE pros and cons of the question, rubber tread *versus* steel studs, have given rise to endless argument, and there will always be many adherents to both sides. If any decision is arrived at it usually takes the form of a compromise, the combination of steel and rubber studs in one tyre; the advantages

of the one counteracting the disadvantages of the other; when the rubber would slip the steel holds the road, and *vice versa*. To those motorists, and they are numerous, who favour this type of cover will come as a pleasant surprise the decision of the Dunlop Rubber Co., Ltd., to market a combination cover in several sizes for motor cycles and light cars.

The construction is somewhat similar to the usual rubber-studded cover,

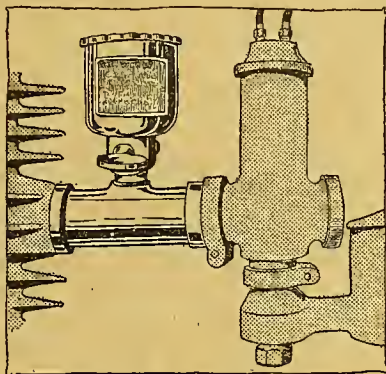
Dunlop combined steel and rubber-studded cover.

with additional layers of canvas and rubber on the tread to support the steel studs. These are fixed in such a way as to make them almost impossible to pull out. On the new tyre the rubber studs stand slightly higher than the steel studs, so that when the weight is on the tyre both kinds will be equally in contact with the road surface. The thickness of material on the tread is abnormal; on the section before us it measures  $\frac{3}{4}$  in. thick, and it should be practically impossible to puncture. This cover should make an ideal sidecar tyre on account of its sturdiness. It is to be made in four sizes for motor cycles, 26 in.  $\times$  2  $\frac{1}{2}$  in., 26 in.  $\times$  2  $\frac{1}{2}$  in., 26 in.  $\times$  3 in., and 650  $\times$  65 mm. (also for light cars, 700  $\times$  80 mm. and 700  $\times$  85 mm.). A number of tyres are already in use on the road, and are giving every satisfaction. It is doubtful whether this cover will completely oust the older all-rubber stud and all-steel stud types, but it is certain to find many admirers, and should have a big future.

## GRAPHITE FED VIA THE INDUCTION PIPE.

GRAPHITE has always been recognised as an almost ideal substance for the lubrication of the cylinder walls of any internal combustion engine, especially where great heat exists, as in an air-cooled motor. Considerable difficulty, however, has occurred in introducing it into the lubrication system in a convenient manner. Many dodges have

been tried with more or less success, such as suspending it in the lubricating oil and so on. A device which, we understand, is quite successful is the Woolf graphite lubricator, which originates from America, and is handled in this country by Messrs. Jarvis Bros., of Middlesbrough. It consists of a small



The Woolf graphite lubricator for introducing fine flake graphite into the cylinder via the induction pipe.

receptacle for the graphite very similar to an ordinary screw-down greaser. This is screwed into the induction pipe of the engine, so that the lubricant is supplied with the mixture direct to the cylinder and piston, the parts of the engine which benefit most by the graphite lubrication. In the neck of the lubricator is fitted a tap; this tap, however, is really a measure, it being a hollow plug with a hole at one side which registers with the graphite receptacle, and is so filled with the lubricant. Upon the handle being turned the hole registers with the outlet to the induction

pipe, and the engine suction draws the small particles of flake graphite into the cylinder with the mixture. This operation, we understand, need only be done once in fifty miles. Of course, this system does not replace the ordinary lubricating oil, but merely augments it, and is claimed to provide perfect lubrication for the cylinder walls.

## SHOW OF SECOND-HAND MACHINES.

AS already announced, a proposal is on foot to hold a show of second-hand motor cars and motor cycles at the Royal Agricultural Hall, London, from November 10th to 18th of the current year, and also at the Royal Botanical Gardens, Manchester, from December 1st to 9th. Similar shows, we are informed, will be held in Scotland and Ireland in the spring of 1917. The organisation is in the hands of Messrs. William Glass and Co., Lincoln House, High Holborn, London, W.C. Anyone deciding to send his machine for sale at this show should communicate with the secretary of the company in question. The cost of space for exhibiting will be reckoned at 2  $\frac{1}{2}$  % of the selling price under £200, with a minimum of £1 5s. for motor cycles and £2 for sidecars. The price includes entry in catalogue, certificate, insurance against fire, whitening tyres, and dusting the machine during the show. The exhibit, however, must be delivered clean. If the machine is sold a commission of 2  $\frac{1}{2}$  % is charged on the said price (5% in all). Each exhibit will be examined by a qualified expert, and a certificate will be attached to the exhibit setting forth its condition, thus protecting the purchaser against misrepresentation.



## SIR HIRAM MAXIM TO THE RESCUE!

The veteran inventor has turned his attention to the petrol supply problem, and is now engaged upon experiments with a view to rendering paraffin suitable for motor engines.





### Buying Oils in Bulk.

Sir,—Since 1913 we have consistently advocated in our advertisements in your widely read journal the economy of purchasing motor oil in bulk, say five-gallon drums, instead of in comparatively expensive small tins.

Your contributors have frequently pointed out that nowadays this matter is of particular importance, and we may mention for your possible information that the Government are exercising control over the output of "tin plate" from which tins are manufactured.

Nevertheless, we regret to have to advise you that there are cycle and motor dealers here and there who cannot or will not see this aspect of the question, and who press small tins on the customer requiring a drum. Surely the dealer must realise that sooner or later his customer will go elsewhere for his supplies.

*The Motor Cycle*, we find, is read almost as much by the trade as by motor cyclists, and we venture to think that this letter or a note on similar lines will do good.

PRICES' CO., LTD.

### Decarbonising on Active Service.

Sir,—We have just had the pleasure of perusing the pages of our old friend *The Motor Cycle* of August 24th, and note with particular interest the photograph of S. George and his accompanying remarks, which appear on page 160.

We say "with particular interest" because we are Royal Flying Corps despatch riders ourselves, though, unlike S. George (who is at a base depot), we are with a squadron in an advanced position. As you are aware, the P. and M. is universally used throughout this corps, and it is only because we have had experience extending over fourteen months out here that we venture to criticise the statement of such an expert as S. George. Considering the poor quality of the juice that all branches of the M.T. use out here, it is impossible for any engine to do 30,000 miles without thorough overhauling.

We say nothing against the P. and M. engine; in fact it is probably the most reliable out here, but, apart from the motor cycle, it is doubtful whether the man could, physically, attain such a total in something under eight months.

We shall watch the pages of your paper with keen interest for further remarks on this great "record."

1st A.M. MAYO, No. 4162.

1st A.M. MORDUL, No. 4143.

1st A.M. NUTT, No. 3849.

1st A.M. SALMONS, No. 6278.

B.E.F., France.

### Short Measure of Petrol.

Sir,—Regarding Mr. Sidney J. Williams's letter published in *The Motor Cycle* of the 7th inst., we heartily agree that some step should be taken to enforce the correct measure being supplied by the petrol companies. We, in common with other garages, are hit hard by this shortage, because when we have to open a two-gallon can to supply, for example, half a gallon at a time, we find that the fourth measurement is, seven times out of ten, short of what it should be. This we have to make good out of our most princely margin of profit by opening another can to make measure.

The best solution of the problem is to purchase petrol in bulk and store underground in a tank with meter, but every-

## LETTERS to the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

one cannot do this. Even if the two-gallon cans were filled under some system of Government supervision, the question of leaky cans crops up. Here is another case where we have to make good any under-measure, because the petrol companies will not now exchange faulty cans, and if we do not exchange such cans we lose custom.

We should like to see opinions of other garages on this matter.

JUICE RETAILERS.

Yelverton.

[Is not this question one demanding the investigation of the Motor Trade Association?—Ed.]

### Silent Discharge.

Sir,—I was extremely interested to read "Ixion's" notes in your issue of September 14th on the causes of overheating and his references to sparking plugs. His remarks confirm my own experiences. These are not confined to one make of machine, but extend to many, the same thing having happened with a 2½ h.p. New Imperial, a 2½ h.p. twin Forward, a 3½ h.p. twin James, a 3½ h.p. Premier, a 3½ h.p. B.S.A., a 6 h.p. twin A.J.S., and a 6 h.p. twin Enfield. In each case, by running for a mile or so on anything over half throttle, the engine would come to a standstill, though it would, as "Ixion" also remarks, restart almost immediately. In some cases I have found that even the momentary lifting of the exhaust valve would reproduce normal firing. Like "Ixion," I, too, have a few rusty old Bosch plugs, relics of T.T. races, and the fitting of one has invariably produced the result that my engine would continue to run on a large throttle opening. It has been most important to me that an engine should so run, as I have done a tremendous amount of riding in connection with carburetter designing. It was essential that I should know why this pulling up occurred, whether it was due to carburetter, ignition, or oiling, and I have proved, conclusively enough for myself, that in every case it has been due to plugs. 1.

### THE SPORTSMAN'S MOUNT.



A good catch—54 lb. of fish caught before nine o'clock in the morning, thanks in part to the Zenith sidecar, which enabled Mr. O. B. Geake, of Tunbridge Wells, on the left, and his friend to get to the scene of operations with the least delay. The Zenith is two years old, and Mr. Geake reports no trouble during this period.



have used five or six different types of British ones, with the same result in each case. I have taken out the British and put in the Bosch, the trouble at once disappearing, only to recur when the other plug was returned.

I have not, so far, carried out any experiments for the purpose of ascertaining what happens or what the precise cause is, as I have been working on carburettors, and it was sufficient for me to know that it was plug and not carburettor trouble.

My reason for writing is to bring forward a little more evidence that our plugs are not yet perfection. It is only when the faults in an article are known that they can be eradicated.

HAROLD J. COX.

Sir,—The question raised by your correspondent in this connection is a rather novel one, and I agree with "Ixon" that an expert opinion on the subject would be useful.

My physics are very rusty, but I am quite willing to "butt in" in the hope of enticing one of "Ixon's" "size 8 hats" into the arena.

One of the principal properties of a radio-active substance is its power of rendering air a partial conductor by ionisation. It was this property, I believe, which led to the discovery of radium. According to one theory radio-activity is caused by disintegration of the atom, brought about by the speed of its component particles rising above a certain critical value.

I think experiments showed most of the common metals to be radio-active to a light degree, and, as heat has the effect of accelerating the speed of vibration of an atom, it seems quite reasonable to suppose that a metal becomes more radio-active as its temperature rises.

If it does, it is probable that at a certain temperature the metal forming the points of a sparking plug becomes sufficiently radio-active to ionise the gas between the points and produce the "silent discharge."

Perhaps your correspondent could tell us whether an engine liable to the mysterious drying up he mentions is also subject to pre-ignition knock, i.e., is the temperature producing the supposed "silent discharge" higher or lower than that causing pre-ignition?

London, N.W.

P.C.K.S.

#### American Motor Cycles.

Sir,—Referring to the correspondence on American motor cycles, Captain Lindsay has indeed "hit the nail on the head," to use a somewhat hackneyed phrase. All such machines which I have come across were very fine for three months, passable for six, but hopeless for a year's hard work.

In your issue of September 7th, D. H. Smith, M.T., A.S.C., in speaking of his "leading" single, makes a slight error. Among his leading singles Captain Lindsay mentions the  $3\frac{1}{2}$  h.p. "All-British" Norton. It was *this* engine which set the fashion in the motor cycle world, and Norton engines were manufactured before a complete machine was made.

I would point out to Mr. Smith that his leading single adopted the long stroke and large valve idea a matter of two years ago, and this has *always* been the great Norton feature. The machine for greasy road work is the  $3\frac{1}{2}$  h.p. Norton. On my  $3\frac{1}{2}$  h.p. T.T. machine I have covered 7,000 miles since July, 1915—trouble nil. Need I add the usual disclaimer?

JOHN W. WALKER.

Sir,—I would like to reply to Mr. D. H. Smith's letter (September 7th, page 210), as he apparently does not approve of my personal short list of good things. I would point out that I also have ridden every model of his "leading single" since 1907, excepting a 1909 one, and I am at present using a 1916 model in the war zone. I shall be pleased to give him any information about it. None of the machines mentioned in my list can be accused of being copies. Each one has been a distinct advance on the "policy of conservatism," which is, in my opinion, not the policy for the British motor cycle industry to take up just yet in the face of a coming Overseas trade war. The result of this policy is seen most clearly in our Overseas Dominions, where America is gaining ground rapidly. I am afraid I buy my leading single from the other 15%, who do not copy but lead. Only a short two years ago saw a (Mr. Smith's) "leading single" become the copyist.

My leading single was offering the short-sighted public a countershaft two-speed chain-drive machine two years before

his leading single was offering a fixed gear belt drive. The bulk of the single-cylinder market is, however, slowly, but surely, coming into line with the machine I have in view. One by one the people who formerly derided the long-stroke engine most violently are producing long-stroke engines without a blush.

With all due respect to Mr. Smith, I think I will stick to my short list—a list I have drawn up from riding experience, not prejudice.

Adding the usual disclaimer,  
B.E.F.

A. LINDSAY (Capt.), R.G.A.

Sir,—Capt. Lindsay in your issue of the 31st ult. makes many dogmatic assertions anent American motor cycles. Does he speak from practical experience, or is his opinion only the result of an intolerable bias? I have never been astride a "single," but if I allowed my intense appreciation of the (to me) undoubted superiority of my American twin to lead me into equally intense disgust with the untried single it would be an easy matter to give vent to sarcasm. I have lately taken delivery of a 7.9 h.p. Harley-Davidson model 16 F with sidecar, and I can assure Capt. Lindsay it is anything but an "over-engined crudity" (a most narrow-minded sarcasm).

Taking Capt. Lindsay's points in turn:

1. Twist grip control.—Which is easier, a twist of the wrist with a firm grip of the control, or holding the handle-bar grip with two fingers and a thumb, and manipulating two levers with the rest of the digital members.

2. Kick starters.—Are American kick starters any more crude than British? I trow not, if one's eyesight can be depended on not to transform an English machine into an American whenever a perspiring motor cyclist is "doing time" on the kick starter!

3. Constant attention is no more demanded by American machines than English. Will Capt. Lindsay tell us what attention the American machines demand that the English do not? The boot is on the other foot, to some degree, too!

4. Automatic carburettors.—If they are not automatic, what on earth are they? Anyhow, they do give a decent "tick over" in free engine, which is not the fact in the case of the average British single from my observation.

5. It is to be hoped Capt. Lindsay does not think his opinion to be so infallible that his list of machines may be taken as complete or authoritative. How many of these machines has he actual prolonged riding experience of?

May I briefly enumerate the special points about my particular "crudity" which appeal to me, and are not usually found in the average British machine? Substantially built all round, including carrier, mudguard and stays to same, silencer. Rigidly assembled (no rattle). Practically impossible for steering column to alter relative position to handle-bars. Automatic lubrication: this alone has, to me, increased the pleasure of riding beyond all expectation. Oil reservoir, ample for a five hundred miles tour with sidecar. Clutch which may be slipped indefinitely; British makers usually demur at such treatment. Substantial gear box. Interlocking of clutch and gear controls. Large wheels and 3in. tyres. Automatic carburetter, easily adjustable for either economy or power (see *The Motor Cycle*, December 2nd, 1915). Sensible spring saddle. Large filler caps. Carrier which *will* carry. Loop frame. Gear box on, instead of hanging to frame. Powerful brakes without unsightly belt rims for friction surfaces. Mechanical crank case release of large diameter. Really efficient silencer. Sheet metal tool box neatly mounted. Enclosed overhead inlet valves. A goodly array of crudeness!

Usual disclaimer in full.

J.W.

#### The Scott Sociable.

Sir,—I think the offence given to some people by the appearance of the Scott Sociable is caused partly by the projecting radiator cover. The radiator could be in full view with a plated or dull top of neat shape.

To draw a larger sale, perhaps the plan of fitting at option a reputable air-cooled four-stroke engine might be effective. We know everything else on the car will be all right, but there will always be two opposing opinions on the two-stroke engine, even if it is a Scott with distributing valve.

An air-cooled engine would allow of the front being finished off like a sidecar, which, in my opinion, is distinctly graceful when it is a Canelet or similar pattern. A



projecting cylinder on the off side would not be objectionable, provided the oil oozing from tappet guides were hidden.

I agree with "Sidecarist" in the issue of September 14th, but I cannot believe that the price will be much, if any, less than £100, and most people will want 75 m.p.g., which is probably impossible of attainment by a 550-600 c.c. two-stroke twin in a car for two. W. R. DEUCHAR.

#### Petrol Substitutes.

Sir,—Referring to Mr. Binks's reply to "CW 45" in your last issue, Mr. Binks gives as his only excuse for the sudden increase in the cost of his fuel that the freights have increased enormously. Now, in May this fuel was being sold at 1s. 3d. per gallon; at present the cost is 2s. 6d. per gallon. Allowing that two gallons of the fuel weigh roughly 15 lb., this means that in the last five months the freight from California has increased by nearly £19 per ton. H.J.L.

Sir,—Seeing the letters *re* Binks fuel, I think my experience will be of interest. I sent cheque for barrel of fuel and three jet carburetter nine weeks ago. I received the carburetter in seven days, but the fuel has not yet come to hand after nine weeks. At the end of July I received a postcard advising me that the fuel had left their wharf and would take the railway company ten days to deliver. After waiting nearly another three weeks I advised Messrs. Binks that the fuel had not come to hand and asked for an explanation, but my letter was totally ignored. Therefore, after waiting still another two weeks I wrote again, and this time received a reply saying that they were absolutely helpless in the matter and could not say when they would deliver. W.M.F.

Sir,—Seeing a complaint from "C.W." concerning Binks fuel, I, too, have a complaint which also should be made public, and by so doing may get a more satisfactory answer from Messrs. Binks than I have been able to do. On April 18th I ordered and paid for forty-two gallons of fuel at 1s. 2d. per gallon with addition of 7s. 6d. for the cask. I have not yet received the fuel, although I have made applications for it. Five months is rather a long time to wait for delivery, and I certainly think that I should be entitled to my supply before those now ordering. Possibly they wish me to wait until paraffin is down again to 8d. per gallon! E.J.L.

Sir,—On July 30th I sent a cheque to Messrs. Binks ordering a carburetter and a barrel of fuel. I received the carburetter about three weeks after. The fuel, however, I have not yet received. This is now, at the time of writing, seven weeks within about two days. I have written several times, and have received about four letters or postcards saying that they are urging the railway company to deliver, and that I shall receive it in a few days. I had the same advice a month ago. I have made enquiries at the railway depots, and am informed that there is no delay in delivery. I do not know if any of your readers have had a similar experience. I for one shall certainly not order again. I have written asking for proof that it has been despatched and by what railway, but get no reply. I have now asked for the delivery of the fuel or the return of my money, failing which I shall have seriously to consider the question of recovery by other means. Mr. Binks is at liberty to keep mine and sell it at his advanced price. C.A.E.

#### The Boycott of German Goods.

Sir,—"Britisher's" suggestion for a league of motor cyclists pledged not to use "new" goods of German origin is an excellent idea, and, apart from being another blow to the enemy in the commercial world, is an important step towards building up the motor cycling industry in the British Isles *après la guerre*. My name is going in to "Britisher" without a moment's delay, and I await future copies of the "blue-covered book" to see how the movement progresses. When one is separated from the incomparable hobby for just on a year, it seems essential that somebody should be blamed for it, and pretty forcibly too, and I, for one, will see that no German article of

any description whatever is used by me in connection with motor cycling or anything else. *The Motor Cycle* is sent to me regularly every week, and so far not a copy has gone astray. I am particularly interested in the descriptions and illustrations of devices tending towards economy in fuel, and also appertaining to the satisfactory use of the substitutes now being produced. Needless to say, numerous cuttings are finding their way into my notecase, but as different engines are not always suited by the same fuel I should welcome any correspondence in your columns from riders of Douglas solo machines showing the results of their experiments with fuel and carburetter. Before leaving England I found my machine would run quite well on a 50% mixture of petrol-paraffin, but paraffin can be improved upon, and I would like to know which of the new fuels produces the most efficiency in the Douglas with Amac carburetter.

There are many like myself who desire to know what arrangement exists for supplying a limited quantity of petrol to soldiers home on leave from the Front, as the regulation cards are only valid for residents in the British Isles, and the man who can do with a week at his favourite pastime is left wondering what he is to run his machine on.

France

(GUNNER) J. CHESHIRE.

#### The Public Schools M.C.C.

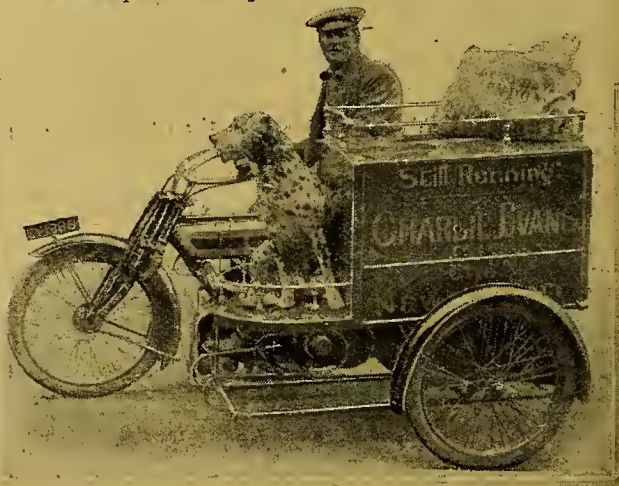
Sir,—With reference to Mr. A. Q. Roberts's letter in your issue of July 6th, I beg strongly to confirm all that this gentleman states concerning the Public Schools Motor Cycle Club. How on earth can a club of this name be formed at the present time, when almost every fit old public school man is doing his bit in this war? Is it not absurd? If the formation of this new club is being granted permission by the committee of the original club it is a different matter altogether. Personally, I do not think this is the case.

Surely the older and more experienced motor cyclists, especially those in the habit of attending race meetings and hill-climbs, have not quite forgotten the smart little red flag with a hand-painted motor wheel, on which was clearly inscribed "The Public School Motor Cycle Club," Marlborough. D. CHURCHILL WEIR.

Bombay.

[The idea Mr. Roberts refers to was one to found a club for boys at present members of public schools. The P.S.M.C.C. is for both past and present members of the public schools, Universities, Osborne, Sandhurst, Woolwich, etc.—Ed.]

[Owing to lack of space we are obliged to hold over many letters of interest. They will be published as circumstances permit.—Ed.]



A Swansea vendor of *The Motor Cycle*, among other papers, and his 6 h.p. A.J.S. sidecarrier. Quite the most novel feature of this outfit, which belongs to Mr. Charles Evans, is the fine Dalmatian and his special platform. The advantages of sidecarriers for newspaper delivery are manifold.





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 India: Wilkinson & Co., 12, Dalhousie Square E., Calcutta.

Godbolds.

## PETROL TANKS.

Trade  
Enquiries  
Invited.



Telegrams:  
"Tanks,  
Wolver-  
hampton."

WHY PUT UP WITH LEAKY OR ILL-FITTING TANKS?

**We are Tank Specialists. Give us a trial.**  
 OUR METHOD OF MANUFACTURE ENSURES **THE BEST.**

### SPECIAL.

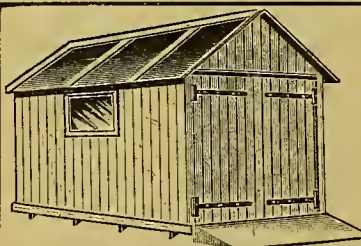
SPARE TANKS, complete as shown, Plated Taps, etc.

1 Quart - 5/3 each.



**THE GRAISELEY CYCLE TANK CO.,**

Vale Place,  
Merridale St.,  
WOLVERHAMPTON.



## MOTOR CAR HOUSE

Constructed of strong framework covered with Planed, Tongued, Grooved, and V Jointed Matchboards. Roof covered with good roofing felt and double doors as illustration. The whole to be made in sections to bolt together and sent Carr. Pd. to any station for cash with order only.

Prompt despatch guaranteed.

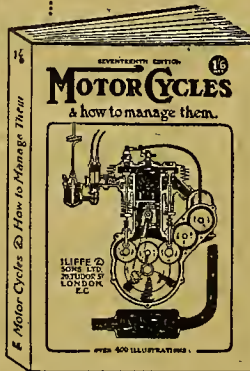
6x3x6ft. high.	8x5x7ft. high.	10x8x8ft. high.	14x9x9ft. high.	20x12x11ft. high.
55/-	115/-	165/-	255/-	£27 10s.
Floors 9/-	20/-	40/-	63/-	£6.
Creosoted 2/6	4/6	6/6	10/-	15/-

**THE NOTTINGHAMSHIRE TIMBER CO., Netherfield, Notts.**

F. W. BARKER : PROPRIETOR.

## The Seventeenth Edition

# of MOTOR CYCLES & how to manage them.



*The most complete work  
of the kind ever published.*

**376**  
Pages.

**425**  
Illustrations.

*Carefully revised, re-  
written throughout, and  
much enlarged.  
Many new features.*

Service riders will find this book  
an indispensable companion. . .

Price 1/6 Net.

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Obtainable from THE PUBLISHERS, ILIFFE & SONS LTD.,  
20, Tudor St., London, E.C. and all leading booksellers.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Gradient.

**?** I have had an argument with a friend who states that a gradient of 1 in 1 would be vertical, which I contend is wrong. Would you please oblige by stating whether or not a gradient of 1 in 1 would be vertical.—R.B.

For road surveying purposes a gradient of 1 in 1 is not vertical. It means that in one unit of horizontal distance the ground rises an equal distance. The resulting gradient would be extremely steep, the line being at an angle of 45° to the horizontal line. Perpendicular would be 1 in 0. In railroad engineering, we believe, 1 in 1 is recognised as perpendicular.

### Carburettor Flooding.

**?** I have had great trouble with my carburettor leaking after it has been flooded, and, being a novice, I would like some advice about it. I only run about 60 m.p.g. of fuel with my two-stroke. Do you think the jet is too large?—W.F.

Petrol will always flow from the carburettor after the needle valve has been lifted. If, however, it drips if left standing, take the needle between the finger and thumb and turn it round, pressing it down on its seating. Probably there is a little grit there. If this does not cure the trouble you must grind in the needle valve with a little oil and crocus powder. The high consumption might be quite well due to the leakage at the float chamber. This does not mean that the jet is too large. There might, however, be no harm in your trying a smaller one.

### Difficult Starting.

**?** My machine is a 5-6 h.p. Rudge, overhead valve, and is a little difficult to start. Is there any way to prime the cylinder, as there is no compression tap?—G.H.L.

To obtain easy starting, you should make sure all the following adjustments are in order: Contact breaker points clean with a gap of .4 mm., see that the rocker arm is not sticking, make sure the carbon brush is clean, clean the carburettor, make sure no air leaks exist in the induction pipe, that both valves are in good order with fairly good springs, and the tappets adjusted properly. When the engine is cold allow about .5 mm. clearance between the exhaust valve and tappet, and just clearance between the inlet rocker and valve. In the absence of a compression tap all you can do is to prime the engine *via* the sparking plug hole by removing the plug.

### Taxes for Three-wheelers.

**?** I bought a Morgan runabout this year and paid £1 registration and £1 for licence (in March last). I am now asked by the police to pay another £2 3s., making my licence £3 3s. in all. As this machine comes under motor cycles and tricycles, I thought I was quite right in only paying £1, and shall be glad if you can tell me if I shall have to pay the extra.—F.P.B.

If the machine weighs over 3 cwt. you have to pay £1 for registration, but the car only having three wheels is still a motor cycle so far as local taxation licence regulations are concerned, and you are therefore only liable to a local taxation licence of £1.

### Hints on Driving.

**?** I have a 3½ h.p. three-speed motor cycle, and I shall be glad if you will give me a few instructions as to the correct use of the gears. I find in my district the second gear with full throttle is as fast as I want to go. Is it better to use this or the top gear with half throttle, which would give about the same rate of speed? (1.) Which is better for the engine? (2.) Which way will use the least petrol? (3.) What is the correct way to use the air inlet? I close it to start the engine, and then open it wide, leaving it in this position until I want to start the engine again.—R.J.T.

(1.) It would be better for the engine, and (2.) it would be better for the sake of economy to drive on the top gear as much as possible, controlling the speed of the engine by the throttle. (3.) Close the air only to start, and open it when the engine is once going, only closing it if the engine misses fire through too weak a mixture or is inclined to knock on hills.

### Connecting Rod Touching Flywheels.

**?** Could you advise me on the following questions: I have a 2½ h.p. machine, and I am troubled with the connecting rod rubbing on the flywheels. It causes my machine to knock now and again, and also causes a rattle all the time I am running. (1.) Should the connecting rod touch both sides of the flywheel or should it not? There is no up and down play on any of the bearings, as I have had them all renewed. I was thinking of putting a liner on each side of the big end, but do not know if this will be good practice. (2.) Is this a common form of trouble? My last machine had all the bearings worn when I dismantled it, but I was never troubled with the connecting rod rubbing. (3.) Do you think I should put liners at each side of the big end, or have a special bush turned ⅛ in. longer than the standard, so that I could have ⅓ in. overlap at each side and thus prevent the connecting rod from touching the flywheels?—J.T.

(1.) The connecting rod should not touch the sides of the flywheels. Perhaps a thin washer on each side of the big end bearings will prevent this trouble. It is more annoying than serious. The only thing that really matters is vertical play. (2.) The trouble is not a common one. (3.) We should say that it would be hardly necessary to have a special bush turned, but, of course, this would be a rather more practical way of carrying out the alteration, though it would not be the cheapest way of getting over the difficulty.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

### Too Much Air.

**?** I have a 3½ h.p. horizontal twin with racing cams, which give a slight overlap in the valve setting. This machine is not very good at easy starting. I have seen to all the usual adjustments, i.e., air leaks, plug points, magneto. To start, I fully advance the spark and give full air and half throttle (this is usual, I think); carburettor, Amac with 32 jet. Would a 34 jet be abnormal for this type of engine? I may say the present petrol consumption is quite low. I have to flood the carburettor rather a lot to start.—V.L.A.

We should think your difficulty in starting is due to too much air, as you say you have the air lever open for starting. This is not correct; you should fully close the air, and give about one-quarter throttle. What is wanted is a small quantity of very rich mixture for easy starting. Your jet should be about correct, though you might try a slightly larger one. When running on full throttle you should find that by slightly closing the air an improvement in running is effected, if the correct sized jet is fitted. At all other speeds except starting, you should be able to give full air.



**Timing.**

**Q** I recently bought a 1912 4 h.p. motor cycle and sidecar, and wrote the makers with regard to timing and size of jet (B. and B. carburetter). They sent me the following instructions: Valve timing. Exhaust to close at the top of the stroke, and inlet to open immediately after. Magneto timing. Platinum points to break with lever fully advanced when the piston is at the top of the stroke. I thought there must be a mistake on this point, and wrote the makers again, and they still insist on this timing for the magneto. They also recommend a 40 jet to the B. and B. carburetter. It seems to me that with these settings there will be great overheating and heavy consumption. (1.) Of course, the valve timing is normal, but I cannot understand the magneto timing. Would you be good enough to give me your advice on the matter? (2.) What do you think is the reason for this timing? I cannot get a sensible answer from the makers—simply a dogmatic assertion that "this timing is best for a 4 h.p. machine." (3.) I have a 1915 Amac carburetter, and think of fitting this. What size jet do you think would be about right with medium weight sidecar and 10 stone passenger?—W.G.F.

(1.) We should say that the magneto timing given is decidedly on the retarded side. We would advise you to try timing it as follows: Piston top dead centre, ignition retarded, contact points just separating. If this setting should cause knocking when fully advanced the setting should be gradually retarded a bit at a time until the full advance can be taken without knocking being caused. We should say you could not better the valve timing. (2.) We fancy the makers must mean "retarded," not "advanced."

(3.) No. 40 jet seems very large. We would have thought 30 to 32 plenty large enough. The only way to arrive at the correct jet size is by experiment. First try fitting a jet which is too small to run the engine properly, then gradually increase the size until you have such a size that up to half throttle you require rather more air than throttle, but after half-throttle opening rather less air than throttle to get the best results. This applies to the old pattern B. and B. In the modern semi-automatic type of carburetter, such as the needle valve B. and B., Amac, Senspray, etc., you should be able to give full air at all speeds, after a start has been made, except perhaps at very slow speeds; also at full throttle opening, when the machine is pulling hard, closing the air levers slightly should be found to make an improvement in running if the correct sized jet is fitted.

**The Petrol System on a Four-stroke.**

**Q** Would you kindly state whether the petrol system of lubrication can be used on a low-powered four-stroke engine with the same success as on a two-stroke? My own machine, on which I am thinking of using this method, is a 2½ h.p. single-cylinder with overhead inlet valve.—S.A.

No; this type of lubrication cannot be used by itself on a four-stroke engine, as with this type of engine the charge is drawn into the cylinder only, whereas in a two-stroke the charge enters the crank case as well as the cylinder, so lubricating all parts. The petrol system can, however, be used in addition to the ordinary pump feed system, and, if the piston is inclined to be a tight fit, is very desirable, as it ensures a liberal supply of oil reaching the piston and rings.

**Misfiring on a Twin.**

**Q** I am having some trouble with a 1915 2½ h.p. twin. It is extremely difficult to start, but after starting and getting it warmed up it will run fairly well for some distance when it starts missing badly, and will stop altogether on a slight hill. I then examine the plugs—both new Lodges—the jet, and clean out the carburetter, making sure there is not a spot of dirt or water about. A start after about fifty yards sprint will still have it missing. All the inlet unions are bound with tape. The spark seems regular, but not too strong. The only thing I have not done is to fit new inlet valve guides. They do not seem to be detachable. The valves seem rather a loose fit in the guides. Can you give me any advice as to how I can effect an improvement?—W.M.

We do not think your trouble is due to worn valve guides. It is probably due to some detail in the magneto. Have you made sure that the contact breaker rocker arm is quite free and not sticking? See that the points make good contact, and are clean. Also clean the carbon brushes, and see that the high-tension wires are not damaged in any way. Also pay attention to the valve springs, these being weak might cause missing. Possibly (but unlikely) the magnets require remagnetising. We presume you have cleaned out the petrol feed pipe.

**EXPERIENCES WANTED.**

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"J.P." (Lincoln).—3½ h.p. Scott running with a petrol and paraffin mixture.

"J.B." (Cleator Moor).—Advice on upkeep of Hendee Special motor dynamo, also Alkum accumulators in connection with same outfit.

**RECOMMENDED ROUTES.**

**NORTHAMPTON TO WIMBLEDON.**—H.W.A.

Northampton, Newport Pagnell, Woburn, Dunstable, St. Albans, Aldenham, Bushey Heath, Harrow Station, Alperton Green, Ealing, Kew, Richmond, Wimbledon.

**HITCHIN TO TETBURY.**—C.McD.

Hitchin, Luton, Dunstable, Tring, Aylesbury, Thame, Wheatley, Oxford, Faringdon, Highworth, Cricklade, Malmesbury, Tetbury.

**PULBOROUGH TO LIMPFIELD.**—G.S.O.

Pulborough, Billingshurst, Horsham, Crawley, Copthorne Common, New Chapel, Lingfield, Crowhurst, Oxted, Limpsfield. Distance approximately 4½ miles.

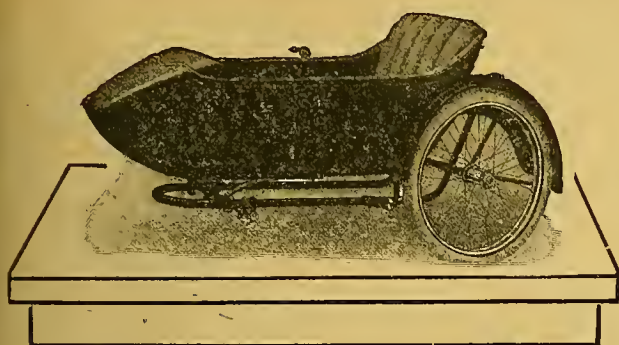
**PLUMSTEAD TO SOUTHSEA.**—C.H.

Plumstead, Woolwich, Eltham, Mottingham, Chislehurst, Bickley, Addington, Purley, Redhill, Reigate, Dorking, Guildford, Hindhead, Petersfield, Cosham, Portsmouth, Southsea.



Miss Isabell Wells, of Bristol, and her 3½ h.p. lady's model Brough. Miss Wells is quite a novice, but finds the horizontal Brough particularly suitable as a lady's mount, on account of its ease of starting and control. Its flexibility is also a point emphasised by this West Country motor cyclist.





## The *Canoelet* STANDS ALONE

—In splendid isolation the "Canoelet" Sidecar remains the perfect example of the engineers' skill and the body-builders' craft. Synonymous with comfort, "Canoelet" means all-round sidecar satisfaction, especially for the lady who has been used to riding in a car. She will appreciate the luxury of the "Canoelet."

MEAD & DEAKIN, Tyseley, BIRMINGHAM.

## Simms non-soot Plug increases engine power.



The fat and fiery spark obtained with Simms "non-soot" Plug ensures instantaneous combustion of the whole of the charge, so if your engine does not develop its full power fit Simms "non-soot" Plug.

This British-made Plug fires at all engine speeds.

Price each, Single or Twin Contacts,

**3/6**

Metric or American Threads.

All dealers, or from

### Simms Motor Units Ltd

191, Wandour St, Oxford St, London W  
Sole Makers.

E.L.H.

## I SUBMIT there

is a solid reason why you should adopt a  
**BINKS CARBURETTER, viz.:  
YOU CUT YOUR FUEL BILL IN TWO**

if you adopt my system and use my fuel. You can, of course, use petrol or benzol without alteration.

Price of  
Carburetter  
complete—

**49/-**

plus 10% extra  
war cost.

**FIT ANY  
MACHINE.**

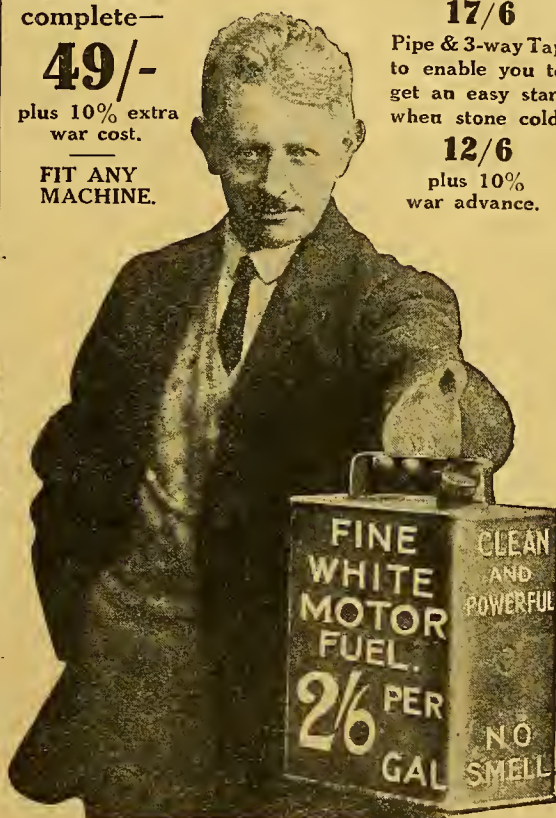
Small extra Tank  
to clip on Frame,

**17/6**

Pipe & 3-way Tap  
to enable you to  
get an easy start  
when stone cold,

**12/6**

plus 10%  
war advance.



## READ!

### MY 3-PHASE JET DAMPING CARBURETTERS

have such perfect vapourising properties that they enable you to use fuel at **2/6** per gallon in 42-gallon casks, which you are allowed to keep on your premises. Your engine will tick over dead slow, and pull dead slow in traffic, yet give the full power. It is almost impossible to tell you are not running on petrol at **2/9** a gallon. It cannot damage your engine or soot it up, and makes Motor Cycling possible in these times.

I give you my personal assurance of the truth of what is stated above. Please send at once for full particulars of the carburetter, and also for my Treatise on Carburation, and terms of One Month's Approval Trial.

**C. BINKS, Ltd., Eccles.**



# WAR - TIME TESTIMONY

In War  
as  
In Peace

**THE  
MOTOR CYCLE**

produces  
excellent  
results

and

Maintains  
its.

**Pre-eminence**

as a  
market place  
for  
**Second-hand  
Bargains**



The rates for paragraph advertisements in *The Motor Cycle* are: First 12 words or less 1/6, and 3d. for every additional two words. Each paragraph is charged separately and name and address must be counted. Advertisements should be posted to arrive not later than by first post on FRIDAY morning for the following Thursday's issue. Address *The Motor Cycle*, Coventry, or 20, Tudor Street, London, E.C.



During the war *The Motor Cycle* has enhanced its already high reputation as THE newspaper for motor cyclists. It is read by practically every owner (and intending buyer), whether in the army, navy, air service, or civil life, and is, therefore, the most suitable medium for readers' advertisements of second-hand goods — for sale, wanted, or to be exchanged.

## Callers on day of publication.

In respect to my advert. in *The Motor Cycle*, on arriving home on Thursday afternoon I found a gentleman had been waiting two hours to see my machine. Since then I have had 10 APPLICATIONS, and my wife informs me that as early as eleven o'clock on Thursday morning a man came to see the machine.

C. HECTOR PETERS,

13, Mayow Rd., Forest Hill, S.E.

## An excellent advertising medium.

I must give *The Motor Cycle* credit for being an excellent advertising medium. Your paper must have been newly published when QUITE A HOST OF OFFERS came for my carburetter, and also offers to supply tank I asked for.

JAMES PAUL,

124, High St., Perth.

## Sold same day.

I wish to thank you for inserting the last advert. I sent in place of the one that was too late.

It may interest you to know that the machine was SOLD THE SAME DAY that the advert. appeared. I also had MANY WIRES AND LETTERS.

Undoubtedly *The Motor Cycle* is THE paper for motor cyclists in every way.

J. L. RUTTER,

Newlands Park, Sydenham.

## Delighted with speedy replies.

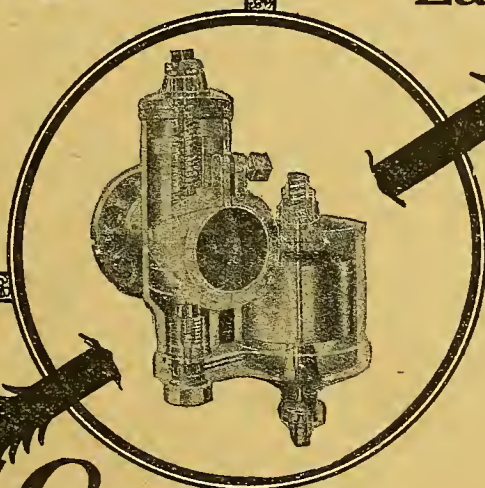
I am delighted with speedy replies received through the medium of your valuable paper, *The Motor Cycle*. Last week, advertising exchange, I have HAD REPLIES EVERY POST, and have suitably exchanged with a satisfied reader.

G. HARROP,

57, Abbeyhill Rd., Oldham.



# Inseparable



**Cool Running.  
Easy Starting.**

**Low Petrol  
Consumption.  
Great Flexibility.  
Plenty of Power  
on Hills.**

*The*  
**AMAC**  
*CARBURETTER*

*Write for Catalogue.*

**Aston Motor Accessories Co., Ltd.**  
Aston Cross, Birmingham.

AT  
**HARRODS**

**New Motor Cycles in Stock.**

3 h.p. Enfield Twin	- - -	£57 15
4½ h.p. B.S.A. Countershaft model		£62 0
2½ h.p. New Imperial-Jap	- - -	£38 0
2½ h.p. Calthorpe-Jap	- - -	£37 16
2¾ h.p. Allon	- - -	£42 0

Levis, Popular and Model "E."

Several other Lightweights.

**DEFERRED TERMS FOR MOTOR BICYCLES.**

New: One-fifth down as first deposit, and 2½% interest only charged.

Second-hand: Half-cost down instead of usual one-fifth.

**HARRODS LTD., London, S.W.**  
RICHARD BURBIDGE, Managing Director.

**"Bowden"**

**Everything depends**

—when furnishing or renewing the Control-equipment on your machine—upon the sagacity shown in selection. Wisdom is best served by choosing from

THE

**BOWDEN BRAKES,  
CONTROLS & WIRES, etc.**

because these Specialities are widely-renowned for their Excellent Construction and Reliable Service, and are produced in a big range to fill every possible want.

We await your request for copy of our fully-informative 1916 Art Catalogue.

**The Bowden Brake Co., Ltd.,  
Tyseley, . . . Birmingham.**

**Tyseley**



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application. Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.,** and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 2½ h.p., 3-speed, 1916, new, in stock.—Pickering, Mardol, Shrewsbury. [X7022]

LATEST Model A.J.S. in stock, 6h.p.; £102/18.—Cross, Agent, Rotherham. [X7880]

A.J.S. 4h.p. Combination, new, actually in stock.—Cowbridge Garage Co., Cowbridge. [X7671]

A.J.S., new 1916, 4h.p., in stock, £76; 1913 6h.p., in magnificent condition, £44.—Crow Bros., Guildford. [2131]

A.J.S. Late 1914 6h.p. Combination, 3 speeds, countershaft, in nice condition; £60.—6, Warren St., London. [2228]

A.J.S., 1913-14, T.T. model, 2½ h.p., 2-speed, clutch, kick starter; £30.—Ashworth, 4, Ferndale Rd., Clapham. [X7737]

1913 A.J.S. 6h.p. Combination, 3 speeds, usual accessories, tyres practically new; £45.—Parr, 11, The Chase, Clapham, S.W. [2204]

1916 A.J.S. 6h.p. Combination, special sidecar, only used in August, accessories, etc. (all unused); 100 gas.—T.H., 137, London Rd., Liverpool. [X7515]

A.J.S. 4h.p., 1915 Combination, hood, screen, 2 spare wheels, Lucas lamps, Watford speedometer, only run 1,600 miles; £75.—Smith, 3, Greenaway Gardens, Hampstead. [X7747]

## CASH OR EXCHANGE.

### NEW MODELS.

EXCELSIOR (American), 7 h.p., 3 speeds .. £75 0  
OVERLAND, 12 h.p., 4-seater, electric starting and lighting (tax £4 4s) ..... £225 0  
RITZ 4-cylinder 2-seater Light Car ..... £145 0  
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke ... £36 10  
ROYAL RUBY—J.A.P., 2½ h.p., 2-speed ..... £39 10  
WILLIAMSON Cy-cl-ca, W.C. Douglas eng. £126 0

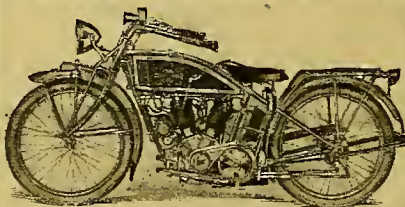
## 1916 (U.S.A.) EXCELSIOR.

7 h.p., twin, 84 × 80, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

A few late 1915 new 7 h.p. 3-speed models, with electrical equipment, at pre-tax price of £71 10s.

Exchanges quoted. Easy payments 2½% extra. We are sole Yorkshire distributors. Liberal terms to trade.

Cocchbuilt PERFECTION SIDECARS to suit, £13 10.



## SOLO MACHINES.

VILLIERS, 1915, 2½ h.p., 2-speed ..... £27 10  
DOUGLAS, 1914, 2½ h.p., 2-speed ..... £37 10  
DOUGLAS, 1914, single gear, chain-belt ... £28 10  
DOUGLAS, 1913, 2-speed ..... £34 10  
INDIAN, 1914, 7 h.p., 2-speed, spring frame £44 10  
INDIAN, 1912, 1 h.p., 2-speed ..... £29 10  
1912 3½ h.p. ZENITH-GRADUA ..... £26 10  
1912 3½ h.p. 2-sp. BRADBURY, chain drive £29 10  
1912 3½ h.p. Silent ROACH ..... £24 10  
1913 6 h.p. 2-speed CLYNO ..... £39 10  
HUMBER, 3½ h.p., 2-speed ..... £25 10  
RUDGE, 3½ h.p., F.B.E., good order ..... £19 10  
ALLDAYS, 3½ h.p., 2 speeder ..... £14 10  
TRIUMPH, magneto, spring forks, new tyres £18 10  
DOUGLAS, 1911, 2-speed, wants attention. £17 10  
N.S.U., 3½ h.p., 2-speed, spring forks ..... £17 10  
F.N., 2½ h.p., 2-speed, shaft drive ..... £17 10  
HENDERSON, 2-speed, 4-cyl. .... £46 10  
TRIUMPH, 1911, 3½ h.p., 3-speed ..... £26 10  
TRIUMPH, 1909, 3½ h.p., 2-speed ..... £24 10  
TRIUMPH, 3½ h.p. clutch model ..... £21 10  
TORPEDO, 3½ h.p., 1911 model ..... £17 10  
MINERVA, 2½ h.p., wants attention ..... £4 10  
DOUGLAS, 2½ h.p., twin, spring forks ..... £15 10

## SIDECAR COMBINATIONS.

WILLIAMSON, 1914, W.C., 2-cyl., 2-speed, 2-seater Sidecar ..... £62 10  
1916 5-h.p. COVENTRY EAGLE Combination £72 10  
1914 7-h.p. 2-speed INDIAN Combination ... £53 10  
1913 7 h.p. 2-speed ARIEL and Sidecar ... £42 10  
1913 6 h.p. 2-speed REX and Sidecar ..... £43 10  
1911 3½ h.p. 3-speed TRIUMPH and Sidecar £27 10  
QUADRANT, 7-h.p., 2-speed, twin, chain drive, and coach Sidecar. Fine lot ..... £45 10  
S.P.K., 3½ h.p., 3-speed, and Sidecar ..... £29 10  
1912 3½ h.p. 2-speed PREMIER and Sidecar £33 10  
1909 3½ h.p. 2-speed TRIUMPH and Sidecar £26 10  
1913 3½ h.p. 3-speed TRIUMPH and Gloria Sidecar ..... £39 10

## Halifax Motor Exchange

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Telegrams—"Perfection."

## MOTOR CYCLES FOR SALE.

### A.J.S.

1915½ 2½ h.p. A.J.S., 3-speed, perfect condition new, complete, £45; with Rally sidecar, £21 Wignall, Decorator, Moonnount Park, Wigan. [2]

1915 A.J.S., 5h.p., with 2 speeds, countershaft, starter, clutch, sidecar; bargain, £42/10.—Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2]

A.J.S., 4h.p., Millford 15 gn. sidecar combination complete with horn, tools, etc. outfit as new, ridden 500 miles; price £83, or best cash offer.—Up Okehampton, Devon. [X7]

A.J.S. 6h.p. 1915 Combination, hood, screen, and curtains, interchangeable wheels, enclosed oil drive, 3 speeds, Binks carburettor, in good order; —Hewett, 167, High St., Homerton, London, N.E. [1]

1916 A.J.S., 2½ h.p., 3 speeds, chain drive enclosed detachable back wheel, in perfect condition, run 800 miles, property of officer now overseas; £30.—Mrs. Malcolm Nicholson, Highfield Hall, L. [X7]

A.J.S., latest model, 6h.p. twin, three-speed, in changeable wheels, spare wheel complete, car ty special sidecar, patent hood, side curtains, extra body, adjustable wind screen, handsome turnout, entirely on substitute; £95, or nearest.—Scott, Catlin's Cafe, Grantham. [X7]

### Alldays.

ALLON, 2½ h.p., 2-stroke, 2-speed, 1916; in stock Pickering, Mardol, Shrewsbury. [X7]

ALLDAYS 2-stroke, in perfect order; £25.—Warre 386, Euston Rd. Museum 3081. [2]

COLMOORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Alldays. [10]

ALLDAYS Allon, 1916 models in stock; cash gradual payments 2½% only.—Referee Cycle Co., 3 High Holborn. [10]

ALLONS, new 1916 2-stroke 2-speed models, £ exchange or easy terms arranged.—Wanchope's, Shoe Lane, London. [2]

ALLON, 1916, registered March 30th, 2-speed, chain drive, kick start, little used, absolutely like new; 40 —Horn, Clothier, Bourne. [X7]

1916 Allons, only done 50 miles, complete all accessories; bargain, £45.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [21]

ALLDAYS Allons, all models, from stock, also 1 2-speed kick start De Luxe model, with Lucas accessories, £42, reduced to special price £37; also 1 2-speed, hand clutch, with Lucas accessories, £38/ reduced to £35; and 1916 single speed, only shop-soled £32/10, real bargain, reduced to £29/10, cash only Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [20]

### Antoine.

PETROL Free with 1911 Antoine 6h.p. twin, chain kick start; 15 gns.—Troward, 78, High St., Hanstead. [20]

MOTOR Cycle and Sidecar, 6h.p. twin Antoine Chater-Lea frame, Whittle belt; £12.—T79 Jackman's, Huret, Twyford, Berks. [X7]

### Ariel.

3-SPEED 3½ h.p. Ariel, splendid order; £20.—Colma Depot, 31, Colmore Row, Birmingham. [X78]

ARIEL, 3½ h.p., semi-T.T. model, with variable pull gear, a topping mount at bargain price, £25/10. —Tens' Garage, Bicester, Oxon. [X78]

1915 Ariel, 3½ h.p., 3 speeds, countershaft, excellent order; bargain, £45.—The Barnes Motor Garage opposite Red Lion, Barnes, S.W. [21]

ARIEL, 3½ h.p., free, hand-controlled variable pull decompressor, excellent condition, lamps; £21 38, Avonmore Rd., West Kensington. [21]

### Auto-Wheels.

AUTO-WHEEL, late 1914 model, splendid condition shock absorber fitted; £8.—Boylan, 54, Thornhill Rd., West Norwood. [20]

AUTO-WHEEL, late 1914 model, little used, in condition, £8/10; 1915 ditto, £10.—Murray's, 37 Charles St., Hutton Garden, Holborn. [X78]

AUTO-WHEEL, 1915 model, excellent condition, in Palmer cover, excellent on paraffin; accept £8/1 —Titchmarsh, 26, Habberley St., Kidderminster. [X78]

AUTO-WHEELS for sale, guaranteed perfect, £6/ £8/17/6, £7/10, £8/8, £9/9.—George Smith's, Clapham Junction, opposite Arding and Hobbs' Theatrical Bartersea 1271. [19]

### Bat.

1915 3-speed Bat-Jap, condition as new; £34.—Colmore Depot, 31, Colmore Row, Birmingham. [X78]

BAT-J.A.P., 1911, 8h.p., overhead valve, T.T. model —Elce and Co., 15-16, Bishopsgate Av., Cannon mile St., E.C. [105]



# MOTOR CYCLES FOR SALE.

Bat.

AT and Sidecar, 3-speed, fitted with every accessory, hood, screen, etc., nearly new; £75.—Warren's, Euston Rd. Museum 3081. [X7879]  
 AT-J.A.P., 1194, T.T., special overhead valve engine, 3-speed gear and kick starter, T.T. and touring bars, very new heavy Kempsall, grey finish, very fast, very up, in perfect order; £35.—Wallis, 49, High St., Saffron Walden, Essex. [X7779]

Bradbury.

12 Bradbury and sidecar, complete, lamps, etc.; £24.—Cross, Jeweller, Rotherham. [X7879]  
 RADBURY, 4h.p., free engine, all in good condition; £15.—455, York Rd., Wandsworth. [2122]  
 RADBURY, 1912, 4h.p., in very good order; £20.—Wallis, 49, High St., Saffron Walden, Essex. [X7784]  
 h.p. Bradbury, 3-speed gear, and sidecar; £20.—Colmore Depot, 31, Colmore Row, Birmingham. [X7844]  
 RADBURY, 4h.p., 2 speeds, in good order, with or without sidecar; £17/10 and £20.—6, Warren London. [2230]

12 3/4h.p. Bradbury, 2-speed, Bosch mag., Binks, wicker sidecar, and speedometer; £20.—Saunders, Highbourne. [X7939]  
 RADBURY and Sidecar, 2-speed, F.E., lamps, complete, splendid order.—Mitchell, 13, Pine Grove, Victoria Park, Manchester. [X7805]

13 Bradbury Combination, good condition, N.S.U. gear, lamp, horn, accessories; any trial; new s; bargain, £22.—Pusey, The Forge, Wycombe Ash, Bucks. [X7857]

PETROL Free with 1912 Bradbury, clutch, 16 gns.; 1913 3-speed, clutch, 24 gns.; 1913 2-speed, clutch, 26 gns.—Rider Troward, 78, High St., Heston, London. [X7857]

RADBURY, 1914, 4h.p., 3-speed, Sturmer-Archer gear, 12 gn. Comfy coach sidecar, P. and H. lamp and horn, in very good order, nearly new Dunlop all round; £35.—Wallis, 49, High St., Saffron Walden, Essex. [X7776]

Brough.

ROUGH 3 1/2h.p. Horizontal Twin, 1915-6, semi T.T., Sturmer 3-speed, handle-bar clutch, ridden 100; cost £70; as new; £52.—Davison, Chemist, Heston. [X7854]

PETROL Free with Brough, 1916, horizontal twin, Sturmer countershaft gear, Lucas horn, speedometer, mileage 270; 55 gns.—Troward, 78, High St., Heston. [2080]

B.S.A.

S.A., 1916, 3-speed, new; £56.—Digby, Mersea, Essex. [2120]

S.A., new 1916 models H and K actually in stock.—Moss, Wem. [X7810]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0792]

S.A. Auto-Wheel for sale, not done 150 miles, in perfect condition, hardly soiled; £10.—Holder, Mborne, Dorset. [2033]

S.A., 1913, 3 1/2h.p., coachbuilt sidecar, Binks carburettor, 64 to gallon Binks fuel; £38.—9, Lancaster Villas, Brighton. [X7743]

14 B.S.A., 3 speeds, kick-starter, and sidecar, complete; £50.—The Barnes Motor Garage, site Red Lion, Barnes, S.W. [2179]

S.A., 1915, model K, overhauled extravagantly recently, new cylinder and piston, etc.; £46, or offer.—Laytons' Garage, Bicester, Oxon. [X7894]

13 B.S.A., 3 1/2h.p., clutch model, lamps, accessories, splendid condition, tyres new; £26/10; light weight wanted.—456, Whitehorse Rd., Thornton Heath. [2012]

S.A., 1914, 4 1/2h.p., 3-speed countershaft, chain drive, Lucas lamps, Stewart horn, like new; 40 or; any trial given.—97, Malvern Rd., West Kilburn. [1943]

S.A., 1916, 4 1/2h.p., coachbuilt sidecar, chain-cum-belt, all accessories, done 1,500 miles, 2-speed, all to new, speedometer; £65.—H. McKinnon, Draper, Nbridge, Mon. [X7521]

S.A., 3 1/2h.p., late 1913, all chain, 2-speed, Chater-Lea upholstered sidecar, overhauled by makers in up at cost of over £10; bargain at 245.—Arthur Jackson, Trowbridge. [1933]

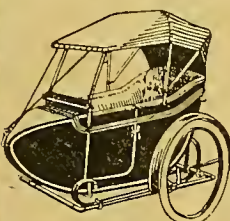
S.A., 1915 1/2, 4 1/2h.p., 3-speed, chain drive, sporting aluminium sidecar, disc wheel, large number accessories, guaranteed perfect condition, very little used; £10.—Brown, 20, Glover's Court, Preston. [X7861]

S.A.—Two models K actually in stock, £62 each, ready to ride away; Canoelet B.S.A. sidecars from 1915; deferred terms arranged, liberal exchanges; also 1912 clutch model, usual price £29/10, sale price £10, spot cash only.—Lamb's, 161, High St., Walthamstow, and 50, High Rd., Wood Green. [2004]

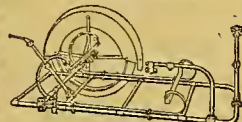
S.A., all-black, late 1915, extra large coachbuilt Bramble sidecar, 4-point attachment, lamp, 2 starters, Lucas horn, new 3in. Palmer back, spare carb. tube, belt, chain, valves, plugs, sundries, runs on 2 tins petrol free; owner proceeding France; £2.—Laffan, c/o Gazeley, Penny Stratford. [X7903]

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We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28 x 3in. tyre and four point attachment.



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4 1/2 h.p. STAR, brand new £68 model, big single, 3 speeds.	£55 0
2 1/2 h.p. Stationary Petrol Engine, new £22 10s. model, magneto, 2 flywheels	£16 10
4 h.p. ZENITH, 1911, Gradua variable gear	£19 15
2 1/2 h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc.	£29 15
7-9h.p. PREMIER, 1914, 2-speed countershaft, with £13 10s. new coach Sidecar	£49 15
6 h.p. REX, 2-speed, magneto	£11 15
Twin REX frame, tank, wheels, 2-speed gear, tyres, etc.	£7 5
2 1/2 h.p. MINERVA, magneto, variable gear	£8 15
7-9h.p. INDIAN, 1915, 3-speed, electrical model, and £18 Montgomery Sidecar.	£69 15
1916 7-9 h.p. HARLEY-DAVIDSON	£80 15
1916 ditto, electrical model	£89 0
1916 FORD Touring Car, detachable wheels	£85 0
2 1/2 h.p. EXCELSIOR, 1916, 2-stroke	£24 15
20 h.p. FORD Van, new, 1916 model	£130 0
20 h.p. FORD Van, 1915 model	£90 0
2 1/2 h.p. TYLER, 1915, 2-speed model	£24 15
2 1/2 h.p. TRIUMPH, 1910 model	£16 15
3 1/2 h.p. JAMES, 1912, 2-speed, chain drive, and coach Sidecar	£26 15
3 1/2 h.p. HUMBER, 1913, 2-speed, Sidecar	£29 15
3 1/2 h.p. PREMIER, 1913, 2-speed countershaft gear, belt and chain	£26 15
3 h.p. LINCOLN-ELK, 1911, magneto	£12 15
3 1/2 h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn	£25 15
5 h.p. Twin REX engine, carburettor and magneto	£9 0
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with sidecar	£69 15
3 1/2 h.p. HUMBER, 1911, 2-speed	£17 15
2 1/2 h.p. MATCHLESS-J.A.P., 1910	£10 45
1915 TRUMBULL Light Car, hood, screen, detachable wheels, speedometer, electric horn and lamps	£39 0

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New £5 weatherproof Magneto, £3 10s.; New Trouser Overalls, 10/6; Long Lengths Steel Tubing, 1 1/2 x 12, 14, 16, 18; Bosch Magneto, 50/-; B. and B. Carburettor, 12/6; Amac Carburettor, 12/6; New 20/- Brass Electric Sidecar Lamps, 5/6; Ditto Tail Lamps, 5/6; approval; New Spare Valves for Harley-Davidsons, 4/9; Coach-built Sidecar, £4 5s.; Douglas Carburettor, 10/6; New 26 x 2 1/2 or 2 1/2 Tubes, 6/-; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); £16 10s. New 26 x 2 1/2 & 2 1/2 rubber studded covers 12/6 and 13/-; Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburettor taken in exchange).

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4 1/2 h.p. New 1916 B.S.A. Models, chain drive £64, chain-cum-belt £62; these famous motor cycles are fitted with the countershaft 3-speed gear box; the all-chain drive is recommended for sidecar work, and the chain-cum-belt for solo; canoelet sidecars to fit, £14/17; cash, exchange, or easy terms.—Wauchope's, 9, Shoe Lane, Fleet St., London. [2059]

Calthorpe.

CALTHORPE-J.A.P., brand new, 2 1/2h.p. model, J.A.P. engine, and Enfield 2-speed gear; £34.—Moss, Wem. [X7811]

1915 Calthorpe-Jap, 2 1/2h.p., Enfield gear, in splendid condition, complete with lamps, Lucas horn; £24.—Robinson, 60, Yorkshire St., Oldham. [X7911]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

CALTHORPE 1914 Combination, 4 1/2h.p., Bosch mag., kick starter, 2-speed gear box, new condition; 35 gns.—R. Summerton, Halford, Shipston-on-Stour. [1945]

CALTHORPE, 2-stroke, 1916, latest model, Enfield 2-speed gear, just arrived from works; £32/11.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1978]

CALTHORPE-J.A.P., 1916, 2 1/2h.p., Enfield 2-speed, new, but slightly shop-soiled; special bargain, £33.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1977]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

CALTHORPE-J.A.P.'s, 2 1/2h.p. with Enfield gears, 36 gns.; three actually in stock; also a 1916 2-speed J.A.P. model, £34/10, reduced to £33, cash only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2000]

CALTHORPES, J.A.P. 2 1/2h.p. engines, 1916 models. £37/16, with Enfield 2-speed gear; also single-speed models, £32; and 2-strokes; we have several good second-hand machines of this make to offer from £17/10.—Wauchope's, 9, Shoe Lane, London. [2060]

Campton.

CAMPTON-VILLIERS, 1915, an exceedingly sound and useful machine; £21, or reasonable offer.—Laytons' Garage, Bicester, Oxon. [X7890]

Chater-Fafnir.

3 1/2 h.p. Chater-Fafnir, 2-speed, F.E., and sidecar; £12, 32.—1, Wards Terrace, Broad Lane, Tottenham. [2137]

Chater-Sarolea.

CHATER-SAROLEA Combination, F.E., Bosch, fine condition; trial; after 8.30, or Saturday afternoon.—12, Shalstone Rd., Mortlake, S.W. [2156]

Clyno.

CLYNO and sidecar, 6h.p., 2 speeds, free; £30, complete; reason sale, called up.—Page Hall, Penrith. [X6939]

CLYNO 2-stroke, splendid order, with all accessories; £21/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X7827]

CLYNO and Sidecar, 1915 conversion; £65, or exchange 3 1/2h.p. and cash, Ariel preferred.—38, Granville St., Grimsby. [X7783]

1912 6h.p. Clyno, 2 speeds, and coachbuilt sidecar, excellent order, many extras; £35.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2180]

Coventry Eagle.

COVENTRY Eagle, 2 1/2h.p., 2-stroke, in brand new condition, little used; £25.—Wallis, 49, High St., Saffron Walden, Essex. [X7790]

Connaught.

1914 Connaught, 2-stroke, 3 speeds; £21.—Cross, Eppingham Sq., Rotherham. [X7878]

CONNAUGHT, 1914, 2-speed gear box, perfect; £26.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1966]

1916 Connaught, in first-class condition, fitted with Dunlop tyres and belt; £23.—Firth, Woodbridge Rd., Moseley, Birmingham. [X7869]

CONNAUGHT, 2 1/2h.p., 2-stroke, Sturmer 3-speed, kick start, will run on paraffin; £33.—Miss Davis, 2, King Edward Rd., Nuneaton. [X7816]

CONNAUGHT, genuine bargain, thorough good condition throughout, £21; another with 2-speed gear, £27.—Colmore Depot, 31, Colmore Row, Birmingham. [X7835]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models; prices from £28/17/6.—87-91, John Bright St., Birmingham. [X7882]

Douglas.

DOUGLAS, 1913, 2-speed, T.T.; £32.—Warren's, 386, Euston Rd. Museum 3081. [2092]

DOUGLAS, 1912, 2-speed; £25.—Warren's, 386, Euston Rd. Museum 3081. [2093]



## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1916, better than new: £53.—Warren's, 386, Euston Rd. Museum 3081. [2091]

DOUGLAS, 1912, 2-speed, just overhauled; £20.—Box L2,166, c/o The Motor Cycle. [2035]

1911 Douglas, good tyres and good running order; £12.—455, York Rd., Wandsworth. [2125]

DOUGLAS, 1915, 2-speed, £40; another, £42.—Warren's, 386, Euston Rd. Museum 3081. [2090]

DOUGLAS, 1915, 2-speed, new condition, with accessories; £45.—Pickering, Mardol, Shrewsbury. [X7021]

DOUGLAS, 2½ h.p., first to view will purchase; £15, no offers.—14, Doddbrooke Rd., West Norwood. [1541]

DOUGLAS Combination, late 1915, 4 h.p., 3 speeds, indistinguishable from new, fully equipped; what offers? [X7021]

DOUGLAS, 1916, 2½ h.p., 2 speeds, T.T. [1541]

DOUGLAS, 1915, 2½ h.p., 3 speeds, T.T. [1541]

DOUGLAS, 1914, 2½ h.p., 2 speeds, T.T. [1541]

DOUGLAS, 1911, 2½ h.p., at £16.—6, Warren St., London. [2223]

DOUGLAS, 2½ h.p., just overhauled, worn parts renewed; seen by appointment; £13/10.—7, Allison Rd., Acton. [2027]

1915-16 Douglas, in new condition, done 300 miles only, Lucas lamps, etc.; £48.—Cross, Jeweller, Rotherham. [X7877]

DOUGLAS, slightly used, War Office model, as new; £55, complete.—Colmore Depot, 31, Colmore Row, Birmingham. [X7823]

DOUGLAS, 2½ h.p., 2-speed geared, thoroughly overhauled; £27.—Colmore Depot, 31, Colmore Row, Birmingham. [X7835]

1915 2-speed T.T. Douglas, special engine and fittings; £46.—Colmore Depot, 31, Colmore Row, Birmingham. [X7842]

1911 Douglas, complete, Lucas lamp set and horn, running order; £10.—Shepherd, Cupernham, Romsey, Hants. [7512]

1911 Douglas, 2½ h.p., excellent tyres, good order; £15.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2181]

DOUGLAS, 2½ h.p., War Office model, all accessories, excellent condition; £40, no offers.—New Ship Garage, Brighton. [1731]

2½ h.p. 1910 Douglas, good running order and condition; £15, or good make lady's bicycle and cash.—Shingles, Cromer. [2019]

1913 Douglas Model N, single speed, countershaft, perfect condition; £21/10.—Whitehead, Braunstone Gate, Leicester. [X7806]

1915 Douglas, model V, 2-speed, new condition, 2,000 miles, delivered October; £46.—Eckford, 53, Kingston Hill, Surrey. [1931]

1915 4 h.p. Douglas, Colonial model, 3-speed, sporting coachbuilt sidecar, in good order; £58.—179, Balaam St., Plaistow, E. [1940]

2½ h.p. Douglas, 1911 model, single speed, very powerful and fast; £17/10, guaranteed.—Wauchop's, 9, Shoe Lane, London. [2061]

1914 T.T. 2-speed Douglas and accessories, in good condition; £38, seen any time.—Bounds, Garage, 225, High Rd., Kilburn. [1985]

1915 T.T. 3-speed Douglas, and accessories, in perfect condition; £42/10, seen any time.—Bounds, Garage, 225, High Rd., Kilburn. [1984]

1913 Douglas, 2½ h.p., 2 speeds, excellent tyres, T.T. bars, complete; £35.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2182]

DOUGLAS, new, latest pattern, 2½ h.p., models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 1914, T.T., 2-speed, kick starter and clutch, new tyres, in fine order; 40 gns.—Welfare, 21, Barmouth Rd., Wandsworth, S.W. [2141]

DOUGLAS, 1914, 2½ h.p., 2 speeds, clutch, kick starter, speedometer, lamp, horn, oil as new; £37/10.—455, York Rd., Wandsworth. [2121]

DOUGLAS, 1915½ (May), 2½ h.p., 3 speeds, model U, P and H lamp, and all accessories, as new; £45.—Ames, Station Hill, Basingstoke. [X7514]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

1914 T.T. Douglas, 2½ h.p., lamps, mechanical horn, etc.; £38.—7, St. Mark's Rd., W. (few minutes from Notting Hill Station, Met. Rly., via Baker St.) [2128]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

DOUGLAS, T.T., 2½ h.p., 1912; £20; little used, thoroughly overhauled, perfect condition, fast, good climber, new tyres; trial.—215, Birchfield Rd., Birmingham. [X7855]

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carrying our full and comprehensive Guarantee.

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**ZENITH, 1914 (late), 8 h.p., countershaft and clutch, lamps and speedometer, Verona coachbuilt Sidecar, like new**..... £68  
**REX, 1914, 6 h.p., 2-speed, modele de luxe, handle starting, coach-built Sidecar, just been overhauled**..... £40  
**TRIUMPH, 3½ h.p., 2-speed countershaft, Sidecar**..... £32  
**INDIAN, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar**..... £62  
**INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame**..... £42  
**ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar**..... £60  
**REX, 1913, 6 h.p., 2-speed, cane Sidecar**..... £28  
**RUDGE, 1913, 5-6 h.p. Multi, with Rudge Sidecar**..... £50  
**INDIAN 1910 5 h.p. Combination, 3-speed**..... £65  
**MATCHLESS 1914 8 h.p. 3-speed Combination**..... £60  
**B.S.A., 1914, 4½ h.p., 3-speed, with Swan Sidecar**..... £67

#### SOLO MODELS.

**DOUGLAS, 1911, 2½ h.p., 2-speed, spring forks**..... £20  
**GALTHORPE, 1914, 2 h.p., 2-speed**..... £19  
**RUDGE 1913 3½ h.p. Multi, T.T. bars**..... £33  
**IVY, 1915, 2-stroke, single-speed**..... £18  
**TRIUMPH, 1912, 3½ h.p., clutch model**..... £28  
**NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine**..... £34  
**TRIUMPH, 1912, 3½ h.p., clutch model**..... £30  
**TRIUMPH, 1912, 3½ h.p., clutch, Philipson pulley**..... £28  
**REX, 1913, 3½ h.p., 2-speed, and clutch**..... £29  
**HARLEY, 1915, 7-9 h.p., 3-speed, T.T. bars**..... £56  
**RUDGE, 3½ h.p., Philipson pulley, 1915 improvements**..... £42  
**SUN-VILLIERS, 2½ h.p., 1915, 2-stroke**..... £18  
**ENFIELD, 1915, 2½ h.p., 2-speed, 2-stroke**..... £35  
**BROWN, 3½ h.p. model, Bosch magneto, 2-speed gear**..... £14  
**DOUGLAS, 1915, 2½ h.p., 2-speed**..... £49

#### CARS AND LIGHT CARS.

**N.A.G., 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set**..... £300  
**SUNBEAM, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled**..... £295  
**KNIGHT JUNIOR, 1914, 12 h.p., 2-seater, sporting body**..... £155  
**MINERVA, 26 h.p., 5-seater, make an excellent 25 cwt. van. Perfect mechanical order**..... £80  
**MORRIS-OXFORD, 1913, 10 h.p., all lamps and accessories (including speedometer)**..... £135  
**G.W.K., 1914, 9 h.p., just re-painted and new hood fitted**..... £100  
**G.W.K., 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn**..... £160  
**DEEMSTER, 1914, 9-5 h.p., 2-seater, all accessories; a bargain at**..... £110

**1914 and 1915 DOUGLAS MACHINES**  
bought for Cash.

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## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1914 model, bought end of July, 1913, powerful, fast, sporty, in splendid condition, new; £32, or close.—Staithforth, 82, Sheffield, Chesterfield. [X74]

DOUGLAS, 2½ h.p., in splendid condition, nearly new, tyres, enamel good, lamps, pump, etc.; reason for selling; £14, or offer.—E. Andrews, 11, Hereshell, Forest Hill, S.E. [20]

1915 Douglas, 2½ h.p., done 500 miles, speedometer, lighting dynamo and lamps, condition perfect; £50, no offers.—Kingston Hotel, Kingston, S.W. Phone: 744 Kingstou. [19]

DOUGLAS 1915 4 h.p. Combination, 3 speeds, Color model, spares, Pedley cover, 2 inner tubes, chain, plugs, tools, Lucas lamps, horn; £60.—Sud 572, Bearwood Rd., Smethwick. [X7]

1914 Douglas, 2½ h.p., model W, clutch, kick-start head lamp set and horn, just overhauled, engine guaranteed perfect, condition excellent; £38.—Robinson's Garage, Green St., Cambridge. [21]

DOUGLAS, 1913, 2½ h.p., 2-speed, tyres nearly new, P. and H. head lamps and generator, rear lamp horn, spare belt and tube case; £35.—Wilkins, Simps and Co., 11, Hammermith Rd., London. [19]

2½ h.p. Douglas, 2 speeds, clutch, kick starter, 2 lamps, 2 generators, fully equipped, beautiful mount as new, run under 1,000 miles; £36/10, on sale.—Thorpe, Whitehouse Rd., Thornton Heath. [20]

1912 Douglas, 2½ h.p., model U, footboards, 1 turned handle-bars, engine thoroughly overhauled, excellent tyres, P. and H. lamp set, horn; £24.—Robinson's Garage, Green St., Cambridge. [21]

DOUGLAS, latest model, 2½ h.p., U, 2-speed, The son-Bennett mag., 2 lamp sets, Lucas horn, 100 miles only, statement guaranteed; see test car, genuinely new machine; £54/10.—Robinson's Garage, Green St., Cambridge. [21]

**Elswick.**  
3½ h.p. Elswick Combination, not done 500; owner; £4 listed; £45, cost £90.—Motorist, 146, Cloude Rd., Islington. [20]

**Enfield.**  
COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [08]

1912 2½ h.p. Enfield, just overhauled; £15, no offers; approval.—Clark, Section, Tynemouth. [X75]

3 h.p. Enfield Twin, as new, Lucas set; £20, bargain.—Flying Officer, 100, High Rd., New Southgate, N. [19]

3 h.p. 2-speed Royal Enfield, condition as new; £24/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X78]

ENFIELD Combination, 1914, hood, screen, speedometer, lamps, spares; £57.—2, Barfield Rd., Linstone. [19]

ROYAL Enfield Combination, 6 h.p., coachbuilt or 40 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X78]

ENFIELD 1913 Combination, new 1914, lamp spares; £40; any trial.—198, Cavendish R, Balham, S.W. [22]

ENFIELD, 3 h.p., 1914, good condition, 140 m.p. E. substitute, vaporiser fitted; £32.—Jackson, 89-0 Lane, Bradford. [21]

1915 Enfield Combination, splendid order, just overhauled, Klaxon, new Palmer 650; £70, or nearer.—Milner, Hawes, Yorks. [20]

1915 Enfield 3 h.p. Twin, excellent condition, speedometer and all accessories; £40.—Edgar Chasman, 7, Castle St., Worcester. [X78]

1916 6 h.p. Enfield Combination, and accessories, new, only done 50 miles; £43/10; seen any time.—Bounds, Garage, High Rd., Kilburn. [19]

1911 2½ h.p. Enfield Twin, good condition throughout; £14 secured; seen by appointment.—William, Oak Cottage, Christchurch, Coleford, Glos. [19]

2 h.p. 1916 Enfield, 2-stroke, 2-speed, latest model with 2 Lucas lamps and horn, in stock, ready for the road.—Robinson's Garage, Green St., Cambridge. [21]

1915 6 h.p. Enfield Combination, dynamo lighting, accessories, perfect throughout; accept first offer over £70; must sell quick.—Bentley, Averdare, Glasorgan. [20]

1916 6 h.p. Enfield Combination, 90 gns.; 1916 3 h.p. twin, 55 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [08]

NEW B.S.A. Enfield Combinations from stock, 90 gns. also a good 1916 second-hand combination, near new, with all accessories, 80 gns.—Wauchop's, 9, Shoe Lane, London. [20]

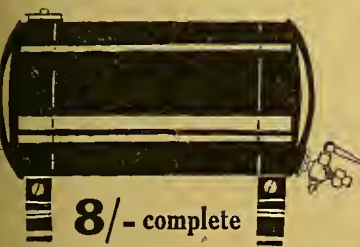
ENFIELD 1916 6 h.p. Combination, hood, special fold screen, watch, mechanical horn, etc.; £38; Friday or Tuesday, or appointment.—S. Elsie, 11, Lansdowne Av., Leigh-on-Sea. [20]

ENFIELD, 1915, electrically equipped model, hood and screen, usual price £89/10, sale price £84/10; also 1915 3 h.p. 2-speed touring model, usual price £44, sale price £37/10; no exchanges, cash only.—Lane, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [20]



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Specially designed for **Paraffin Conversions**, with large filler cap, union cock, T piece, and two feet of copper tubing, the whole forming a complete outfit Capacity 1 quart, length 7½ in.

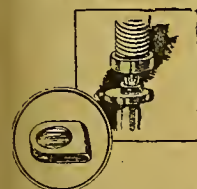


**8/- complete**

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an opportunity you should not miss.  
26 x 2½ **22/6** 28 x 2½ **28/-**  
26 x 2¾ **25/-** 28 x 3 **29/6**

YOU can overcome the wear on the valve gear of your engine in 10 seconds by the use of the **Service Valve Tappet Adjusters**



Made in following thicknesses:  
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Price 2d. each or 6d. per set of 4.

**Second-hand Accessories of all kinds**—and Motor Cycles—in good condition wanted for cash or exchange. Any goods supplied on confidential easy payments if desired.

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**The 'All-Weather' Belt**



Prices below are for Standard No. 1 Quality—

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Shop-soiled, spliced, and two-length Belts at two-thirds of above prices.

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Telephone ... 6430 Holborn.

## MOTOR CYCLES FOR SALE.

Enfield.

**ENFIELD** 1916 6h.p. Combination, latest model, just arrived from works; immediate delivery; 90 gns.; exchanges; best prices allowed.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1981]

**ENFIELD**, 3h.p., 1916, latest model, just arrived from works; immediate delivery; make sure of this now; 85 gns. and two Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1979]

**1916 Enfield**, 6h.p., and sidecar, 2-speed gear, hand clutch, handle starter, tyres perfect, Stewart horn, Miller lamp, machine in lovely running order, and absolutely as new; 70 gns.—Julian, Broad St., Reading. [X7901]

**ENFIELD** Combinations, latest models. We have them in stock, and desire your enquiries concerning either exchange or extended payment propositions; very high prices allowed for good machines.—Laytons' Garage, Bicester. [X7895]

**1916 Enfield** 6h.p. Combination, spring handle-bar, wind screen, lamps, horn, watch, 3 tins petrol, mileage 1,000, perfect condition; 75 gns.—Lettis, Osborne, Romney Lodge, 177, New Park Rd., Brixton. Seen at 163, Loughborough Rd., Brixton. [2212]

**BIRMINGHAM Enfield Agent**, P. J. Evans, 87-91 John Bright St.—Immediate delivery all models, including lighting set combination, special 8h.p. with hood and screen, and standard 6h.p. combination, also 3h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X7888]

**ENFIELDS**—Six models actually in stock ready to ride away: 8h.p., 92 gns.; two 6h.p. standard combinations, 85 gns.; electrically equipped, 6h.p., 105 gns.; 3h.p. touring model, 55 gns.; T.T. model, 55 gns.; liberal exchanges, generous deferred payments.—Lamb's, 161, High St., Walthamstow, and 50, High Rd., Wood Green. Phone. Walthamstow 169, and Hornsey 1956. [2002]

Excelsior.

**AMERICAN** Excelsior, late 1915, 7-9h.p., 3 speeds, kick starter right hand side, convertible 2-seater sidecar, does 60 m.p.g.; price 60 gns.—124, Philip Lane, Tottenham. [2136]

Fafnir.

**FAFNIR**, 6 gns., 3½ h.p., m.o.v.; Bosch, B. and B., overhauled, good order.—Railway Garage, Staines. [1905]

F.N.

**F.N.**, 2½ h.p., 2-speed, clutch, handle start, footboards; £13.—Fairlight, Brookwood. [2139]

**PETROL** Free with 1912 4-cyl. F.N.; 17 gns.—Troward, 78, High St., Hampstead. [2076]

Harley-Davidson.

**7-9h.p. Harley-Davidson** Combination, 1916, in stock.—Pickering, Mardol, Shrewsbury. [X7020]

**1915 Harley-Davidson**, 3-speed, Canoelet sidecar, little used; £69.—B., Roseneath, Auckland Rd., Caterham. [1974]

**HARLEY-DAVIDSONS**, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

**HARLEY-DAVIDSON**, late 1915, scarcely used, 11F, runs 75% paraffin; bargain, 50 gns.—Cooper, Baker, Windsor. [1748]

**HARLEY-DAVIDSON**, 11F, and family body, sound, all on; £72.—Wm. Andrews, Stanton Villa, New Lawa Rd., Ilkerton. [X7726]

**7-9h.p. 1915 Harley-Davidson**, fitted with dynamo lighting, in condition like new; £65, guaranteed.—Wachope's, 9, Shee Lane, E.O. [2072]

**COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**1915 Harley-Davidson** Combination, 11F model, 3 speeds, new tyres, perfect condition and tune; £70.—Donald, Ingleholm, Vernon Rd., Leigh-on-Sea. [X7520]

**HARLEY-DAVIDSON** Combination, 1916, new, not done 200 miles, with £3 seat on carrier, complete; £100.—Harry Muscovitch, 298, Commercial Rd., London, E. [2047]

**1915 Harley-Davidson**, 11J, 7-9h.p., 3-speed, electric lights and horn; £55, carriage paid; approval; will take 3½ h.p. or lightweight part-exchange.—Macrae, 2, Castle Terrace, Edinburgh. [1944]

**SLIGHTLY** Used Harley-Davidson Combination, electrically equipped, complete with new £20 sidecar, with all 1916 improvements; £75, genuine bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [X7837]

**1915 Harley-Davidson** and Coachbuilt Sidecar, storm apron, lamp, horn, tools, etc., purchased from officer now abroad, done about 4,000 miles.—12, Canterbury Terrace, Maida Vale, W. Phone: Paddington 3214. [1502]

**HARLEY-DAVIDSON**, 1915, 7-9h.p., 3-speed, with Montgomery coachbuilt sidecar, horn, lamps, tools, and spares, in perfect condition, not ridden since overhauled by makers; £65.—Horne, Colley Manor, Reigate, Surrey. [X7760]

**HARLEY-DAVIDSON**, 1915, 7-9h.p., 3 speeds, perfect condition, nearly new, complete, all accessories, coachbuilt sidecar, wind screen, luggage carrier and petrol carrier; £80.—Gladwin, Empire, Kingston-on-Thames. [X7764]

## SHOP-SOILED SIDECARS!!

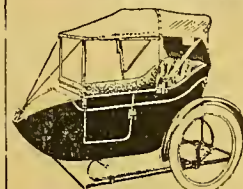
We have a few new but showroom-soiled **FARLOW Sidecar**, which we offer as follows:

Model No. 1. Usual price £11. **SALE PRICE £8.**  
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All carrying our usual guarantee.

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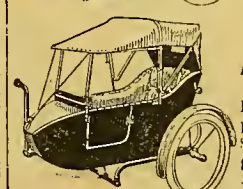
Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyers' ideal.



Model 1.  
**Underslung Chassis, with Luggage Carrier combined.**

Splendidly made and built for hard work.

£11 0 0  
Hood ..... £2 4  
Screen ..... £1 0



This is Model No. 2.

**A BEAUTIFUL LIGHT SIDECAR.**

PRICE ..... £10 0  
Hood ..... £2 4  
Screen ..... £1 0

Delivery from Stock.  
Your Agent will supply

## NEW STOCK FOR IMMEDIATE DELIVERY.

1916 6 h.p. **ENFIELD** Combination, c/built 90 gns.

1916 5-6h.p. **ENGLISH** Excelsior Dig

1916 2½ h.p. **OMEGA-J.A.P.**, c/shaft gear ... 38 gns.

1916 **FORD** Ambulance, 20 h.p., ..... £135 0

1915 11 h.p. **TRUMBULL** Light Car, new ... £120 0

## SECOND-HAND BARGAINS.

1915 2½ h.p. **DOUGLAS**, 3-sp., Colonial model £45 0

3½ h.p. **SCOTT**, and smart Sidecar, ..... £30 0

1914 3½ h.p. twin **JAMES**, 3-speed, counter-shaft gear, speedometer, and Sidecar, ..... £33 0

2½ h.p. twin **ENFIELD**, chain drive, 2-speed £20 0

1915 6 h.p. **ENFIELD** Combination, beautiful condition, well fitted up ..... £70 0

3½ h.p. **HUMBER**, 2 speeds, handle starting, fine gear ..... £22 0

1911 3½ h.p. **P. & M.**, 2-speed, chain drive, M.O.V., nearly new Dunlops ..... £22 0

1915 2½ h.p. **WOLF**, 3-speed, done 900 only £25 0

1914 3 h.p. **OMEGA**, 2 stroke ..... £16 0

1909 3½ h.p. **REX** de Luxe, 2-speed, handle starting ..... £17 0

1912 6 h.p. **A.C. Sociable**, fine condition ... £44 0

1915 6 h.p. **NEW HUDSON**, 3-sp., counter-shaft gear, kick starter, Farlow Sidecar £59 10

18-22 h.p. **SIDDELEY** Lorry, 4 speeds, chain drive, 2 ignitions ..... £50 0

10½ h.p. **HUMBER** Lorry, 3 speeds, two ignitions ..... £40 0



**NEW MOTOR CYCLE FRAMES.**

Fully Guaranteed,  
25/- each.

## ODD BARGAINS.

Dr. pped Top Tube Frame, new ..... £3 0

P. r. S. Hand 26 x 2½ Wheels, Tyres, Belt Rim £4 5

V.S.U. 2-speed Gear, complete with controls 65/-

Lycett's 1916 La Grande Saddle, soiled only 15/-

Pair 1915 A.J.S. 6 h.p. spring forks ..... 39/-

Rigid Sidecar, no tyre ..... 17/6

New Splitdorf-Dixie Magneto, single, anti-... £4 0

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F.R.S. Lamp Set, 1,000ft. beam, shop-soiled 35/-

F.R.S. Lamp Set, 1,000ft. beam, shop-soiled 45/-

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## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**HARLEY-DAVIDSON** Combinations, with their newest sidecars, actually in stock, £101/15, and £110; deferred payments if desired: liberal exchange.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2005]

**HARLEY-DAVIDSON**, the Silent Grey: immediate delivery of 1916 models, all new 1915 types sold out; one of two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0617]

## Henderson.

**HENDERSON**, 1915½, 4-cyl., 10h.p., short model, scarcely used, absolutely unscratched, semi T.T. bars, 2-speed, clutch, 65 m.p.s., all accessories, electric light, spare chains, tubes, etc.; £68.—P. Bush, Royal Aircraft Factory, Farnborough. [X7733]

## Humber.

**1912 3½h.p.** 2-speed Humber, splendid sidecar or solo mount; £25.—Colmore Depot, 31, Colmore Row, Birmingham. [X7845]

**HUMBER**, 3½h.p., 2-speed, condition good, also coachbuilt sidecar; offers.—17, Uxbridge Rd., Shepherd's Bush. [2028]

**HUMBER**, 2-speed, new coachbuilt sidecar, perfect; owner called up; £26, or nearest.—111, Howard Rd., Walthamstow. [2038]

**HUMBER**, 4h.p., 3-speed, comfortable sidecar, new Dunlop on back, good condition; £25.—Fleming, St. Nicholas St., Leicester. [X7909]

**1915 3½h.p.** 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]

**1912 3½h.p.** Humber, 2-speed, handle starter, with Mills-Fulford coachbuilt sidecar, in perfect order.—Webster, Lyndhurst, Bray's Lane, Coventry. [X7672]

**HUMBER** 2½h.p. Twin, 3-speed gear, engine, tyres all as new, very fast, and a smart little machine; £20.—Wallis, 49, High St., Saffron Walden, Essex. [X7777]

**HUMBER**, 3½h.p., P.M. 2-speed, chain drive, Bosch, B. and B., lamps, wicker sidecar; £18, complete; seen after 8, or Sunday.—49, Estcourt Rd., Woodside, Oroydon. [2043]

**1912 3½h.p.** 2-speed Humber, with coachbuilt sidecar, in good order; £32/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**1914 4h.p.** Humber, water-cooled, 3 speeds, clutch, and handsome coachbuilt sidecar, excellent hill-climber; £50.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2183]

**HUMBER**, 1913, 4h.p., 3 speeds, free engine, handle starting, speedometer, lamps, horn, like new throughout; £27/10; sidecar if required.—3, The Mews, Victoria Rd., Clapham, S.W. [2213]

## Indian.

**PETROL** Free with Indian, 1913, 5-6h.p., T.T.; 25 gns.—Troward, 78, High St., Hampstead. [2078]

**INDIAN**, 1915, 7-9h.p., T.T., free engine, in real good condition; £36.—6, Warren St., London. [2225]

**7-9h.p.** Indian, 1915, coachbuilt sidecar, complete, as new; £63.—Tompsett, Moors, Marden, Kent. [1954]

**1915 5h.p.** 3-speed Indian Combination, lamps, speedometer; £70.—K., 24, Chester Rd., Blackpool. [X7727]

**1915 5h.p.** 3-speed Indian, Verona sidecar; £50; lamps, spares, good order.—Elander, Stotbridge. [2114]

**7-9h.p.** Indian, 1914, T.T., clutch model, excellent condition, very fast; £40.—Bevir, Hurstdown, Hendon. [1958]

**INDIAN** Combination, 7h.p., 1914, sporting sidecar, P.H. lamp, etc.; £40.—22, Park Rd., Wandsworth Common, London, S.W. [2045]

**1914 7h.p.** Indian and coachbuilt sidecar, fitted first-class, splendid order throughout; offers.—Rowley, 35, Lumley Rd., Skegness. [2017]

**TWO** 1914 Indian Combinations, 2-speed, clutch models, perfect condition; bargain, price 40 gns. and 48 gns.—280, Narborough Rd., Leicester. [X7753]

**INDIAN**, 1914½, spring frame, 2 speeds, Burberry 1916 coachbuilt sidecar to match; £46; exchange Douglas and cash.—Stratton, Mount Pleasant, Redditch. [2009]

**INDIAN**, 7-9h.p., 1915, model de luxe sidecar, hood and screen, electric lamp and horn, speedometer, as new, not done 400 miles; £75.—Edwardes, 20, Blackfriars Rd., S.E. [2211]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £70.—P. J. Evans, John Bright St., Birmingham. [X7884]

**INDIAN**, late 1915, 3-speed, T.T. bars, comfortable sporting sidecar, condition throughout new, many spares; got car; £58, no offers; photo.—6, Churchways Crescent, Horfield, Bristol. [2055]

**INDIAN** 1916 Powerplus Model; with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £60.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0639]

## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN**, 5h.p., 3 speeds, and Swan sporting coachbuilt sidecar, in excellent condition; £47/10. Cass's Motor Mart, only address, 5, Warren Rd., Euston Rd., W. Museum 623. [2]

**1915 T.T. Indian**, 3-speed gear and clutch, 1 starter, electric lighting set, Lucas horn, 11 top studded tyres, as new, machine in perfect condition; 45 gns.—Julian, Broad St., Reading. [X7]

**7-9h.p.** 1915 Indian and Sidecar De Luxe, 3-speed, clutch, chain drive, and kick-start model, electric lighting set, electric horn, mirror; 70 gns.; guarantee.—Wanchope's, 9, Shoe Lane, London. [2]

**INDIAN** Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres; £75; spring frame tour model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X7]

**INDIAN**, 7-9h.p., late 1914, clutch, kick start, speedometer, electrical equipment, Mills coachbuilt sidecar, tyres new, perfect condition; £57/10; appointment.—Freeman, 62, New Broad St., London, E.C. [X7]

**INDIAN**, 1913, delivered 1914, 7h.p., 2-speed, spring frame, Millford sidecar, electric lamps, condition good throughout; £46, or offer.—Sapper Penson Searchlight Station, Warren Rd., Kingston Hill. [18]

**BIRMINGHAM** Indian Agent, P. J. Evans, 67, John Bright St.—Immediate delivery, ex-stock 5h.p. 3-speed standard and sporting models, with or without sidecar, price £70; sidecars from 11 gns. [X78]

**INDIAN** Combination, 7-9h.p., late 1915, handle used, like new, 20 gns. sidecar, electric light, at cost over 1000 few months ago; with supply of petrol £85, no offers.—Orton, 256, High St., Manor Park. [22]

**7-9h.p.** Indian, spring frame model, fitted with some sporting sidecar, 2-speed gear, and free engine clutch; the combination, complete with all accessories £35, guaranteed.—Wanchope's, 9, Shoe Lane, London. [20]

**INDIAN**, late 1913 combination, 7-9h.p., 2-speed, clutch, lamps, speedometer, electric horn, and accessories, including two new tyres, excellent condition; any trial given; £47.—Brugg, 151, Grosvenor St., S.W. [19]

**INDIAN** Motor Cycle, 1915 model C, 7-9h.p., electric light and horn, and Mills-Fulford coachbuilt sidecar, all in splendid condition, only run 2,700 miles price £75.—Freeman, Manor House, Monkton Combe Bath. [X77]

**SPECIALLY** Fitted, burns paraffin, 1914 Indian 7h.p., Millford sidecar, spring frame, electric equipment, new tyres back and front, in absolutely first class condition; £50.—Curry, 33, Costlemain A Bonnemouth. [X77]

**A POWERPLUS** Indian, G, with Swan sporting sidecar, disc wheel, and accessories; price £50, offer for quick sale, can be seen at Wolfe's Garage, Woburn Sq., W.C., by appointment.—Apply, L2,150, c The Motor Cycle. [19]

**INDIAN**, 1915 model C, spring frame, 3 speeds, 6 horn set, this machine has been very little used and is in quite new condition, £55; 16 gns. Phoenix sidecar, fitted with Gloria cane body, to fit Indian, complete.—Wallis, 49, High St., Saffron Walden, Essex. [X77]

**INDIAN** 5h.p. 3-speed 1915 (September) Combination, practically new, complete with speedometer, horn, lamp, generator, kit of tools and spares, Millers coachbuilt sidecar, with storm apron and lamps; £68, accept £65.—Oscar Davies, c/o Norton's Garage, Llandrindod Wells. [226]

**P. J. EVANS**, Birmingham and Midland India Agent.—All models in stock for immediate delivery; 5h.p. 3-speed model, £70; 7h.p. T.T. Powerplus £73; 7h.p. 3-speed, spring frame, and electric light £78; special de luxe 7h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X788]

## Ivy.

**IVY**, 2½h.p., late 1915 model, Dunlop heavy tyre and accessories, as new, only run 800 miles; £22.—Moss, Weir. [X781]

**LOOK** at this.—Ivy 2-stroke, new November, 1915, as not ridden since April, Miller head lamp, as generator, 2-note horn, guaranteed in perfect condition and take 2 anywhere; first cheque for £22 secures the wonderful bargain.—Brown, Gloucester Rd., Chesterfield. [X787]

**IVY**, 1916, 6h.p. J.A.P. combination, 3-speed Sturmey Archer countershaft gear, Ivy coach sidecar, lot nearly new, and complete with 75/- F.R.S. lamp set, Lucas 21/- horn, rear lamp, also Lucas set on sidecar, wind screen, and apron; £60.—Wallis, 49, High St., Saffron Walden, Essex. [X777]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [082]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [080]

**JAMES** 1914 Combination, in perfect condition, new Dunlops, Low generator; £50.—Port, Lahannum Woodside Park, N. [195]

**2½h.p.** James 2-stroke 2-speed, late Aug., 1915, excellent condition, only run 1,500 miles, complete with accessories.—Buckley, Yatton, Som. [215]

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## MOTOR CYCLES FOR SALE.

James.

21 h.p. James, 2-stroke, 2-speed model, 1915, complete with all accessories and speedometer; £37/10, guaranteed.—Watchoppe's, 9, Shoe Lane, London. [2064]

JAMES Combination, late 1915, 3-speed countershaft, chain drive, kick starter, done 500 miles, splendid condition; £60.—Green, Fisher's Green, Waltham Abbey. [X7765]

HERE'S a Bargain.—24 h.p. James, 2-stroke, 2-speed, only ridden 1,000 miles, absolutely perfect, and is new, heavy Dunlops, large P. and H. lamp set, pan seat saddle, new Dunlop belt; first cheque for £32 secures it.—Amber House, Gloucester Rd., Chesterfield. [X7874]

JAMES, 1914 (November), 4½ h.p., No. 6 combination, good tyres, lamps, and horn, only been used weeks; expert examination invited; would exchange higher power twin combination with cash either way, Indian, Harley, or Matchless preferred, or sell £50.—Oliver, High St., Aylesbury, Bucks. [2032]

JAMES 1913 4½ h.p. Combination, with Triplex glass wind screen, Sturmey-Archer 3-speed gear, Bosch mag., Jones speedometer, P. and H. head lamp, new spare tyre, luggage carrier, waterproof cover, all lamps and accessories, in excellent condition, done about 6,000 miles; £55; seen by appointment.—Write (or 'phone) Eampstead 7147, 48, Queen's Rd., Avenue Rd., N.W. [2029]

JAMES, 1915, 2½ h.p., 2-speed, 2-stroke lightweight, with Lucas accessories, £34/10, reduced to £31/10, not cash only; also 1916 (May) 4½ h.p. electrically equipped combination, hood, screen, speedometer, also 16 h.p., mileage 1,500 only, £74/10, reduced to £69/10, special cash price only, great bargain.—Lamb's, 51, High St., Walthamstow, and 50, High Rd., Wood Green. [2010]

J.A.P.

J.A.P. 8 h.p. Combination, 1913, 2 speeds, clutch, coachbuilt; £32/10.—11, Luna Rd., Thornton Heath, Croydon. [2152]

Kerry.

KERRY-ABINGDON, 3½ h.p., 2-speed, free engine, h.b.c. clutch, Binks, Montgomery sidcar, perfect condition; £30.—Crown Drinks, Bridgewater. [X7918]

1912 3½ h.p. 2-speed Kerry-Abingdon, in good order; £21/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0843]

Lea-Francis.

LEA-FRANCIS, 3½ h.p., 1913, 2-speed, speedometer, etc.; exchange for lightweight and cash, or sell £40.—L2.130, c/o The Motor Cycle. [1924]

LEA-FRANCIS, 1915, 3-speed gear, F.R.S. lamp, mechanical horn, 1916 light coachbuilt sidecar, hatch machine, all splendid condition, new tyres this season; £60.—Fletcher, Highfield, Long Eaton. [X7426]

LEA-FRANCIS, late 1915, 3½ h.p. twin J.A.P. engine, Bosch mag., 3-speed countershaft gear, clutch and kick starter, with Montgomery de Luxe 21 in. sidcar, and Lucas accessories, practically new, guaranteed correct throughout; £75.—Moss, Wem. [X7813]

Levis.

EVIS, 1916, 2-stroke; £25.—Warren's, 386, Euston Rd. Museum 3081. [2095]

EVIS, 2½ h.p., in splendid condition; £20.—Colmore Depot, 31, Colmore Row, Birmingham. [X7834]

EVIS, 1916, 2 speeds, coachbuilt sidcar, in nice condition; £32.—6, Warren St., London. [2229]

EVIS, late 1915, practically new, all accessories; £24.—W.O., 30, Elizabeth St., near Victoria Station, W. [2024]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

EVIS, 1916, Enfield 2-speed, chain drive; £38.—V. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1965]

EVIS, 2½ h.p., free engine; £25; any trial; or exchange for 2-speed Junior Triumph and cash.—Elford, Wool Co., Nuneaton. [X7817]

EVIS Popular, new; special bargain; cannot repeat; £28 cash; gradual payments 2%.—Referee Cycle Co., 332, High Holborn. [0764]

EVIS, 1916 Popular model, 2½ h.p., new, but slightly soiled; special bargain, £27.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [1980]

EVISES, Populars £32, model B with 2-speed gear, rustless rims, £47/10; deferred payments, exchanges; also a 1915 Popular with accessories, £24/10, reduced to £22/10, spot cash only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2001]

Lincoln-Elk.

INCOLN-ELK, 4½ h.p., 1914, with sidcar, good condition, new tyres; £28.—Colville, High St., Marlow. [2116]

M.A.B.

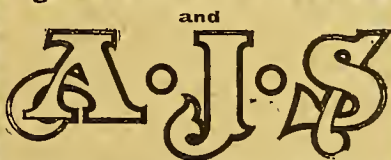
DETROL Free with M.A.B. 3½ h.p. Twin, Enfield gear, kick start; 27 gns.—Troward, 78, High St., Epsom. [2079]

Martin.

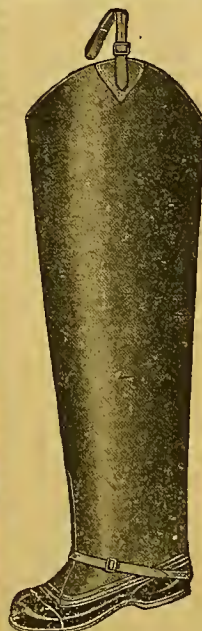
h.p. Martin-Jap and sidcar, overhead valves, just thoroughly overhauled, very fast; £50, offer.—L. 9, Church St., Penny Stratford. [2020]

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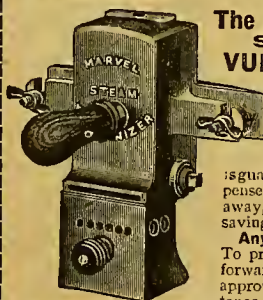
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## MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS, 8 h.p., 1914, 2-speed, coach sidcar; £48.—29, St. Leonard's St., Bow. Must be sold. [2123]

MATCHLESS 8 h.p. Combination, 2-speed, in fine condition, little used, fully equipped.—Watson, Orchard, Baleswell. [1933]

6 h.p. Matchless C.B. Combination, 2 speeds and free, 3 lamps, speedometer, tools and spares, all good condition; £37.—14, Chiplest St., New Cross, S.E. [X7917]

MATCHLESS, 1914, 7 h.p. M.A.G. engine, 3-speed countershaft gear, model 8B, extra heavy tyres, been little used, and in perfect order, £50; brand new Canelet Matchless sidcar, 1916 model D4, never been fitted, £15.—Wallis, 49, High St., Saffron Walden, Essex. Phone 45. [X7772]

Minerva.

MINERVA, 4-5 h.p. twin, low, new 1915 frame, spring forks, new tyres, belt, Bosch mag., B. and B. recently overhauled, good running order; trial; with or without wicker sidcar; £18/10; called up.—Smith's Works, Laurel Av., Twickenham. [2157]

Moto-Reve.

MOTO-REVE, 2½ h.p., Simms, Dunlops, Druids, new connecting rods, valves, 1 piston, all rings, gudgeons, union bearings, camshaft just fitted, uses half and half; £14, others.—Box 785, c/o The Motor Cycle. [X7925]

Motosacoche.

21 h.p. V-twin Motosacoche, M.A.G. engine, Bosch, 4 Amac, Druids, tyres good, ideal lightweight; £15.—Appleton, c/o 25, Newgate St., London, E.C. [2190]

New Hudson.

NEW Hudson, 2-stroke, racer, overhauled, perfect gift, £18.—W. Jennings, Bozeat, Wellingborough. [X923]

NEW Hudson, 1915, 2½ h.p., 2-stroke; £20.—B. and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

NEW Hudson, 2½ h.p., 2-stroke, 2-speed gear; £38; several of these machines in stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

NEW Hudson Big Six 1916 3-speed Combination, Lucas head and rear lamps, Klaxon horn, B. and B. latest carburetter, small mileage, privately owned, practically new; 60 gns.—Eldridge, Fordingbridge, Hants. [2054]

NEW Hudson 9B 6 h.p. Fawn Combination actually in stock, deferred payments if desired, exchanges; also 1916 4 h.p. 3-speed combination, usual price £65, special sale price £59/10; also 1912 3-speed, 2½ h.p. model, usual price £21, sale price £18/10, spot cash only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2007]

New Imperial.

NEW Imperial-Jap, latest models in stock; £38 and £44/8.—Crow Bros., Guildford. [1262]

NEW 6 h.p. New Imperial-Jap, 3-speeder, in stock; £75/5.—Crow Bros., Guildford. [2132]

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

1916 New Imperial, 2-speed, perfect, good condition, little used; £28.—Browne, 10, York Rd., Maidenhead. [X7740]

NEW Imperial, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [0765]

1914 2-speed 2½ h.p. Imperial-Jap, splendid order throughout; £25.—Colmore Depot, 31, Colmore Row, Birmingham. [X7830]

NEW Imperial 1916 Current Models in stock, also one or two bargains, chop-soiled.—Laytons' Garage, Bicester, Oxon. [X7896]

2 h.p. New Imperial-Japs from stock; 2-speed gear 24 models, £38; cash, easy terms, or exchange.—Watchoppe's, 9, Shoe Lane, London. [2068]

NEW Imperial-Jap, 1915, in good order, for sale, or exchange with cash for a higher powered motor cycle.—Joseph Pavitt, Aveley, Purfleet, Essex. (D) [X7858]

NEW Imperial, 2-speed, lamps, horn, tools, etc., new condition, bought new 3 months ago; offers; £38 lowest.—Gwilliam, Oak Cottage, Christchurch, Coleford, Glos. [2201]

1916 New Imperial, 2 speeds, extra tank, almost as new; bargain, £30; also 1915 model, £25.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2184]

NEW Imperial-Jap, 2½ h.p., 1916, 2-speed, clutch, kick start, only soiled; usual price £44/8, reduced £37, special cash price only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2003]

1916 (May) New Imperial, 2½ h.p. J.A.P., 2-speed, clutch, kick start, only done 600 miles; cost £44/8; new accessories cost £3/10; sell complete £38, and 6 gallons petrol.—Write, Hunt, 37, Petherton Rd., Highbury, N. [1951]

J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X7883]



## MOTOR CYCLES FOR SALE.

## New Imperial.

NEW Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## Norton.

T.T. Norton, just arrived; first cheque £54/12 secures it.—Plastow, Grimsby, Plastow. [X7936]

NORTON, 4½ h.p., 1916, indistinguishable from new, T.T., free engine clutch; 50 gns.—6, Warren St., London. [2227]

NORTON, 1916, 3½ h.p., Brooklands racing special, Brooklands certificate, 70 m.p.h., Philipson pulley, and all accessories, run 500 miles; £67/10.—Cass's Motor Mart, only address 5, Warren St., Euston Rd., W. Museum 623. [1822]

## N.U.T.

N.U.T., 1916, 3½ h.p., 3 speeds, countershaft, J.A.P. overhead engine, kick starter, speedometer, practically new; £46.—6, Warren St., London. [2226]

## O.K.

O.K.'s in stock, M.A.G. £42/10, J.A.P. £38.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [2037]

O.K. 1914 2-speed Lightweight, exchange 3½ h.p. or sell £19.—Bridger, 18, Beaumont Av., Richmond. [2158]

1915 O.K., 2½ h.p., 2 speeds, good tyres, reliable machine; cheap, £25.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2185]

O.K., 2½ h.p., J.A.P., 1916, latest model, 2-speed, practically unused; present price £38, bargain, £32/10.—Heybourne Motors, Maidenhead. [1946]

## Omega.

PETROL Free with Omega, 3 h.p., 2-stroke; 17 gns.—Troward, 78, High St., Hampstead. [2077]

## P. and M.

1914½ Phelon-Moore Combination, equal new; bargain, £58/15.—Alson, 49, Kirkgate, Wakefield. [X7904]

PETROL Free with P. and M., 3½ h.p., 2-speed, clutch; 14 gns.—Troward, 78, High St., Hampstead. [2074]

1914 P. and M., 3½ h.p., 2 speeds, kick start, low built, sidecar; £40.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2186]

1912 3½ h.p. P. and M., 2-speed and free, nearly new coachbuilt sidecar, just overhauled, running condition guaranteed, speedometer, lamps, horn, tools, and spares; £37/10.—Lieutenant Sinclair, H.M.S. Vernon. [X7675]

## Precision.

3½ h.p. Precision, 1913, fixed engine, done 7,000 miles, 32 good condition; best offer secures.—Box L2158, c/o The Motor Cycle. [1983]

PRECISION, 2½ h.p., 1913-14, perfect condition, only used Thursday afternoons; £19/10.—Harding, 29a, Market St., Wellingborough. [2087]

PRECISION Junior Lightweight, 1915, 2 speeds, new condition; owner joined up; best cash offer.—7, Vale Terrace, King's Rd., Chelsea. [X7799]

PRECISION, 4½ h.p., Bowden 2-speed gear, kick start, and clutch, new Dunlops, heavy studded tyres, coachbuilt sidecar; £36, or exchange 2-stroke.—Sweet, Engineer, Fishponds, Bristol. [X7866]

## Premier.

PREMIER, 3½ h.p., N.S.U. 2-speed, grand condition; £24.—137, Alum Rock, Birmingham. [X7866]

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 1913, 2½ h.p., clutch, free engine, perfect running order, new belt, tyres good; £19/10.—W.L., 20, Asfordby St., Leicester. [X7791]

1913 3½ h.p. T.T. Premier, good tyres and belt, in very good order, and very fast; £19.—Wallis, 49, High St., Saffron Walden, Essex. [X7782]

PREMIER, 2½ h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X7893]

1914 Premier, 3½ h.p., 2 speeds, countershaft, excellent order, with sidecar; £40.—The Barnes Motor Garage, opposite Red Lion, Barnes, S.W. [2187]

LATEST Model 1916 3½ h.p. 3-speed Premier; £64; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

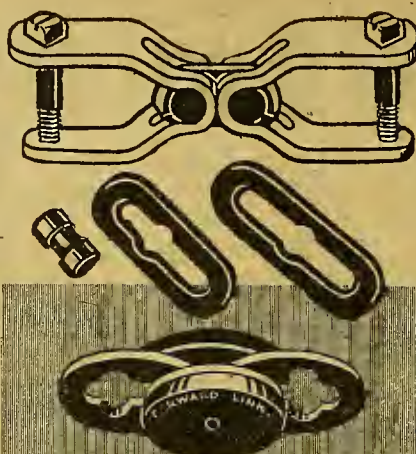
1913½ Premier, 3½ h.p., countershaft 2-speed, clutch, Gloria coachbuilt sidecar, speedometer, mechanical horn; £38, lowest.—G.W., 36, Elmfield Rd., Balham. [X7915]

## Quadrant.

QUADRANT, 4 h.p., 1913, 3 speeds, clutch, beautiful machine; £22.—11, Luna Rd., Thornton Heath Clock, S.E. [2153]

## Radco.

RADCO, 1915, 2-speed, in nice order; £25.—Warren's, 386, Euston Rd. Museum 3081. [2096]



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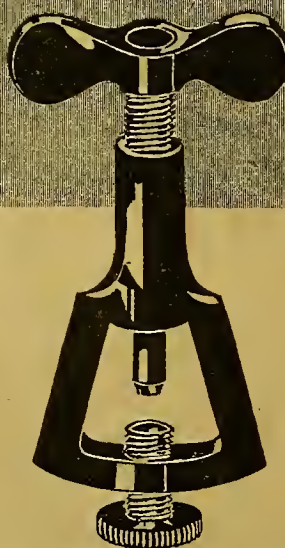
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## MOTOR CYCLES FOR SALE.

## Radco.

RADCO, 1915, 2-speed, 2-stroke, exceptionally good condition, and complete with accessories; £24/—Colmore Depot, 31, Colmore Row, Birmingham. [X781]

RADCO, 1914, 2-stroke, 2 speeds countershaft, 17 tyres, piston and rings, footboards, enamel plating as new; nearest £19.—A. J. Jarvis, Watnall Cirencester. [12]

## Regal.

REGAL, 1915, 2 stroke, 2-speed, open frame; 2 with accessories.—Colmore Depot, 31, Colmore Row, Birmingham. [X78]

REGAL-GREEN-PRECISION, 1914, and coachbuilt sidecar, very little used; £39; like new.—Nicholls St., West Bromwich. [X78]

## Rex.

REX, sidecar, Mabon free engine, accumulator; £67/—34, Stanbury Rd., Peckham, London. [14]

1910 Rex Motor Cycle, less power unit; £3.—Bouley, 248, Haughton Green, Denton, Manchester. [X78]

REX 5-6 h.p. 2-speed Combination, complete, ban starter, just overhauled, wicker sidecar; £30/171, Burges Rd., East Ham. [2]

REX 5-6 h.p. twin, T.T. clutch model, tyres a belt new, machine in splendid condition; £21/14, Dodbrooke Rd., West Norwood. [22]

REX 1912 6 h.p. Combination, 2 speeds, free engine handle starting, lamps, horn; splendid bargain; £30.—3, The Mews, Victoria Rd., Olapham, S.W. [2]

1913 Rex 5-6 h.p. Twin, 3-speed, with coachbuilt car, tyres perfect, just been overhauled; £1 allowed sacrifice £20, or offer.—Campaigne, 17, Halsey Rise, N. [14]

REX, 6 h.p., 2-speed, wicker sidecar, Hinks, White petrol, oil gauges, binged stoppers, all tyres excellent, lamps, horn, spares; £23.—Evenings, Quintin Av., Wimbledon. [21]

FIRST P.O.O. Secures this bargain.—1911 6 h.p. T Rex, free engine model, new Dunlop tyre on be in good running order; £10; Bosch mag.—Wallis, High St., Saffron Walden, Essex. [X78]

1914 Rex 6 h.p. Twin, 3-speed combination, with seat sidecar, complete with accessories, in B rate order; £45.—Tuke and Bell, Ltd., Motor Dept, Carlton Engineering Works, High Rd., Tottenham. [59]

## Rex-Jap.

6 h.p. Rex-Jap and coachbuilt sidecar; £27/10—Wauchope's, 9, Shoe Lane, London. [26]

## Rover.

ROVER, 1916, new, 3½ h.p., 3-speed countershaft combination, actually in stock.—Moss, Wem. [X78]

1914 (new 1915) 3½ h.p. 3-speed Rover, practically as new, very fast; £37.—Waverley Hotel, Walsley. [21]

ROVER, 3½ h.p., clutch model, sound, but not mine; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X78]

ROVER Combination, fully equipped, late 1915, speed countershaft, new condition; 60 gns.—Willes Rd., Leamington. [X78]

1913 3-speed Geared and Clutch Model Rover, thoroughly overhauled and complete; 30 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X78]

1912 Rover, 3½ h.p., free engine, B. and B. c. breitter, Bosch mag., excellent condition, w good tyres and engine; £20.—Robinson's Garage, Gr St., Cambridge. [21]

ROVER, 1913, T.T., with accessories, very fine machine; usual price £32/10, special sale price £29/10, cash only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [26]

BIRMINGHAM Agent, P. J. Evans, 87-91, J. Bright St., has all Rover models in stock for immediate delivery; countershaft T.T. with fixed or also semi T.T. model, with h.b.c. Philipson; prices £52. [X78]

ROVER, 1913, 3½ h.p., free engine, Philipson h.b. semi-automatic B. and B., Hutchinsons, Glor phone, tools, and spares, condition, plating, enamel perfect, 38 gallons Hinks and petrol; £30.—W. Waverley Rd., Kenilworth. [X78]

ROVER, specially selected, very fast, 3½ h.p. T. with Philipson pulley, Cowey speedometer, F.E. lamp, Lucas horn, extra large tank, all in excellent order, tools, and spare parts complete; price £37, close offer.—Box L2165, c/o The Motor Cycle. [23]

## Royal Ruby.

ROYAL Ruby, 2-speed, 2-stroke, 2½ h.p., bar soiled; £27/10.—Colmore Depot, 31, Colmore B. Birmingham. [X78]

## Rudge.

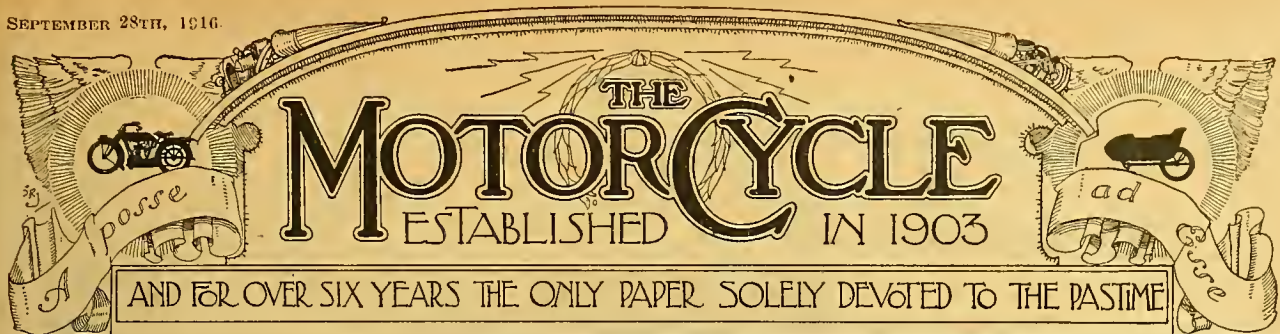
RUDGE Multi, late 1914, practically as new, fully equipped, speedometer; £35.—Below. [22]

RUDGE Multi, 1913, in real good order and condition; £27.—6, Warren St., London. [22]

RUDGE Multi, 1915, 3½ h.p., splendid condition, many spares; £43.—348, City Rd., E.C. [24]

1912 3½ h.p. Rudge, free engine, good condition; £—R. E. Jones (Garages), Ltd., Swansea. [10]





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## Single v. Twin.

**O**F the many problems which have confronted the motor cycle manufacturer in the past, none has been resuscitated so many times as that of single v. twin-cylinder engine. In the one camp we have manufacturers whose outstanding motto is "Reliability," and in the other camp there are manufacturers whose motto is "Pleasurable riding coupled with reliability." We are tempted to revive the subject once again by reason of the views of "Road Rider" expressed in an article in the current issue. This writer is a man of exceptional experience of many and various makes of machines, and he is an exceedingly competent observer. As a result of his unequalled experience "Road Rider" has not the least hesitation in saying that after the war there will be a great and rapidly culminating prejudice against the single-cylinder engine, and that ere long it will become extinct.

Whilst giving voice to "Road Rider's" considered judgment, we must say that we are not so convinced of the speedy demise of the single-cylinder machine as our contributor. "Road Rider" bases most of his views upon the fact that the single-cylinder machine is unnecessarily uncomfortable, and that people are already tired of it and want something which provides smoother running. We contend that reliability will always be the predominating point of attractiveness to the buyer, and perfect as the modern twin-cylinder mount has become, it is doubtful if it be yet the equal, from the point of view of reliability, of the single-cylinder machine. Thus for utility purposes the single-cylinder will always be able to claim its adherents. We will further confess that a multi-cylinder machine is far and away more attractive in its working than a single-cylinder machine, and if the same degree of reliability can be obtained no one would dream of changing from a twin to a single-cylinder. But where we again quarrel with "Road Rider's" sweeping assertion is from the manufacturing point of view. Granted that ease of

manufacture should be no valid reason why comparatively uncomfortable machines should be foisted upon the public, one must remember that manufacturers produce motor cycles from a business standpoint, and the fact that so many single-cylinder machines are produced is not necessarily because their makers consider they are better than the multi-cylinder machine, but on account of the fact that they are easier and cheaper to produce.

To sum up, the comments in this issue will undoubtedly point to an important tendency in design in favour of the multi-cylinder machine, but we are of opinion that "Road Rider" is moving much too quickly in suggesting that 500 c.c. single-cylinder machines will become obsolete in the near future.

## Our Over-zealous Police.

**A**MOST extraordinary case of police interference was brought to our notice during the past week. A motor cyclist was proceeding through Bruce Grove, Tottenham, at 11.45 a.m. one day, with his wife in the sidecar and his children on the carrier, when a policeman in uniform stopped him and told him that two plain-clothes officers wished to speak to him. In due course the plain-clothes men came up, and asked him if he were the owner of the machine and where he was going. Subsequently they wanted to know what he was using, and whether he was travelling on business or for pleasure. His licence having been inspected, he was allowed to proceed.

We immediately communicated the full facts of the case to the Metropolitan Police headquarters, and we are glad to say that the matter was promptly investigated. The facts as we related were found to be true—so we were later informed—and the error was due to a zealous officer. Anyway our correspondent need have no fear, the whole thing was a mistake, he will hear no more of the threatened summons, and other motorists are not likely to be molested.



# THROUGH FEMININE GOGGLES

## The Levis as a Lady's Mount

AT the present time it does not seem altogether good taste to sing the praises of solo machines, for, with so many disabled soldiers about who appreciate runs, one feels selfish spinning along in solitary fashion, however much one's journey may be for business purposes. Still, there are times when the petrol allowance precludes any idea of generosity, and the solo machine has to be used in order to get the greatest mileage possible. On such occasions it is certainly a fast-running economical little machine that is required, and a few weeks ago I found a  $2\frac{1}{2}$  h.p. Levis admirably suited for the purpose. Personally I prefer a passenger by my side to share with me the exhilaration of the ride, but there are times when a good running machine is itself as congenial a companion as it is possible to find. To skim up the hills and to glide down the other side takes one back to the old days of trials.

Such an experience I have had upon the mount I have just mentioned. It was one of the new sloping framed Levis machines, suitable for either sex, with



The  $2\frac{1}{2}$  h.p. two-speed Levis. Note the chain drive and low saddle position.

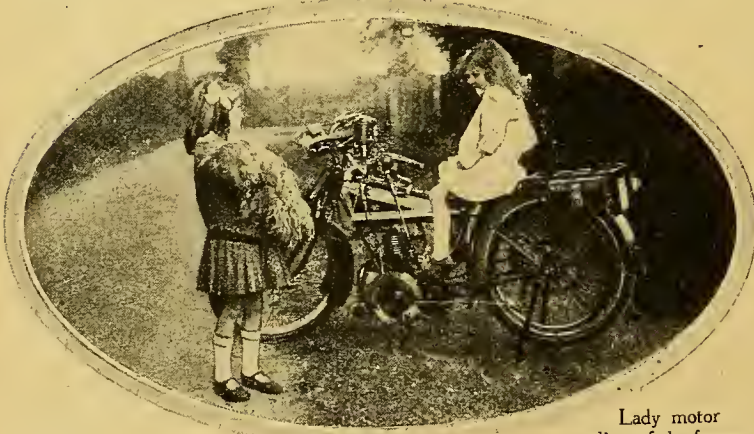
an exceptionally low saddle, which is always in favour with ladies. The engine is the well-tried  $2\frac{1}{2}$  h.p. two-stroke, produced in the works of Messrs. Butterfield Bros. The Enfield two-speed gear, in conjunction with all chain drive, is a feature. The Best and Lloyd oil pump gives a twin oil feed (cylinder and crank case).

There are one or two tricky little hills in my neighbourhood, calculated to try the inexperienced rider or the inadequately engined mount, but the Levis hardly seemed to recognise the hills as such.

I found that the simplest way of starting the Levis was to give it a push on bottom gear, then put gear handle into neutral position while I took my seat, gently bringing the gear handle into low to start away. It is always necessary to allow the engine to pick up speed before changing into top. It is the most lively little two-stroke engine that I remember, and capable of a remarkable turn of speed.

Two-strokes are becoming great favourites with ladies, some of whom are sufficiently daring to take a passenger on the carrier. No doubt the difficulty of obtaining petrol is the sole reason why there are not many more lady riders on the road; the two gallons allotted per month limits our mileage to such a great extent unless substitutes are used.

MAY WALKER.



Lady motor cyclists of the future.

### NEW AUSTRALIAN RECORDS.

SINCE our last issue went to press we have received the times of the new records made by Jack Booth and briefly mentioned on page 251. The new times and previous records are:

ONE MILE.				
Booth (Indian)	...	37 $\frac{3}{4}$ s.	Parsons (Am. Excelsior)	46 $\frac{2}{3}$ s.
FIVE MILES.				
Booth	...	3m. 25 $\frac{3}{4}$ s.	Parsons	...
				4m. 11 $\frac{2}{3}$ s.
TEN MILES.				
Booth	...	7m. 45 $\frac{4}{5}$ s.	Parsons	...
				8m. 28 $\frac{4}{5}$ s.

A10

According to a Melbourne contemporary just to hand the Victorian Motor Cycle Club has refused to recognise the times quoted for the mile and five miles. The reason appears to be that Booth made runs on two successive days breaking the one and five miles records the first attempt, and lowering all three at the second. The club will only grant certificates for the times made on the first day, though the club's timekeepers attended the second attempt.





### Miniature Engines on War Service.

It may be news to some of our readers that the Government is taking lots of small c.c. engines for war service. The latest 220 c.c. bantling of the A.B.C. family was, of course, early pressed into employment as a starting unit for bigger engines, alike on sea-planes and on other large power units which I must not particularise. And the wee two-stroke is not being overlooked either, whilst at least one 5-6 h.p. two-stroke twin is wearing khaki.

### Carry a Spare Brush.

When the magneto was first introduced I examined its mechanism scrupulously, and decided to carry a spare high-tension brush, as the wee carbon pencil seemed essentially vulnerable. For many a long year one of these spares reposed snugly in my purse, and in the early days of the magneto it came in handy more than once. After a time prolonged immunity ended my precautions, and, of course, I got nicely had on a small twin, when both high-tension brushes sheared simultaneously. I have heard of other cases, and therefore I advise my brethren to revive ancient habits, and carry spares.

### Multiple Jet Carburetters.

The more I ride, the more I become convinced that multiple jet carburetters make for petrol economy. In my garage there are seven separate types of carburetter at the present moment, two of which are three-jets. By careful tuning I can get much about the same power out of the septet, together with approximately equal acceleration and flexibility. But the three-jets score on two points very easily, one of these points being a mere fad, whilst the other is of vital importance. They certainly give a lower minimum of revolutions; if throttled down with the engine running free, the single jets give coarse running at the best, whereas the three-jets close down to a mere tick. This detail is of interest to sidecar men, but does not materially affect solo work. On the other hand, the three-jets readily give a superior petrol economy, averaging 25% better than the single jets, which implies an economy of 6d. or more on every 100 miles at the present cost of spirit, or about 30s. on a year's riding. The one and only comparative defect of the multiple jet types is that their fine orifices are far more liable to choke than the big hole of a single jet, and this weakness can be eradicated by fitting a sensible petrol filter.

### The New "Best" Lubricator.

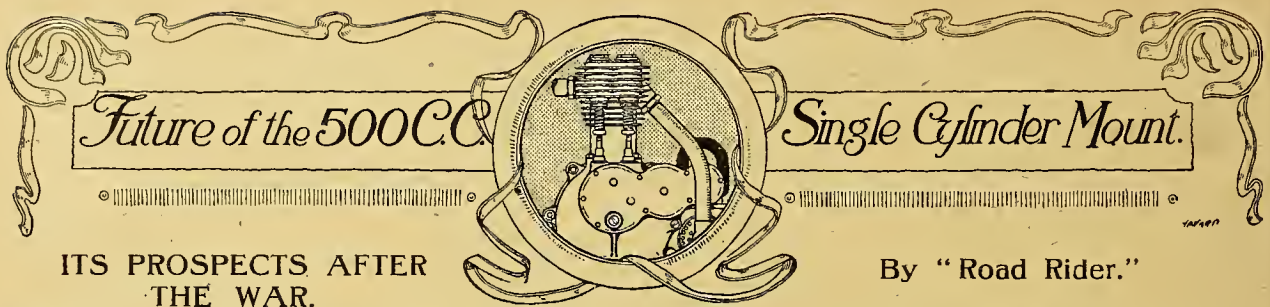
I have never known a novel accessory excite so much interest as the "Best" pump. I thought my present mount had a pretty satisfactory lubricator. It has a small pump on the timing cover, which sucks oil from the tank, and drives it through a sight glass into the engine. The oil feed thus varies with engine speed, an idea which is commonly regarded as unsatisfactory, because most engines are often driven at very low

r.p.m. on high gears under widely different circumstances, e.g., ticking on a whiff of gas in traffic, and pounding on full throttle up a grade. Therefore, the usual ideal is that the perfect lubricator must distinguish not only between engine speeds, but also between engine loads, as the "Best" does. This criticism does not apply to my machine, for the simple reason that it is never allowed to pound slowly uphill on full throttle. The lowest of its four gears is  $13\frac{1}{2}$  to 1, and it develops over 12 b.h.p., so that it can "rev." up the steepest freak hill even with a sidecar attached; and whenever it is able to "rev." on a lowish gear the lubricator will feed plenty of oil. Still, most engines know what it is to be reduced to a slow pounding progress by dint of load and grade; and for such engines the "Best" lubricator should prove perfect. It is just one of those brilliant little notions which deserves to come into universal employment, and I do not see why its main features should not further serve to improve the lubrication of many car engines.

### Engine Rattle.

I made careful enquiries in Coventry the other day as to whether the expert two-stroke technicians had reached any unanimous decision on the subject of what common or garden two-stroke users familiarly term "engine rattle." There would still appear to be two leading schools on this point. The one holds that the metallic ring, tinkle, or rattle, not uncommon with dirty and well-worn engines, is due to the deflector of the piston, when coated with carbon and elevated at the top of the stroke by wear of the connecting rod bearings, which may just catch the under-side of the cylinder head; I must look for dints in the carbon on the ridge next time I dismount a two-stroke engine. The opposition ascribes it simply to the piston rings getting stuck in their grooves with carbon, and so catching against the edges of the ports, instead of sliding smoothly over them. There would appear (to an ignoramus, like myself at any rate) some unnecessary fog on the subject. If the former opinion is correct, it should be easy to demonstrate the fact of piston collision by careful measurements of the maximum clearance (if any) after allowing for oval bushes and carbon films; or, alternatively, to construct a testing engine, similar in every respect to the standard engine, except that there should be a slight depression in the cylinder head, parallel to and coextensive with the piston deflector, yet keeping the usual compression ratio. On the other hand, the question of the piston rings catching wants looking into. The noise hardly sounds as if it emanated from two piston rings catching on three separate ports; some information might be obtained from tests with one, two, and three rings, fitted in various combinations with one or more rings pegged down to the equivalent of being stuck with carbon. Do the piston rings of a Silent Knight engine ever make this or a similar noise against their ports?





## ITS PROSPECTS AFTER THE WAR.

By "Road Rider."

**M**ANY aspects of the motor cycle industry in days to come defy analysis and prophecy. Increased reliability and multi-speed gears are bound to render six day trials something of a farce. Nobody can determine how far taxation and protection or prohibition may affect prices. Nobody can say at what level fuel prices will eventually simmer down. But I am venturing to make one unqualified and dogmatic assertion, which is nevertheless highly controversial; and I make it in order to wake up the trade to a position which is largely unrealised. *I believe the 500 c.c. single-cylinder is doomed!* It is obvious that if this statement is but partially true, it places many British firms in rather a serious position. The 500 c.c. single-cylinder is the machine with which the British trade secured the supremacy of the world's motor cycle industry. Several of our leading factories are organised in peace time with a sole view to its production in enormous quantities. In the past their outputs have sold with consummate ease. For two years past our industry has been either stationary or non-existent, whichever way one prefers to phrase it. So far as one knows, there has been little time for engineers to form plans for the future. It is certain that very few designers have formed clear ideas of popular taste in the era succeeding the war. Should it therefore prove that an increasing percentage of the riders who lead opinion and demand have done for ever with the 500 c.c. single-cylinder, the British motor cycle industry will be largely unprepared for the profoundly changed conditions under which it will resume manufacture. If a deep and increasing prejudice is rife against what was formerly our most popular model, it is time that the trade realised this prejudice. It is time for the Government to release sufficient brains and energy in each factory for the preparation of a more modern type of machine.

### Why the 500 c.c. Single is Waning.

For some time past riders have been undergoing a slow education in the possibilities of comfortable motor cycling. While the 500 c.c. single was certainly the dominant type prior to the war, it was popular because it was established. The most ignorant rider knew the fame of its most distinguished makers, the power and reliability and speed of their machines, the honesty of their dealings. Nevertheless, it had already ceased to be the most attractive or the most interesting machine for riders who were better instructed or more fastidious than the general ruck. Others of us had tasted the comparative freedom from engine vibration afforded by such alternative designs as the Scott twin two-stroke, the Douglas horizontally-opposed twin-cylinder, the big British and American twins—which

do most of their work throttled hard down—the F.N. and Henderson four-cylinders, even the despised baby two-stroke with its even power impulses. Engine vibration has ceased to be a matter of any vital importance on these machines, and many of us, during brief returns to the thumping single-cylinder, realised what an increase of comfort the practical abolition of engine vibration had brought about. During the war, the big single-cylinders have been all but unobtainable. As a consequence a vastly increased section of the public has enjoyed a novel freedom from vibration by riding various smooth-running mounts. Sandwiched between such foretastes of the future, we have all had confirmation of the thumpiness of the big single in the form of brief spins on the type of machine which was once all but universal. Moreover, the big single suffers far more from engine vibration than its forebears did. Their impulses were softened by the flexible drive of the long belt; the modern single is further handicapped by the harshness of a two-chain or chain-cum-belt drive. It may be, probably is, the simplest and staunchest machine available for prolonged hard work, the best D.R. machine in the world; but it can never again figure as the ideal mount for pleasurable touring.

### The Elimination of Road Vibration.

There is a further factor to be considered—that of road vibration. Obviously, it is quite as easy to spring the frame of a 500 c.c. single as that of a 350 c.c. or 1,000 c.c. twin, and it might appear at first sight that road vibration was a factor applying equally to all types of engine. This is untrue. A few pioneer firms have lately introduced good rear sprung frames, for which there will be a perfect *furor* after the war. Their general effect on public opinion will be to raise the standard of comfort, and so to heighten the prejudice against engine vibration. Thus, though their influence on the matter of engine vibration is indirect, it is very real.

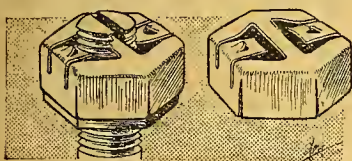
To put the matter more briefly and simply, I do not personally intend to ride another 500 c.c. single-cylinder machine of the current type. I have tested all the patterns now on the market, and, without haste or partiality, I have come to the conclusion that this particular type compares most unfavourably with more modern patterns. I believe trade will gradually desert the concerns which cling to this declining type. I believe the manufacturers of more refined and comfortable designs will rapidly learn to embody the reliable and substantial construction long characteristic of the typical British single; and that the future of the 500 c.c. single is limited to the light T.T. patterns employed as sporting mounts.



## THE CROWN LOCKING CAP.

FROM time to time we have published various methods of securing nuts. There is the castellated nut and split pin, which is expensive and troublesome to remove; there is the spring washer, which places an unequal strain upon the nut and bolt and a strain on the thread in getting the spring washer flattened out; and various other types of locking devices.

The Crown Locking Cap Co., 1, Bank Chambers, Bromsgrove Street, Birmingham, have, however, introduced an ingenious device, which consists of a cap provided with a central beam fitting into a slot which should be first cut in the bolt. It is pointed out that it is just as easy to cut a slot in the bolt as it is to drill a hole for a split pin. At right angles to the central beam which engages the slot are two tongues, the object of which is to catch in the thread. When the nut has been screwed up to the right degree the cap is slipped over so that the central



The Crown locking cap.

beam engages with the slot. The two tongues then ratchet themselves over the thread in which the cap has been pressed home, preventing the cap from sliding up the bolt. To remove the locking cap it is only necessary to slip back the tongues by the aid of a screwdriver or some similar instrument.

The Crown locking cap can only be employed in cases where the bolt projects sufficiently far beyond the end of the nut to allow the cap to be fitted. The manufacturers supply a special slotting saw for cutting the slot in the bolt.

## THE TAN-SAD SPRING CARRIER.

EVEN though one is not addicted to mounting a passenger on the carrier, there is nothing more useful in these days, when it is so often necessary to carry a full petrol tin, than something in the way of a spring platform on which to mount it. When mounted on a rigid carrier a petrol tin soon becomes battered, and if it springs a leak its whole contents may be wasted ere the rider discovers the mishap, while the dead weight of such a load is apt, in time, to fracture the carrier stays. Luggage of any kind rides much more comfortably and securely if mounted in a sprung position than if subjected to the tremendous jolting and jarring which ordinarily befalls it aboard a motor cycle.

The Tan-Sad, which is designed chiefly for mounting a passenger, is fixed simply by the use of a small key, clipped under the cushion, and can be placed in position and securely tightened in a very few seconds.

The springing of the seat can be varied to meet one's requirements by the number

of springs employed. Though provision is made for four springs, two are quite sufficient for ordinary loads. The fittings provide a remarkably comfortable seat for the pillion passenger, and it appears to be a thoroughly well-made and well-designed article.

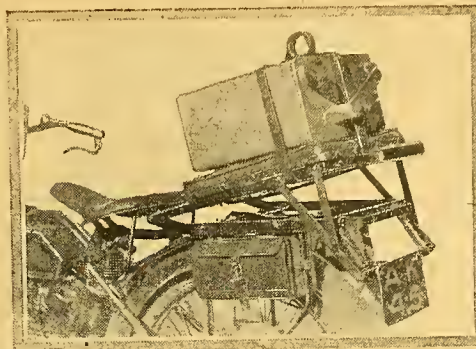
The seat is perhaps a shade far back, and we would suggest that if the pivot joints were brought further forward and the seat also lengthened in the direction of the rider, balance and the comfort of the passenger would be improved. It would also be an excellent plan if the makers so arranged the fitting that the tool-bags, having been removed from the rigid carrier, could be attached to the sides of the spring seat, as this would save the contents of the tool-bags and the bags themselves very considerably.

This attachment, which is far from being unsightly, is made at the Tan-Sad Works, 5a, Parker Street, Edgbaston, Birmingham.

## ACROSS AMERICA BY MOTOR CYCLE.

IN our issue of July 27th we mentioned that two New York lady motor cyclists, Miss Adeline and Miss Augusta Van Buren, were attempting the journey from New York City to San Francisco, on the Pacific coast, a distance of 3,300 miles, mounted on Powerplus Indians. On September 14th we were able to give a short account of how they climbed a famous American test hill, known as Pikes Peak, near Colorado Springs.

Our readers will no doubt be interested to learn that the adventurous

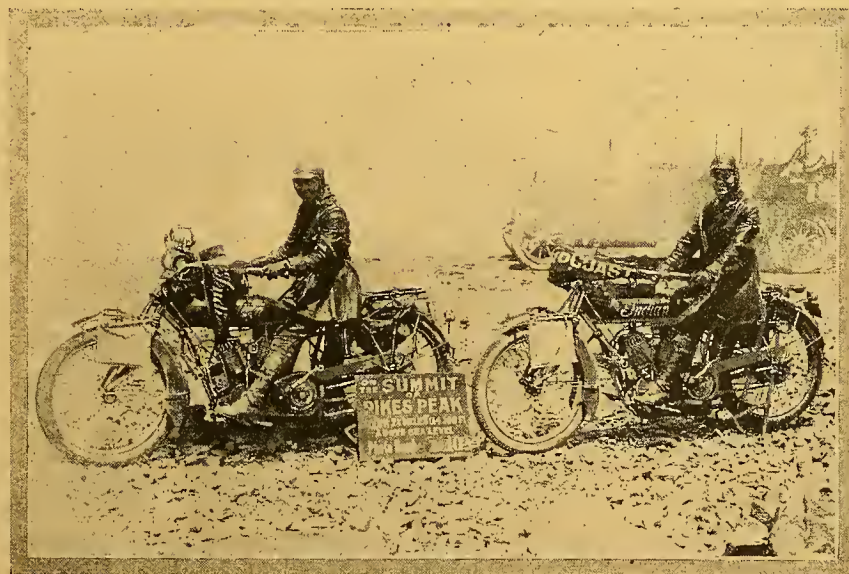


Tan-Sad spring carrier is here shown mounted on two springs only; for carrying heavier loads more springs can be used.

young ladies reached San Francisco on September 2nd, having been two months, less two days, on the journey. They encountered many difficulties, such as land-slides, desert wastes, and broken down bridges. The weather conditions were especially adverse, but, in spite of all these and the atrocious road surfaces encountered in many parts, especially, of course, during their journey across the American desert in Western Utah, their Indians brought them through in splendid style.

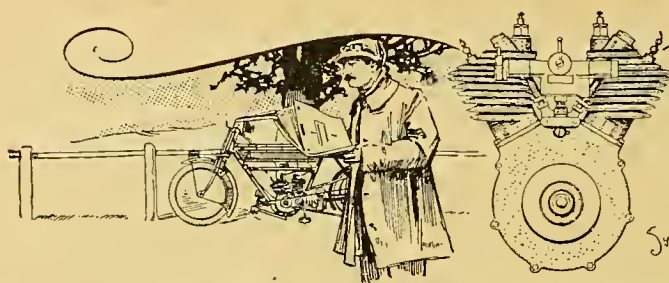
When one considers the distance, the absence of roads, and the hundred and one difficulties encountered on such an undertaking, which have on previous occasions proved the undoing of many hardened riders, the performance of these young ladies is really marvellous.

After completing such a strenuous journey, it is not surprising to find that the riders as well as their machines should not look so spick-and-span as at the commencement.



The Misses Van Buren at the summit of Pikes Peak in the course of their 3,300 miles' journey from Atlantic to Pacific. They left New York on July 4th and reached San Francisco on September 2nd. The ascent of Pikes Peak entails a climb of 2½ miles to 14,109 feet above sea level. In the photograph the Indians have the mudstained appearance of many days' severe grueling.





## ROAD TEST OF WITAL MOTOR FUEL.

**A Fuel which has High Capabilities in the Matter of Speed.**

**T**HE machine on which the following tests were made is a 1916 3 h.p. Enfield. It has been specially fitted for the use of heavy fuels, the Amac carburetter having been provided with an efficient hot air intake, while the induction pipe has been lagged to prevent radiation. Almost as important, minute care has been taken in guarding against air leaks, it being impossible to obtain good results from a heavy fuel unless this point be carefully watched. Insulation tape, seccotine, and indifference as to the look of things are, to a certain point, common necessities in these days of heavy petrol and still heavier substitutes.

With high expectations the tank was filled up with Wital fuel and the engine started. It obstinately refused to fire in one cylinder, this being the front cylinder from which the hot air supply is drawn, and consequently carburation did not improve as the engine warmed up. This kind of thing had happened before when experimenting with heavy fuels, and we knew that, in order to give the Wital sample a fair test, the engine must be taken down and decarbonised—quite a brief task with the Enfield engine. While at it we also took the opportunity of reducing the compression by inserting a  $\frac{1}{32}$  in. packing between each of the cylinders and the crank case, and we can now say with confidence that this has much improved the running of the machine.

A note here which may be of interest to the owners of small twins reduced to the consumption of heavy fuels (no joke intended). Many of these engines will not run satisfactorily on heavy fuels unless reasonably free from carbon deposit. The deposit soon increases the compression to an extent which causes pre-ignition, and the trouble is aggravated by the deposit forming more and more rapidly as bad running continues.

The task of decarbonisation can be made much less frequent by reducing the compression, and now that winter is drawing near this can be done with advantage.

### **A One-third Petrol Mixture.**

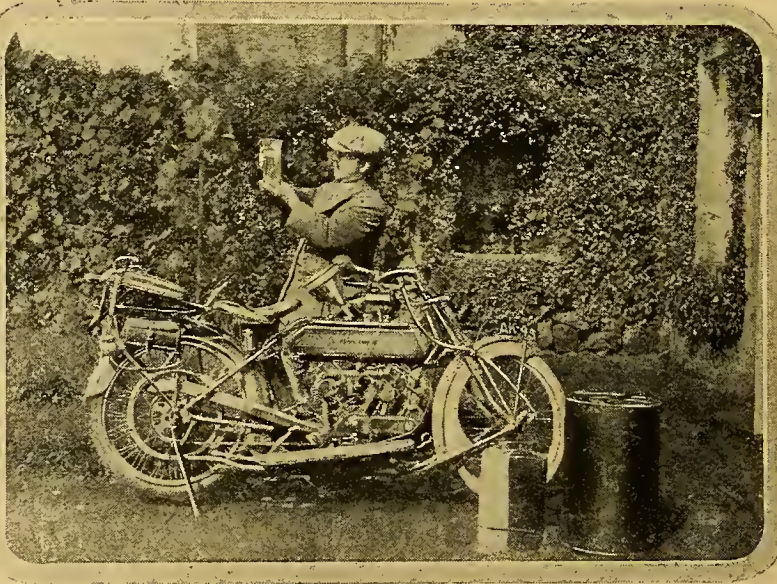
The engine now started up with the healthy beat of a 9 h.p. twin, and it was decided first to try a mixture of one-third petrol and two-thirds Wital. The tests were made over a tortuous mountain route, a thirty-mile circular tour being chosen. Several really bad gradients and freak corners were encountered, one of the climbs being  $3\frac{1}{2}$  miles in length—a steady upward grind, finishing up with fifty yards of 1 in 5 by way of a temperature indicator.

The engine was started up third kick by the assistance of the auxiliary petrol jet, the petrol being cut off instantly the engine had fired, and throughout the journey it ran with perfect sweetness with a plentiful circulation of oil. Slightly less power on hills was experienced than when pure petrol was used, the speed of the engine becoming subdued early in the ascent, and unless a change down was made in good time a distinct, though not particularly malicious, "pink" ensued.

With the Wital fuel mixture we found it particularly necessary to keep up the "revs," and by doing this it was possible to make very fast ascents. It was

not, however, possible to climb so slowly—and surely as with petrol.

The engine has always possessed rather unusual "revving" capabilities, but with the Wital fuel it surpassed itself. It is quite the fastest fuel the writer happens to have stumbled across, and on the few long level stretches the route included it proved very considerably faster than petrol. The first test worked out at 82 m.p.g., 28½ m.p.h.



Refilling the tank of the 3 h.p. Enfield after completing one of the tests.



### Road Test of Wital Fuel.—

A real upland hurricane was blowing, and in order to obtain fair comparative results it was necessary to make the second test that same day. The tank was now filled with neat Wital fuel, but, in spite of the auxiliary petrol jet, a good deal of difficulty was experienced in starting.

### Wital Fuel, no Petrol.

Much that has been said concerning the previous mixture still applies, though the engine proved rather more difficult to handle than when the one-third petrol was included. It took more air, however, and "revved" with just as much enthusiasm, though it proved extremely easy to muddle the mixture, with the result that "pinking" was very apt to occur at freak corners. The chief difficulty lay in the fact that on shutting off the mixture at a sharp corner the engine did not respond instantly on reopening the throttle. It merely jogged over compression for a few paces,

losing speed, and thus a "pink" ensued when finally it decided to fire. This could doubtless be put right by careful adjustment, but many riders have neither time nor aptitude for this.

There was no sign of overheating on hills, most of the long ascent being accomplished on the 35 m.p.h. mark, and by what may almost be regarded as a coincidence, the second round was accomplished within five seconds of the time taken on the first round. We append a table giving at a glance the comparative results:

Fuel.	m.p.g.	m.p.h.	Distance.
$\frac{1}{3}$ petrol, $\frac{2}{3}$ Wital	... 82	28 $\frac{1}{2}$	29.7 miles
All Wital	... 83	28 $\frac{1}{2}$	29.7 miles

Summing up, the Wital fuel would appear to be an excellent petrol substitute, and no motor cyclist need hesitate in sampling it. It is, of course, improved by the addition of petrol as regards starting, and we find that it gives far better results in warm weather than in cold.

## LIGHTWEIGHT SIDECARS.

CERTAIN individuals are pushing the lightweight sidecar, of which the motive portion is either a baby two-stroke or a four-stroke not exceeding 350 c.c. I have done one or two journeys in a 2 $\frac{3}{4}$  h.p. Douglas and sidecar, and must admit that the little jigger, especially in its three-speeded form, is a very plucky little puller indeed, though personally I value my Douglas too much to run it at such a high average of r.p.m., or to risk its light frame under such stresses. I cannot think there is any real economy in overworking a miniature engine or over-straining a featherweight frame. When the same craze is applied to the baby two-stroke it represents sheer lunacy, so far as the bulk of existing machines are concerned, and I am heartily at one with a well-known firm of lightweight makers who include in their vendor guarantee a fair usage clause, which excepts machines fitted with sidecars. The baby two-stroke engine might conceivably stand the racket moderately well in the flatter eastern counties, particularly when the roads are dry and the weather

windless. But it takes most baby two-strokes all their time to keep cool in hilly country with a single load and without the wind resistance of a sidecar, and no sane man would dream of burdening them with such a load in severely undulating localities. If any determined economist insists on running the risks he should use a 2 $\frac{3}{4}$  h.p. motor cycle, with very strong frame, such as the Colonial model Douglas. Many of the lighter and cheaper two-stroke frames would not last half a season under such maltreatment, and it is unfair on the best of them. When the leading constructors of high-powered heavyweights have experienced some difficulty in evolving sidecar chassis which will stand a season's hard work without fracture, it is folly to overweight light frames. IXION.



### DESPATCH RIDERS IN MESOPOTAMIA.

Thanks to the courtesy of Cpl. A. J. Sproston we are able to reproduce these interesting pictures. Sproston, it may be recalled, wrote a vivid account of his experiences in Mesopotamia, which was published in *The Motor Cycle* of July 27th last. The upper picture was taken on a railway truck, showing men and their Douglasses en route to a base. The lower view shows a few despatch riders at the headquarters of the Tigris Corps.



## ELECTRIC LIGHTING FOR MOTOR CYCLES.



### How to Adapt Electric Lighting to Two-strokes and other Lightweights.

IN many issues of *The Motor Cycle* references have been made to the important question of electric lighting for the now popular two-stroke lightweight, and it is by no means improbable before long electricity will come into its own, as an illuminant, in the motor cycle world to the almost complete exclusion of acetylene, as has already happened with regard to motor cars.

With the advent of the highly efficient metal filament bulb and scientifically designed electric head lamp with silvered parabolic reflector, resulting in a considerable reduction in current consumption, electricity has lost practically all its failings, and the old problem of the disposition of the battery ceases to appear as an unsurmountable proposition.

#### Dynamo Dry Battery or Accumulator.

As is well known, there are at the present time three available sources of electricity suitable for the motor cyclist: (1) the engine-driven dynamo, preferably with a battery arranged as a floating device or stabiliser to ensure a steady light when the machine is in motion and a continuance of light when the vehicle comes to rest, (2) the dry battery, and (3) the accumulator used alone.

Of the three alternatives, the dynamo is at present suitable only for passenger outfits where suitable accommodation for the various electrical fittings is not limited, or for the heavyweight solo machine, in which case a little extra weight is unnoticeable and there are better opportunities for the mounting of the battery and dynamo without their presence proving a source of inconvenience.

But for the true lightweight machine it is at present unsuitable, and we are compelled to turn our attention to the remaining two methods.

Dry batteries are now perfectly satisfactory for solo work provided careful attention is paid to the selection of a reliable, guaranteed article and too much in the matter of light is not expected from them. They suffer from the disadvantages, in the writer's opinion, of having no very obvious means of indicating their condition other than by short-circuiting with an ammeter, are not rechargeable, and, owing to their adoption not being universal, it is not always possible to obtain a new battery on the spot if the old battery fails while on tour.

There are, of course, ways of diminishing these defects; it is wise to carry two sets of batteries on the machine and fit a two-way switch at some convenient point to allow of either battery being brought into use.

For all-round efficiency, however, the writer still holds to the celluloid type of accumulator.

In selecting a suitable accumulator for motor cycle use, two points must have careful consideration. (a.) It must be designed expressly for the purpose in order to withstand the road shocks to which it will be subjected, and the type which some makers list as a Colonial model is well worth the slight extra cost. (b.) It must have a capacity and discharge rate suitable for the work it will be called upon to do.

The celluloid accumulator possesses the advantages of light weight and freedom of inspection owing to the transparent case over the teak lead-lined type of cell, and further, if built up with separators of corrugated perforated celluloid between the plates the construction is practically solid, and vibration has little effect upon the life.

With regard to the all-important question of capacity, the principal difference between an ignition battery and one designed for lighting is that while the former is only called upon to deliver current for not more than one-third of the total time the engine is running, the latter is expected to maintain a continuous steady discharge during the whole time the lights are in use, and consequently the capacity of the lighting battery must be very much in excess of what would be considered sufficient for an ignition cell in use for the same number of hours. The general trade rule is to rate the continuous discharge capacity at one-half the ignition capacity, and thus a 20 ampère-hour ignition cell becomes only of 10 ampère-hour capacity when required for lighting.

There is also a further point on the amount of the discharge, or the number of ampères required on the continuous discharge to be investigated. Broadly speaking, this current should not exceed one-tenth of the capacity of the battery calculated on its continuous rating, so that for the example previously mentioned the maximum current taken from a 10 ampère hour cell will be 1 ampère.

#### Selecting the Bulbs.

Having arrived at this stage, the question of the size of bulb supplying the light becomes the next factor, and it will be necessary to balance the desirability of a good light against the necessity of eliminating unnecessary weight.

For ordinary town use and general country riding a 4 volt .75 ampère screw cap bulb giving about three candle-power will be found suitable for the head lamp, and a 4 volt .3 ampère bulb of similar type



### Electric Lighting for Motor Cycles.—

giving about one candle-power for the tail lamp. This latter fitment should be of the pattern which can be housed away under the carrier and protected from the tyre by the mudguard.

The total current taken by the two bulbs in use will be slightly in excess of 1 ampère, and, remembering the rule of one-tenth the capacity, we shall be well inside the limit by adopting a 15 ampère-hour 4 volt battery for the purpose. If the ignition type of cell only is available, after being satisfied that the construction is all that could be desired, see that the ignition capacity is given at not less than 30 ampère-hours. The maximum charging rate will probably be marked at from  $1\frac{1}{2}$  to 2 ampères, and at this rate the battery will be fully charged in ten to twelve hours.

### The Best Place for the Accumulator.

With regard to selecting a suitable position for the battery on the machine, the ideal place is about the centre of the frame, as this is the point at which the vibration will be least felt, but as this position is usually fairly congested by the time the motor maker has secured his various mechanical devices, the next best situation is aft of the seat-pillar tube, and in the majority of machines sufficient space will be found between this tube and the rear mudguard. Failing this position, the only alternative is to attach the case to the side of the rear carrier, but unfortunately the vibration is at its maximum here. [Why not the foot-board?—Ed.] Whatever the position, the battery must be placed in a strong metal case securely attached to the frame by steel clips and screws, and provided with a hinged door. On inserting the battery, make the connections, then pack tightly in place with strips of rubber to prevent any chance of movement, and it is a good plan to attach a piece of sheet rubber to the top of the case inside, by means of fish-glue, to prevent the terminals of wire short-circuiting to the case.

The best kind of wire for the connections between the lamps and battery is the brass spirally armoured two-core cable, as used for motor car lamps, but a cheaper substitute, which will be found quite as satisfactory provided care is taken to prevent fraying by contact with sharp projections, is the ordinary twin circular workshop flexible, which has a black weatherproof finish of impregnated cotton braiding on the outside, while the core will consist of two sets of thirty-five strands of No. 40 gauge wire, possessing great flexibility and ample current-carrying capacity.

Both head and tail lamps should have self-contained switches, as this simplifies the wiring and reduces the possibility of loose connections and short-circuiting, and to prevent the wire swaying it should be clipped to the frame with the soft metal clips sold for use with Bowden wire.

The battery will run the lamps continuously for from twelve to fifteen hours on one charge. If continuous current electric light is available in the house, this charging can be performed either during the daytime if much night riding is indulged in or at stated intervals during the week. The most economical method of charging off the house supply is to connect the battery in series with the lamps of a room which is in use nightly, the reduction in light thus caused being almost imperceptible, while the cost will, of course, be nil, as the lamps would be used in any case.

### Charging the Battery.

The connections can be arranged by removing the tumbler switch controlling the lamps and substituting a new tumbler switch of the two-way pattern and a two-pin wall plug and socket. The permanent wire connections are then remade in accordance with the diagram, and a pair of loose wires, preferably coloured red and black, are attached to the removable plug for connection to the battery as required, and it will

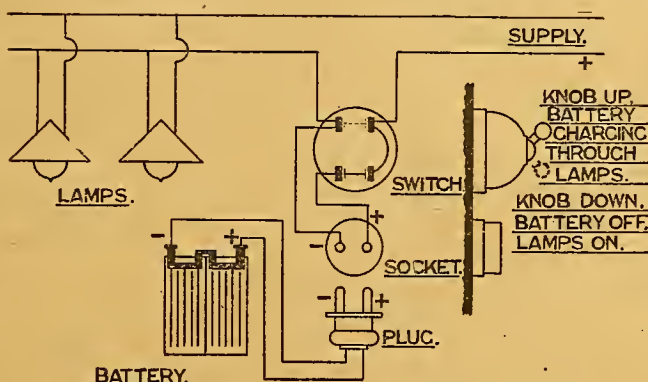


Diagram illustrating the method of charging from the house lights.

be necessary to ascertain which of the two plug wires is connected to the positive (+) source of supply, as this wire when found must always be coupled to the + battery terminal. To find the polarity of the supply, insert the plug in the wall socket, put the switch into the charging position, and dip the bared ends of the two plug wires into a tumbler of vinegar and water. In a few seconds bubbles will be seen

collecting on the negative wire.

When the battery is to be charged it will now only be necessary to connect up the terminals to the plug wires, insert the plug, and switch on until the acid in the battery bubbles furiously and assumes a slight milky colour, owing to the presence of gas bubbles.

When fully charged it can either be immediately disconnected or the switch changed over to the ordinary lighting position, when the battery will be cut off from the supply, and no harm will result even if left in this way for some time.

The one disadvantage of this method of charging is the length of time required owing to the small amount of current consumed by the modern electric lamp, and for purposes of calculation a 200 volt 25 watt metal filament lamp can be assumed to require one-eighth of an ampère, or a 16 candle-power carbon lamp on the same voltage one-third of an ampère. The total number of lamps controlled by the switch should be added together to obtain the actual current passing through the battery, and this sum total must not exceed the maximum charging rate marked on the battery, which is hardly likely to be the case.

As a final warning, never allow the battery to run down so low as to make the filaments appear red-hot only, and never leave the battery in its discharged condition a single hour longer than absolutely essential.

FRANCIS E. SCHOFIELD.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Popping in Carburetter.

**?** What is the cause of "popping" or backfiring in the carburetter? It only occurs at slow speeds or when starting up, but immediately stops if I flood the carburetter.—C.S.H.

The trouble referred to is usually caused by too weak an inlet valve spring or too weak a mixture. It appears to be the latter cause in this instance, because flooding the carburetter seems to cure it. Consequently, shut off the air when you are driving slowly, and see that there are no air leaks in the carburetter or induction pipe unions.

### Burnt Contact Points.

**?** I shall be glad if you can help me to solve the following difficulty which I am having with the U.H. magneto of my 5-6 h.p. 1914 twin. The magneto worked all right until, say, 11,000 miles, when serious misfiring occurred, and the points were found to be very badly burnt. I bought a new pair of platinum screws on April 15th of this year, and they gave no trouble until July 15th, after 916 miles, when I found, as misfiring began again, that they too had burnt out. I took them to an efficient engineer, and he said he suspected the condenser of the magneto. He made a thorough overhaul of the magneto, and found that, except for a small amount of dust, it was in apparently perfect condition. I refitted the magneto, put in two more platinum screws, and ran the machine from July 25th to August 17th, when, after 368 miles, serious misfiring started again. I then fitted a new pair of Jebron points. After a further 278 miles I examined the points (not having had any serious trouble with them) and found that the shorter screw on the lifting part of the make and break was burnt, the heat having caused a small hard dome of metal, which I had to hammer flat again to get a good contact. I am again running on the points and awaiting my next misfiring trouble and consequent call for fresh points. I had a set of new high-tension cables fitted not long ago so that there might be no fault there. If you can kindly help me to stop this trouble I shall be grateful. The short screw on the lifting part is the one that burns away very soon, and then the fixed longer screw becomes affected and chars and burns after a time.—T.W.J.

Your trouble is undoubtedly due to a faulty condenser. The adjustment of the points would not affect this. We would advise you to have the magneto thoroughly overhauled by a reliable firm.

### Hot Air Intake.

**?** In your issue of August 17th, on page 139, "How to Economise," you show a sketch of a pipe attachment to fit on Senspray carburetter on bottom right-hand corner, supposedly to heat the cold air before entering and mixing with the petrol spirit to the engine. My machine is a James. Could you give me a fuller description, with size or bore of pipe required, and the number of coils you would recommend round the exhaust? I might say that the carburetter fitted to my machine is a Senspray. Furthermore, would it be advisable to take out the gauze at the intake?—H.T.

The pipe should be the size of the outside measurement of the spraying funnel. Two or three turns round the exhaust pipe should be sufficient. We should advise you to leave the gauze in position, and only make a hole in it for the tube to pass through. If possible, we think you would be better advised to fit a large tube to the total air intake, and draw all the air from some portion of the engine in close proximity to the exhaust pipe or combustion head.

### Pre-ignition.

**?** I have a 1915 6 h.p. combination, which runs splendidly on the level, but (1) when taking a hill it is altogether against picking up; hills must be rushed with it. When I open out there is a tinkling sound coming from somewhere in the neighbourhood of the magneto, which sounds as if someone were knocking the frame with a piece of wire. This occurs when there are no signs of the engine knocking; in fact, I have scarcely ever heard the engine knock, as the tinkling starts first. Since using a half-and-half paraffin mixture, this tinkling is very much more frequent and pronounced, and that on hills which ought to be easily climbed. I have retarded the spark, and shut

down the air, but with no effect, and the tinkling only ceases when the petrol lever is slightly closed, and then only for a few seconds, when it must be closed further. (2.) The compression of the engine is not what it should be, for when hot I can push it against compression when in top. The valves are well ground, and there is the correct clearance between valves and tappets. The piston rings are quite free; but I have noticed, on each occasion when I have had the engine down, that the slots in the rings have worked their way until they stand one above the other. If you can give me any advice upon these questions I shall be greatly obliged.—J.A.O.

(1.) The tinkling sound of which you complain is probably caused by pre-ignition, which will be likely to be more serious when using paraffin. It may be cured by using less air, or possibly by changing the plugs, as pre-ignition can quite well be caused by plugs of unsuitable design, the points of which get red hot. (2.) If the slots in the piston rings get into line, loss of compression will probably result. Before replacing the cylinder, after taking the engine down, you should see that these slots are equally spaced.

### Large v. Small Valves.

**?** (1.) Do large valves make an appreciable difference in the power of an engine, and can one purchase an instrument for enlarging valve seatings in diameter so as to fit larger valves? Are small seatings (narrower) better? (2.) Is really thick-bodied oil the best for hot air-cooled engines, especially if the compression is rather poor (owing to worn cylinder), as few agents seem to stock it? Personally, I should have thought the thicker the better for hot engines. (3.) Are the standard speedometer gear wheels fixed on the right side of the front wheel?—H.G.B.

(1.) Certainly large valves make some difference, but you must bear in mind that you get practically the same effect, only in not quite such a scientific way, by having small valves and a large lift. As to whether or not you can enlarge the seating depends upon the amount of metal at your disposal, but there is a tool for enlarging valve seatings sold. There is not much object in a narrow seating. (2.) It is best not to use too heavy an oil, but probably the best type is one of medium thickness. Deal with a first-class firm of oil refiners, who will recommend the most suitable lubricant if you tell them the make of your engine. (3.) Speedometer transmission wheels are fitted on the right-hand side.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.



### T.T. Dimensions.

Q.

Would you kindly answer the following questions for me, to settle an argument: (1.) For how many years past has the 500 c.c. limit applied to entries for the Senior T.T. race. (2.) Has a four-cylinder F.N. competed in the Senior T.T. of late years? If so, what were its dimensions (bore and stroke)?—D.P.C.

(1.) The 500 c.c. limit has applied to all entries for the Senior T.T. Race since 1912. Previous to 1912 only the single-cylinder machines were confined to 500 c.c., but twins were allowed a considerably greater capacity, as it had previously been considered that a twin was less efficient than a single of the same capacity. However, the performance of the twins in the T.T. (where for several years a twin-cylinder machine won the race) rather disproved this theory, so in 1912 the capacity for both twins and singles was reduced to 500 c.c., where it has remained ever since. (2.) A four-cylinder F.N. motor cycle competed in the Senior T.T. Race in 1914, its bore and stroke being 50×63 mm., 495 c.c.

### New Clutch Plates.

Q.

A week or two ago I purchased a new set of plates for my 1913 3½ h.p. Triumph free engine clutch and had them put in by a local man. The clutch is all right when "in," but I cannot get free engine with the ordinary movement of the rod, and in order to get it have to screw up the clutch operating rod as far as it will go. Then, of course, when it is screwed up so far the clutch will not come "in" properly and slips badly. What do you think can be wrong? The man who put the plates in seems at a loss, and can only advise me to try to adjust it, but it will not "adjust."—J.M.

Your trouble may be due to too large a number of plates being fitted. Try having one or two removed. Owing to the plates being new they may be slightly rough, but will improve after having been used a little. You might try thoroughly washing out the clutch with paraffin, working the clutch pedal up and down while the paraffin is running through. Having done this you inject thin clutch oil. If the plates are a good fit there is no reason why the clutch should not work if correctly adjusted.

### Two Sparks in One Cylinder.

Q.

I have a 1913 free engine Triumph. I have taken the compression tap cock out of the top of the cylinder and fitted a small Sphinx plug in its place, still retaining the usual Bosch plug in its standard position. (1.) If I connect the top of the two plugs with a short length of copper wire shall I get a spark simultaneously from each plug? (2.) Shall I get more even firing and power? (3.) Will it do the magneto any harm? (4.) When overhauling the engine, to swill the crank case out I half fill it with paraffin oil, and then run the engine for about five seconds. Is this a wise thing to do?—R.M.

(1.) No, you will not. The current will take the line of least resistance, and will

spark in whichever plug the current finds the easiest path. (2.) Consequently this would make no difference to the running, and (3) will not affect the magneto in any way. If you wish to have two sparks in the cylinder you will have to use a double-pole plug or have a special magneto. (4.) It is better not to start the engine with paraffin in the crank case. This washes the lubricant from the bearings, and starting the engine would be rather risky.

### Overheating.

Q.

My mount is a 1911 7 h.p. Rex. o.i.v., long stroke, and I am troubled with overheating. I have had the machine two years, and have never been troubled with overheating before taking it down recently. It gets so hot that it will not pull even on low gear. The engine is clean inside, and I drive with ignition as far advanced as possible without knocking. I may say I have tried all positions of magneto timing, and the valve timing is correct.—G.H.

It is very difficult to say what is wrong with your machine from the particulars you give. The usual causes of overheating are as follow: (1.) Too rich a mixture, caused by enlarged jet; too high a petrol level; choked gauze in carburettor air inlet. (2.) Under or inefficient lubrication. (3.) Choked exhaust outlet. (4.) Insufficient lift of exhaust valves, caused by too great a clearance between valves and tappets. This should be about .4 mm. (5.) Incorrect valve timing. Exhaust valves should close when the pistons are exactly on top of the exhaust stroke; inlets should open immediately after. Use a good make of plug, with stout electrodes. Make sure all machine and gear bearings are quite free.

### RECOMMENDED ROUTES.

#### LIVERPOOL TO IPSWICH.—G.H.

Liverpool, by ferry to Birkenhead, Chester, Nantwich, Stone, Weston, Rugeley, Armitage, Lichfield, Fazeley, Atherstone, Smockington, Lutterworth, Husbands Bosworth, Market Harborough, Kettering, Thrapston, Huntingdon, Godmanchester, Fenstanton, Cambridge, Linton, Haverhill, Baythorn End, Cavendish, Long Melford, Sudbury, Hadleigh, Ipswich.

#### MANCHESTER TO ABERYSTWYTH.—C.S.

Manchester, Altrincham, Mere Corner, Northwich, Crabtree Green, Chester, Rossett, Llandegla, Corwen, Bala, Dolgelly, Machynlleth, Talybont, Aberystwyth.

#### ROTHERHAM TO BLACKPOOL.—C.D.

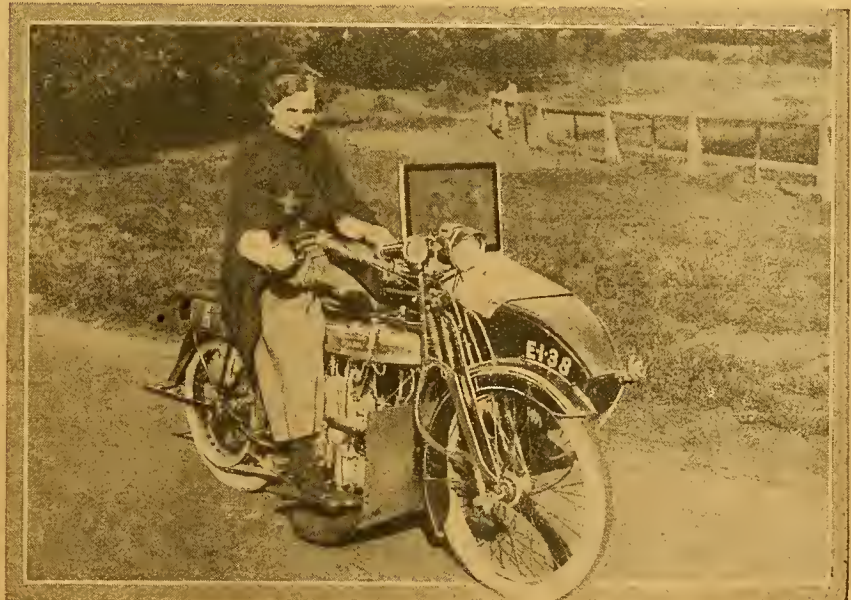
Rotherham, Mexborough, Marr, Ferry Bridge, Aberford, Harewood, Otley, Ilkley, Skipton, Gisburn, Clitheroe, Preston, Kirkham, Blackpool.

#### PETERBOROUGH TO CHATHAM.—G.W.G.

Peterborough, Norman Cross, Alconbury Hill, Huntingdon, Godmanchester, Royston, Buntingford, Ware, Harlow, Chipping Ongar, Brentwood, E. Hornden, Tilbury, by ferry to Gravesend, Rochester, Chatham.

#### FARNBOROUGH TO HARPHAM (YORKSHIRE).—F.S.K.

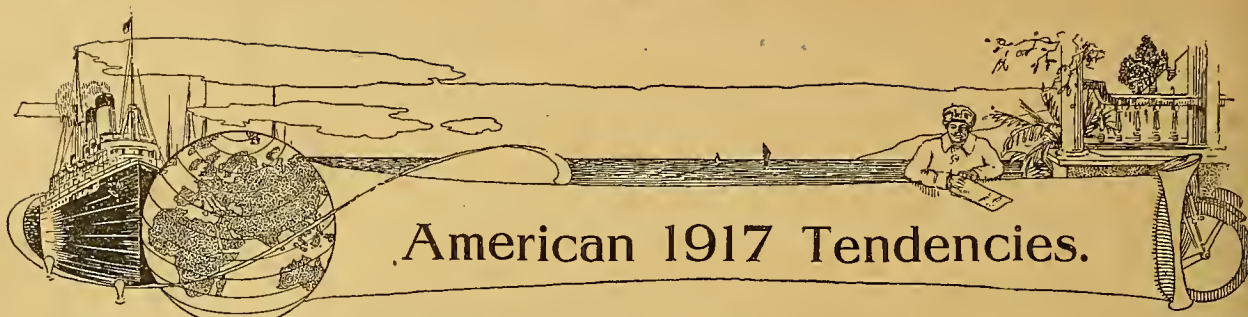
Farnborough, Bagshot, Ascot, Windsor, Uxbridge, Rickmansworth, St. Albans, Codicote, Hitchin, Biggleswade, Eaton Socon, Alconbury, Norman Cross, Stamford, Grantham, Lincoln, Brigg, New Holland, Hull, Beverley, Great Driffield, Harpham. Approximately 230 miles.



### MOTOR CYCLES FOR HOSPITAL NURSES.

Motor cycles are becoming quite popular among nurses who have to travel some distance from their homes to the different hospitals they attend. Our photograph of a 4 h.p. Douglas sidecar shows a nurse wearing a Striside skirt, which when the wearer is dismounted looks in no respect different from an ordinary walking skirt.





## American 1917 Tendencies.

### Trend of American Design as indicated by Features of Next Year's Models.

**A**LREADY particulars of the 1917 models of a number of American makes of motor cycles are coming to hand, and quite a number of the improvements and alterations are worthy of notice. The chief point which impresses one on seeing most of the new models is the decided tendency towards British appearance. At one time the American motor cycle, like nearly all other American machinery, was a type entirely on its own, but as each new year's model is introduced one sees less of the flimsy, gadgety fittings invariably found on these machines, and more and more of the solid and substantial outlines usually associated with machines of British build.

In considering the few makes already shown in their 1917 form, probably the point which impresses one most is the fact that all are equipped as standard with three-speed countershaft gear boxes and all-chain drive. Even the four-cylinder Henderson which, as most riders know, has hitherto been content with a two-speed situated in the rear hub, has now a gear of the three-speed type, which forms a portion of the power unit. In our description of a trial of this machine, which appeared in our issue of November 4th, 1915, it may be remembered that we pointed out that the space at the rear of the engine was simply asking to have a gear situated in it. In connection with gears and clutches a point which seems to be becoming fairly universal on all Yankee mounts is the device which interconnects the gear change lever and the clutch operating mechanism, so preventing the gear lever from being moved unless the clutch has previously been disengaged. The operation of the clutch in most cases can be performed either by hand or foot at will.

#### Bowden Wires becoming More Popular.

This dual control is a point which has received a certain amount of attention of late in this country, the difference between the two systems being that where it is fitted over here the hand-controlled portion is usually operated by Bowden mechanism from the handle-bar, whereas the American method is almost universally by means of levers and rods, the operating lever usually being situated on the tank side. Speaking of controls reminds one that the various controls, such as spark, throttle, valve lifter, brakes, etc., are in nearly all cases still actuated by means of rods and levers, the flexible wire system apparently not finding any great favour. On the other side of the Pond. But a few makes are now beginning to adopt wires to a greater

extent, though in most cases in conjunction with the twist grip method of control for throttle, valve lift, and spark. On one or two well-known machines the flexible wire system appears for the actuation of the second brake, a fitting which, owing to the law of this country, has usually figured on machines imported into England, but until quite recently has, on most machines, been conspicuous by its absence on those sold in America.

Kick starters and footboards, too, are apparently rapidly replacing the pedalling gear which until quite recently was almost universal on American mounts.

#### Large Kick-starter Pedal.

One well-known firm has made a simple improvement to its recently-adopted kick-starter, which corresponds with a point recently raised by "Ixon" in these columns, viz., a kick-starter pedal with a more generous surface for the foot. In this particular instance the pedal is formed by a substantial bicycle pedal, after the manner of the Lea-Francis, which, when not in use, folds neatly out of the way. The footboards, when fitted, are nearly always made so as to fold up—a system now fairly well known to British riders since the Indian people introduced it some years ago, but which never found favour in British-built machines. This type of board is undoubtedly a useful fitting, at times rendering storage easier and often saving considerable damage owing to a spill when riding solo.

#### Engine Design.

When considering the points of engine design, one immediately notices the increasing disappearance of the detachable cylinder head, which at one time formed a popular American type, while the side-by-side position for the valves on touring models seems to be increasingly popular. Roller bearings are becoming common, and on several of the better-known makes are being adapted not only for big-end bearings, but, as on at least one well-known make, they also form the main engine-shaft bearing in place of ball bearings. Mechanical lubrication has now become almost universal, the simple adjustable plunger pump forming the means on most machines. Simplicity of production and reduction of parts, especially those of the small variety, are undoubtedly beginning to be the aim of the American designer, whilst strength and lightness, consistent with cheapness of production, are also aims worthy to be followed.

The stands are now nearly all made of light girder metal formed in one piece

with no brazed joints. Front wheel stands are making an appearance on some of the American models. It is curious that, although front stands were made for the machines intended for this country, they were rarely supplied on those intended for the home market. This also applies to the extension of the front mudguard over the front wheel; this fitting appears to be universal now.

The new American Harley-Davidsons are equipped with a front stand, which is fitted to the main frame just beneath the engine, a feature which has the advantage of allowing the steering head to be quite free for inspection and adjustment when jacked up. The hollow type of wheel spindle, always fairly common on American motor cycles, is now more popular than ever, and is, in fact, practically universal.

#### Spring Frames.

In spite of the fact that rear sprung frames had their origin practically in America, as far as can be at present seen, little seems to have taken place in the way of manufacturers taking up this type of frame generally. Spring seat pillars and auxiliary saddle springing, however, are fairly common. Another point of interest lies in the fact that, whereas in England short semi-T.T. handle-bars are becoming almost universal for touring mounts, the Yankee still seems to adhere to the long upturned pattern. This is probably due more to the twist grip control than to the more comfortable position gained.

#### Single Cylinders.

The single-cylinder has always been a more or less neglected pattern, and although most of the manufacturers still continue to list and manufacture a single-cylinder model, little enthusiasm seems to be displayed in it. Nearly all American singles have been fitted with the engine in a more or less inclined position, and although this principle appears to be most popular, there is certainly a tendency to assume the vertical position. The new Reading Standard single, for instance, has the engine practically in a vertical position, but for some reason or other it is still very slightly inclined backwards.

An important point in American motor cycles is that nearly all makers are following their bigger brothers, the car manufacturers, and turning out their outfits ready for the road complete with lighting installations, horn, and so on. The dynamo lighting outfits are becoming very popular, and nearly every firm of repute lists at least one model so equipped.

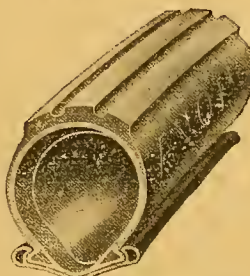


## TYPES OF AVON TYRES—Nos. 7 and 8

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The Avon "Light-weight" Covers have been specially designed for this type of mount, and embody adequate strength and endurance with minimum weight, together with the essential qualities of pace and safety. They will be found to hold the road at all speeds, under all conditions, and prove exceptionally reliable in cornering.



No. 8.—As above, but round-studded tread and slightly heavier casing.

Note the stout 2-ply casing and overlapping bead-flaps.

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Combination .....	Up to 5-6 h.p.	—	—	53/-	55/-	67/9	59/9
Three-ribbed * .....	'Big' Models	—	—	—	—	—	48/4
Tricar.....	Up to 5-6 h.p.	—	—	38/6	41/3	44/-	49/6
Stonebenge .....	Up to 4 h.p.	—	22/9	24/9	26/9	29/6	31/4
Druid.....	Up to 2½ h.p.	17/4	19/3	21/2	—	—	—
Lightweight 3-rib ....	2-strokes, etc.	12/-	14/7†	16/9	—	—	—
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B5





## CORNERING

A point of advantage in the Dunlop non-skid motor cycle cover lies in the fact that when the main studs wear to the level of the main rib, they still have non-skidding properties, because they are not central on the rib but project for half their diameter outside the rib. No. 1 stud, for example, projects on the right hand side of the rib and No. 2 on the left hand side and so on alternately, while the subsidiary studs remain equally operative during the life of the cover.

We would point out that a small pattern non-skid with twice as many studs as the Dunlop is not nearly so effective. Many people have attempted to copy our design, but are unable to do so owing to its being patented.

## DUNLOP

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Founders of the Pneumatic Tyre Industry,  
Para Mills, Aston Cross, BIRMINGHAM.  
OF ALL CYCLE & MOTOR CYCLE AGENTS.



TRADE



MARK.



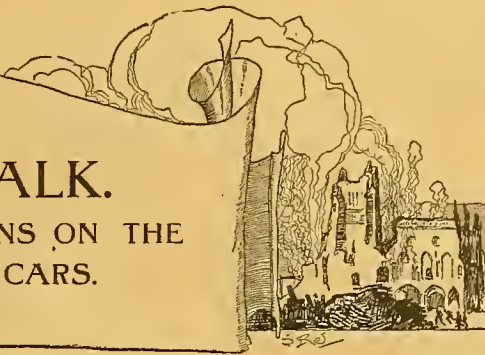
The Dunlop rubber-studded non-skid motor cycle tread.





## "TANK" TALK.

### FURTHER OBSERVATIONS ON THE NEW ARMoured CARS.



SOME of our raw recruits are very excited. One asked his sergeant the other day how long it would take to rise to the rank of Tank Commander.

I heard an old lady on an omnibus ask a "Tommy" just how "these new water-tank things" were worked. "Well, mum," answered the soldier, with a twinkle, "just we fills 'em with an 'ose, then we dashes up to the German trenches, hauls the beggars out by the scruff of the neck, and—drowns 'em!"—Mr. Mayfair in *Sunday Pictorial*.

The secret had been well kept; even inhabitants of towns in which the armoured cars had been made were unaware of the existence of such death-dealing machines.

More men of the Motor Machine Gun Service have joined the ranks of the Heavy Section, Machine Gun Corps.

The officers and men at the camp of the Heavy Section are extremely proud of the exploits of their *confrères* in France, and the majority are keen to get to the Front and show their capabilities. The confidence of the men in their juggernauts is good to listen to.

The fact that the armoured cars were christened "tanks" misled many as to their motive power, and our mention of petrol engines last week came as news to many. "Kuklos" of the *Daily News* says: "The name 'tank' seems to suggest water ballast to put the weight just where it is wanted *pro tem*." I made sure they would be steamers."

Thrilling stories of the adventures of the "tanks" are added by Mr. Percival Phillips to those already narrated. He writes: Let me begin, haphazard, with the story of an "emergency" tank—thrust into the order of battle at the last minute with a "scratch" crew, with instructions to fight on our extreme right above Combles. Through no effort of the frightened Boches, the steering gear went wrong, and the pilot could only travel straight ahead. This he did. He eventually found himself astride a German trench on the outskirts of Combles—a little out of his reckoning. Here he halted, enfilading the trench repeatedly, until a chance shell of large dimensions hit the car, making it impossible to move forward or back. For five hours the crew of the "tank" worked their guns, while parties of German and British bombers

lobbed their missiles across from opposite sides. Eventually the Germans were killed or driven off, and the crew of the "tank" returned safely through a deadly enemy barrage. A second "tank" had a hectic experience in Bouleaux Wood. It travelled about half way up the wood until in a position enabling it to enfilade the enemy's trenches. Then the commander discovered that the infantry were not coming up behind him, so he went back for them. Again he went forward, with the infantry following, passing over enemy trenches and continuing his journey to the outskirts of Morval. Subsequently the commander

#### Found that he was again alone.

Not wishing to keep all the fruits of victory for himself, he again turned and went back to find the infantry, for whom he was acting as a kind of chaperon. He made a return journey of more than 1,500 yards in their direction, and then discovered that the infantry had been held up by a group of machine guns, which had been turned on them from a trench previously reported as unoccupied. Calmly hoisting itself astride the trench, the "tank" took a hand in the firing, knocking out one machine gun after the other until the trench was unoccupied—save by corpses. Unfortunately the "tank" became wedged in an unusually deep crater, and the crew could not extricate it, even though they emerged and tried to dig it out—with the enemy firing at them from another trench seventy yards away. Then the fun really started. Parties of German bombers worked around to one side of the car, while British bombers from the infantry took cover on the opposite side. The ensuing duel lasted an hour and a half. The Germans tried to drop their bombs on the roof of the "tank" without success. A corporal of the "tank's" crew seized a German bomb which fell among his companions, and tried to fling it back, but it exploded, blowing him to pieces. Eventually the German bombers were driven off, and the crew returned to the British lines. In one group of advancing "tanks" eight out of ten reached the point to which they were directed at the beginning of the offensive.

#### North-west of the Ginchy Telegraph

one of this group silenced a group of six machine guns in a redoubt, concentrating its fire on one after another. All of them did useful work in clearing other machine gun parties out of craters. The enemy had poised his guns on the far lip of the crater, and it was extremely difficult to spot them in the tumbled earth. Another

"tank" in this group captured a trench full of Germans just east of Delville Wood. The pilot saw a white flag waving violently and advancing towards him as he was about to halt his "tank" on the trench and sweep it from both sides. Behind the white flag streamed a long procession of unarmed Germans with their hands in the air. The "tank" accepted their surrender, and told them to pass back to the British lines. It was the good "tank" "Dreadnought" that went first into Flers. Very few Germans were encountered in the High Street, and they were promptly shot down. Flers was in a fair state of preservation, the streets were navigable, and some of the houses still standing; it has since been heavily shelled by the German guns. Three cars visited Flers on the first day, and remained until the Germans began their first bombardment of the place. There is a nautical atmosphere about the "tanks." Their officers salute Navy fashion. As one of them said to me, "You have to be everything from a mechanic to a sailor," and I am inclined to think they are as handy men as ever sailed the sea. You should have seen the "Cordon Rouge" plunging over a crater-filled valley on its way to report to a certain brigadier for duty. The ground was as tossed about and billowy as the sea, for not as much as a square foot had been left untouched by the enemy's shells. A smart young lieutenant slipped briskly through the hatchway and "came ashore," darted down the steep entrance passage three steps at a time, and came to attention before the brigadier with a quarter-deck salute. "Cordon Rouge" is ready for action, sir." "Right," said the brigadier, "don't bring it downstairs."

#### The Protestants.

We note with considerable pleasure that those excellent judges of inhuman warfare, the Germans, sometimes called Huns, are protesting to the Geneva Convention against the tanks. This is perhaps the finest testimonial that our gallant soldiers who man the armoured cars have yet received.

They say that it is not war, but bloodshed. May we reply with Mark Twain (quoting from memory): "'That's about the size of it,' said I. 'If it's a fair question, may I ask what your side was proposing to shed?'"

Lack of space prevents us from publishing a list of German atrocities. We will merely mention poison gas, poisoned wells, and disease germs in shells.



### Tank Talk.—

Sooner or later we shall hear a lot of these armoured cars. It so happens that there are a number of journalists forming the *personnel* of the Heavy Section, M.G.C. A member of the *Daily Mail* editorial staff, the assistant editor of the *Midland Daily Telegraph*, besides others, are represented, whilst three members of the section were formerly connected with *The Motor Cycle*.

The "Somme surprise," as *The Light Car* puts it, has been dubbed by the different papers such varied names as Juggernauts, Tanks, Caterpillars, Willies, Trench Destroyers, Ships of the Land, Iron Houses, Mobile Turrets, Travelling Forts, the Land Fleet, the Steel Monsters.

We have heard of more than one claim to have produced the armoured cars which are now "all the talk." Military and fiction writers forecasted them years and years ago, and we know an officer who revived the idea in the early stages of trench warfare, but was laughed at by fellow officers for weeks afterwards. There was an interval, and the subject was resuscitated, the tanks later becoming an accomplished fact, with what success we now know.

### Origin of the Tanks.

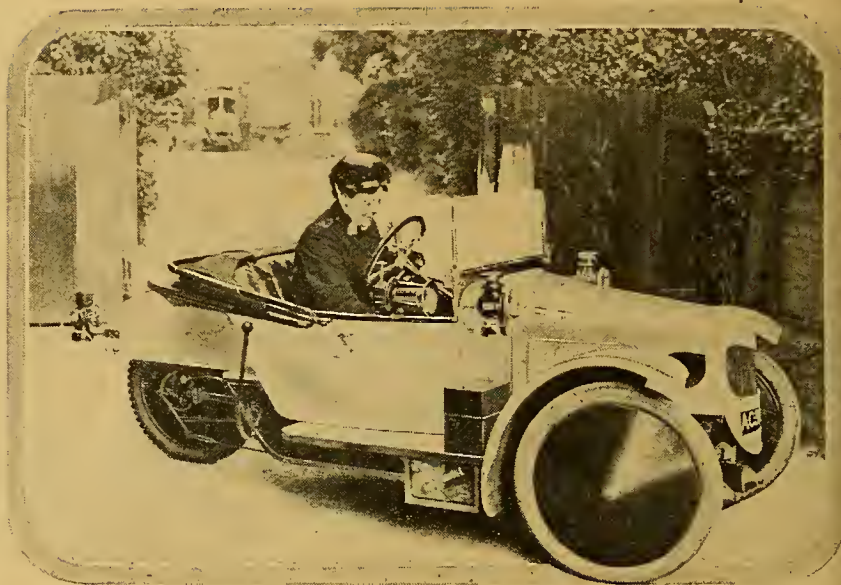
The following statement is issued by the Ministry of Munitions:

In view of the many statements, more or less erroneous, which have appeared in the press, the Ministry of Munitions desires to deprecate the circulation of statements regarding the origination and construction of the new armoured cars, commonly designated "Tanks." In due course an official statement will be issued giving the history and development of these machines, when credit will be given to whom credit is due.

It is only fair, however, to state that the design and construction of the first "tank" are due to officers working under the Admiralty. The Ministry of Munitions subsequently undertook to provide facilities for further experimentation, and for the construction and supply of these machines.



French Army lorry driving instructors. In the background are two British productions—a Tilling-Stevens lorry and a Triumph motor cycle.



A Birmingham lady, Mrs. George Powell, who uses her *de luxe* model Morgan in connection with the St. John Ambulance work. Note position of spare petrol tin.

### THE SOUTHERN PART OF SOUTH AMERICA.

**R**IGHT at the bottom of South America, in the town of Punta Arenas, are a number of motor cyclists, and we are told that British machines are preferred, solely by reason of their reliability and excellent finish. The first machine imported was an L.M.C. in 1911; now there are about forty. The L.M.C. is owned by a Mr. D. P. Bradley, who is at present at home. He speaks very highly of the way in which the L.M.C. has stood up to six years of heavy Overseas usage, and it must be gratifying to the makers, who have given more attention than the majority of other British firms to the requirements of Overseas riders.

In the early part of 1914 Mr. Bradley, together with a friend mounted on a Douglas, made a remarkable run across the continent at the bottom of S.A. The distance traversed was about 400 miles, being from Punta Arenas (Chile) to Port Gallegos (Southern Patagonia) on the Atlantic, and then across the Andes to Esperanza on the Pacific.

### TAKE IN THE AIR WARM.

**W**HEN we compare the carburetter on a car engine with the carburetter fitted to a motor cycle engine we notice one great difference. The carburetter fitted to a car, if it does not take in air specially warmed, has the inlet pipe hot water jacketed, is attached directly to the cylinder casting, of which the inlet pipe forms a part, and always

takes in air heated at least by the high temperature inside the bonnet. Now the main air intake of the modern motor cycle carburetter usually points away from the cylinder, and the air is naturally stone cold, but the idea is, presumably, to get a straight through passage so as to aid vaporisation. We are inclined to think that it is more essential to keep the carburetter warm. This is no new idea, as the old Longue-mares were exhaust jacketed, and often the fixed air inlet was fitted with a warm-air scoop, and this was in the days of .680 petrol. Leaving heavy fuels out of the question for the moment, and assuming that petrol is used, the difference between a warmed and an unwarmed carburetter is most marked. When either the air or the inlet pipe is heated the engine runs more regularly, pulls better, especially at slow speeds, and is more economical in fuel. The use of substitutes renders the heating of the carburetter essential, but we venture to think that even when normal conditions are resumed the hot air pipe in the warming jacket will be retained.

### S.O.S.

Extract from a letter received by the Editor a few days ago: "I always turn my petrol off about 100 yards before I stop, and I find immediately I shut off petrol—that is from the tank—the engine goes much nicer and increases speed 25%. Would an air leakage on the tank just above the tap cause this?"

### HIS MAJESTY'S PILOT.

We are told that on the occasion of one of His Majesty the King's visits to France the Royal car was piloted by a motor cyclist mounted on a  $3\frac{1}{2}$  h.p. James. We are further informed that His Majesty personally commented upon the smart appearance of the motor cyclist's machine.



# IT ALL DEPENDS ON THE TYRE

— but there is no need to worry if you are riding on Bates "British-built" tyres. The rough road, the sharp turn — neither has any terror for the cyclist thus equipped. A Bates tyre is safe at any angle. Its firm grip of the road will carry you safely over the most treacherous surface, and do it as well at the end of its life as at the beginning. That's the strong point about Bates protection. It lasts as long as the tyre does.



The British and Italian War Offices,  
The South African Defence Force,  
The South African Police, and the  
New Zealand Post Office have recently  
placed contracts for

**Bates**  
SUPER RUBBER.  
**Tyres**

#### Colonial Wholesale Stockholders

Smith, Denham & Co, Henderson's Buildings, Von Brandis Street, Johannesburg, S. Africa. Childs, Parr, and Joseph, Nairobi, British East Africa. David F. Laing, 9, Weld Road, Kuala Lumpur, F.M.S. Cycle and Motor Supplies, Ltd., Farish Street, Wellington, New Zealand. W. Cornell & Son, 122, 124, Pirie Street, and 29, 31, 33, Hyde Street, Adelaide, South Australia. A G. Healing & Co., Ltd., 354-356, Post Office Place West, Melbourne, Australia. Bennett & Barkell, Ltd., 124-132, Castlereagh Street, Sydney, Australia.

**W. & A. BATES, LIMITED,**  
**St. Mary's Mills, ——— LEICESTER.**

DEPOTS—LONDON, GLASGOW, & NEWCASTLE.

*In answering this advertisement it is desirable to mention "The Motor Cycle."*



# SUNBEAM

## MOTOR CYCLES-

### PERFECT TRANSMISSION.

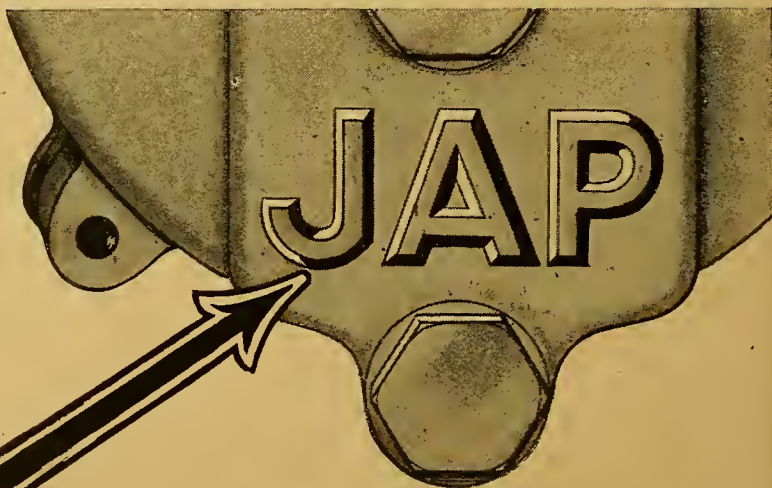
The entire output of the above is at present required for War Purposes.

Prospective buyers are therefore advised to purchase any that are left in stock among the various Sunbeam Agents throughout the country, or apply to have their names put upon our Waiting List.

*Catalogue and full particulars sent on receipt of postcard to —*

**JOHN MARSTON, LIMITED — 11, Sunbeamland — WOLVERHAMPTON.**

SEE  
THESE  
LETTERS  
are on your  
CRANK CASE.



They mean that the Engine was built by  
**J. A. PRESTWICH & CO.,**  
**LONDON.**

The EXCELLENCE IN DESIGN AND WORKMANSHIP  
are your guide when choosing a machine.

**REMEMBER BRITISH AND BEST.**

**J. A. PRESTWICH & CO., Northumberland Park, TOTTENHAM, N.**

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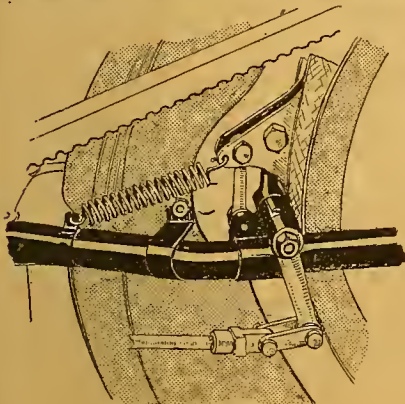
Telephone: 1613 Tottenham.



# ROVER MODIFICATIONS FOR 1917.

Several Wartime Innovations on  
the Latest 3½ h.p. Rover.

**I**N these trying times, when manufacturers are engaged almost entirely on munitions, it is not surprising to find few real alterations in design, even when now and again the makers are able to produce a machine; in fact, the public should really consider themselves lucky if they are able to purchase a machine the details of which are by no means new. The Rover Co. have, however, introduced one or two small modifications in their standard motor cycle, which will appeal to the buyers of the limited number available. Probably the most noticeable alteration from the type which did duty for the past year or so is the wider petrol tank, which is now of such a size that it will hold a full two gallons of petrol, a good feature in these days of restricted fuel supplies. The change



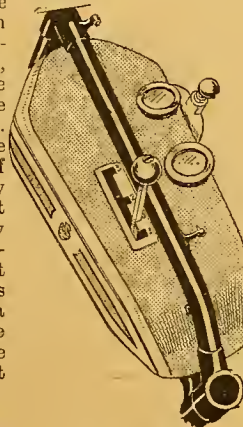
Rear brake mechanism.

speed lever is mounted on a bracket clamped securely to the tank tube, the lever passing through an opening arranged in the tank. The tank thus takes the

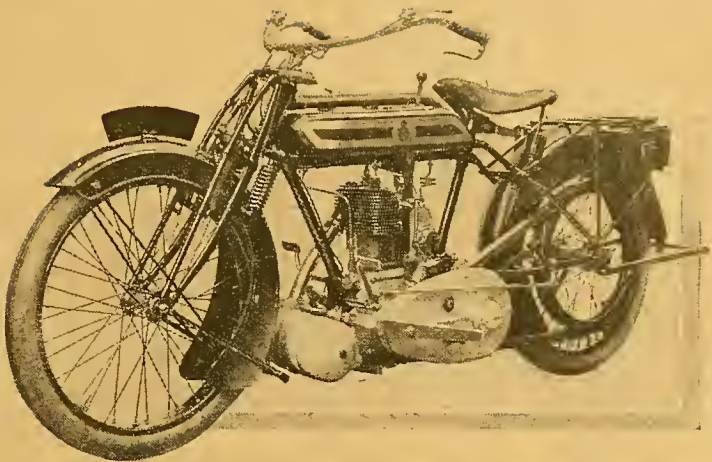
place of the notched quadrant, an arrangement which undoubtedly gives a very neat appearance, in addition to permitting the lever to be in a most get-at-able position, and at the same time leaves the tank sides clear. Certainly the easy removal of the tank may be somewhat obstructed by this arrangement, while it of course adds some extra seams in the tank where leaks might occur.

## The Brakework.

The rear brake is a point where a small detail alteration has effected a considerable improvement. This consists of a small additional rod, connecting the brake



Rover tank showing location of gear change.



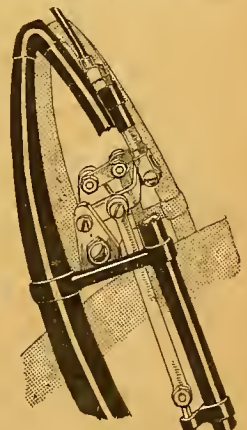
Observe the new aluminium chain cover and large silencer, which are features of the latest pattern Rover.

shoe to the fulcrum bracket in such a manner as to ensure an absolutely parallel motion for the shoe. The brake shoe, which is of the type actuating in the V of the belt rim, is pivoted on the short upturned portion of the actuating lever. If this were the only fixing it would be clear that the action of the rotating wheel would cause the shoe to tip, and cause undue wear at the upper portion of the shoe. By extending the attachment arm and connecting it by means of the small auxiliary rod to the fulcrum lug, the motion of the shoe is then constant in relation to the chain stays and belt rim. The cast aluminium chain case for the chain drive of the countershaft gear is also a recent improvement, which not only enhances the appearance of the machine, but is also more substantial and less likely to rattle than the sheet metal ones fitted previously.

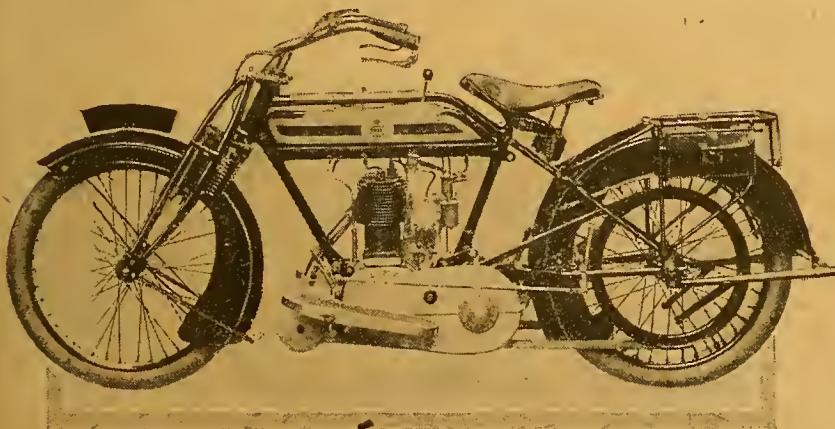
## Other Interesting Points.

Since the outbreak of war quite a number of interesting features have been incorporated in the Rover motor cycle, of which, owing to the absence of shows and to interest in other matters, many readers may not have been aware. We therefore think that a short résumé of a few of the more interesting details will not be out of place. The front wheel brake, for instance, is quite a novel fitment. It is of the usual rim variety, operated by means of a Bowden cable; but, in order to enable it to be more effective, a simple arrangement of a lever giving much greater power is interposed between the horseshoe and the cable.

(Continued on page 278.)



Details of front brake mechanism.



1917 model Rover, which only differs from the 1916 model in a few details, and these are described in the accompanying letterpress.





## TIMES TO LIGHT LAMPS.

SUMMER TIME.			
Sept. 28th	...	7.16	p.m.
" 30th	...	7.11	"
GREENWICH TIME.			
Oct. 2nd	...	6.6	"
" 4th	...	6.2	"

### Airmen Motor Cyclists.

Mr. F. Hulbert, manager of the motor department of the Triumph Cycle Co., Ltd., went up in an aeroplane last week, piloted by his friend, Capt. H. Lister Cooper, who will be remembered as a leading motor cyclist.

### The Principal War Funds.

At the week-end the principal national war funds stood as follow:

The Prince of Wales's Fund	£5,957,162	0	0
(£3,468,925 distributed)			
British Red Cross Fund	4,365,306	0	0
The Queen's Work for Women			
Fund	170,625	0	0
Belgium Relief Fund (exceeds)	2,000,000	0	0
Kitchener Memorial Fund (exceeds)	303,000	0	0

### Why?

An interesting case was tried at Barnsley last week, where a motor cyclist was charged with driving a motor cycle and sidecar to the danger of the public. The defendant stated that he controlled the machine from the seat of the sidecar, an attitude which the Chairman described as ridiculous. In spite of the defendant's assertion that he had complete control of the motor cycle he was fined 20s.

### A Motor Cyclist Victim.

An unfortunate accident to a crippled motor cyclist is recorded in connection with the Zeppelin raid. This man was among the first to reach the spot where the intact Zeppelin fell. On seeing the Germans on the road he hurried for help. In the darkness he unfortunately collided with a motor car and sustained serious injuries to his leg, which may have to be amputated.

### Hill-climbing in Western Australia.

In cold, rainy weather, the Western Australia M.C.C. ran off a hill-climb at the Lesmurdie Falls Hill in July. The road was so bad, due to the rain, that there was some doubt as to whether the event would be run off or not, but competition was so keen that it was finally decided to send the men up.

#### Results:

UNDER 500 c.c.			
H. V. Norton (3½ h.p. B.S.A.)			
A. Roberts (3½ h.p. Triumph)			
L. Hope (3½ h.p. Sunbeam)			
UNDER 350 c.c.			
G. Norton (2¼ h.p. Sunbeam)			
L. Hope (2¼ h.p. Sunbeam)			
H. V. Norton made fastest time (1m. 5½s.) of the day and record for the hill.			

### Fifty Miles Road Race in Queensland.

The Indian lightweight has arrived in Australia, and won a fifty miles road race held by the Queensland Motor Cycle Club. The time was 1h. 31m. The scratch man, E. Lakey, on a 7 h.p. Indian, took 62m.

### Johannesburg-Durban Record.

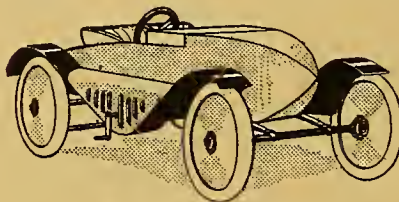
Details reach us of an officially timed ride by two motor cyclists from Johannesburg to Durban. The two motor cyclists, who were mounted on a B.S.A. solo machine and Enfield sidecar outfit respectively, covered the journey in five hours less than the fastest train. The times were as follow:

B.S.A. solo	15h. 39m.
Enfield sc.	18h. 24m.
Train	23h. 22m.

The above times include stops.

### Chills in the Early Autumn.

The season is upon us in which dangerous colds are easily caught. On bright sunny mornings we leave home clad lightly, and return in the chilly night air shivering. The warning applies particularly to short-distance riders, who have only a mile or two to travel to and fro to business. In that short distance a chill may be caught that will last for months, especially at this time of the year.



### A SIMPLE CYCLE CAR.

The design combines the simplicity of a sidecar with the comfort of a small car. The engine is placed between the right-hand wheels as on the Scott Sociable, and the whole vehicle is a glorified double-seated sidecar with four wheels. Our sister journal, *The Light Car*, of yesterday's date, contains a fully illustrated description of this machine.

### Lamp Dimming Regulations.

A motorist was recently fined at King's Heath, Birmingham (where the restricted lights order is in force, which necessitates a thickness of tissue paper over the glass), for having instead a dimming disc with the usual six half inch holes over his electric lamp. Many motor cyclists are unaware that if this type of dimming disc is used (it is only compulsory in the Eastern Counties) it is necessary to use it in conjunction with the sheet of tissue paper in order to render it legal, even in districts where only one sheet of tissue paper alone is sufficient.

### A Fast Levis.

An interesting case was brought before the Belfast Court a few days ago. A rider of a Levis two-stroke was summoned for riding at the rate of 45 m.p.h., according to the police. The compliment to the machine and rider was overshadowed by a fine of 40s. and costs! We learn that the constable's method of checking the rider's speed was by slowly counting six, during which time he says the rider covered 250 yards. This antiquated method of timing is not always confined to Ireland.

### The Arbuthnot Trophy Fund.

Just before definitely closing the Admi Arbuthnot Trophy Fund the Auto Cycle Union received and accepted one guinea from East Midland Centre. This now brings up the total to the very satisfactory sum of £213 3s.

### Ha! Ha!

A reader writes: "The rider of a fix geared machine was causing amusement some onlookers in his vain endeavours effect a start. After many unsuccessful attempts and many more comments from spectators, he finally got away, and then triumphantly drew from his pocket a flag affixed at the front of his machine a small flag on which was written the word PARAFFIN."

### A £5 Reward.

A Norwich reader has written to Editor offering to pay any sum up to £5 for himself and a friend of his to be accepted together as clerks in the Motor Machine Service. It should be explained that the writer is a qualified shorthand-typist, and has been discharged from the R.F.A.

We have pointed out to him that the recruiting work of *The Motor Cycle* has throughout been purely honorary, and it resulted in an estimated saving to the country of several thousand pounds.

### How to Keep Warm.

On a particularly hot day last week we came across a motor cyclist lustily pedalling his machine on a stand. To our amazement he was endeavouring to start the engine on paraffin. We wondered how he had covered the four miles that separated him from home; but the distance one can cover in trying to start a refractory machine is wonderful, many of the old brigade know! Eventually he grasped the fact that motor cycle engines cannot be started on that fuel, and turned disgusted homewards, leaving his machine in the hedge.



### THE SHORTEST WAY

The owner of a Matchless sidecar shown in across country that was unknown to him. The to get assistance from a neighbouring farm. T



## American Sidecars.

Some of the American sidecar manufacturers will pay but scant attention to the sidecar. In an American contemporary we saw the other day that the designs were very decidedly inferior to those of British makers, and we could say also from the point of comfort we feel greatly. During the last two years the American sidecar has improved certainly, but America has nothing to compare with the best British makes.

## Tyre Wear.

The inequality in the value of identically priced tyres was again brought home to us the other day. On the rear wheel of a 10 h.p. chain-driven sidecar belonging to an acquaintance was a leading tyre showing the tread after running four hundred miles. The tyre on the sidecar was an identical one (which cost the same money). This one had been run on the above machine under similar road conditions, and had no damage other than a worn tread; but it had 3,000 miles on the rear wheel to its credit. We were assured that great care had always been taken with regard to the tension of the chains, so that the poor mileage was not due to faulty chain adjustment.

## Overseas Long Distance Road Records.

In several parts of the world not engaged in our great keenness is being displayed in lowering the times made by motor cyclists in covering the distances between certain towns. Thus, we are fairly frequently hearing of improved times for the Hobart-Launceston (Tasmania) and the Johannesburg-Durban (South Africa) roads. Between the chief Californian cities the competition also exists, and we hear that the Los Angeles-San Diego record now stands to the credit of Art. Holmes. Mounted on a Harley-Davidson, he lowered the previous record by 1m. 30s., in spite of a smash, resulting in a dislocated shoulder.



## ALWAYS THE QUICKEST.

He endeavoured to hasten his journey by cutting a shorter route than it looked, and the motor cyclist had started at the second kick upon reaching land.

## The Roll of Honour.

Great regret was expressed in Midland motor cycling circles at the news of the death in action of Lt. R. Wyley, of Coventry. He was a keen rider, and took part in some of the inter-Varsity competitions of the pre-war days. His father, Col. Wyley, is one of Coventry's foremost citizens.

## Armoured Cars or Submarines.

Many and varied are the yarns concerning the "tanks," and perhaps the most amusing is that recounted to us by an officer in the R.F.C. This is to the effect that they will go under water, one having been started at the bank of a deep river and coming out smiling on the other side in five minutes!

## The Standardisation Question.

The Secretary of the Engineering Standards Committee, Mr. C. le Maistre, writes that the question of standardising motor cycle controls may be taken up seriously in the near future by his Committee. The controls matter is becoming of more and more importance in view of the serious accidents that happen from time to time.

## Where to Repair.

In one of the busiest thoroughfares in Coventry we recently saw a motor cyclist apparently in trouble with his engine. Instead of drawing to the side, he commenced operations in the stream of traffic, indifferent to any inconvenience he may have caused. His obliviousness, however, vanished abruptly when a light car driver purposely missed him by what seemed a fraction of an inch, a huge trolley almost touching his sidecar at the same time.

## Road Surfaces in War Time.

The condition of many of the main trunk roads leading out of the Metropolis is very bad, so bad in some cases as to cause serious damage to any vehicle which passes over them. To neglect a road is false economy, and some time or other repairs must be effected which will prove far more costly than judicious mending at the right moment. The cause of the present sad state of affairs is, of course, due to an enormous increase of heavy traffic and to a shortage of labour. We have several times advocated the employment of German prisoners on this class of work, and it has been stated that this is being done in one or two cases, though not as generally as might be.

## Newhaven a Special Military Area.

For the benefit of those readers who did not see the Order of the Army Council published in the daily press of September 13th, it may be stated that Newhaven (i.e., the town itself and the area within the military defences forming part of the Urban District of Newhaven and of the parishes of Denton Urban and Bishopstone) has been declared to be a special military area under the Defence of the Realm Regulations. Persons desiring to enter the area are required, unless they come within the exemptions specified in Regulation 29B of the Defence of the Realm Regulations, to obtain a permit from the Commandant, Special Military Area, Newhaven. The necessary forms on which to make application for a permit may be obtained gratis from the police, and application should be made to the police station nearest the applicant's place of residence.



## SPECIAL FEATURES.

SINGLE v. TWIN.

ELECTRIC LIGHTING FOR MOTOR CYCLES.

"TANK" TALK.

## A Traffic Census.

A daily paper informs us that on a road which led to the spot where one of the wrecked Zeppelins was lying there passed thirty-three motor cycles and ninety-one motor cars in ten minutes.

## Volunteer Motor Cyclists Wanted.

Motor cyclists are wanted in the Essex Volunteer Regiment. Those of our readers who would care to volunteer for this work should apply to Sgt. A. H. Knight, 1st Essex Volunteer Regiment, B Company (West Ham), Motor Section, Town Hall, Stratford, E.

## To Tourists.

We are informed that the last nine miles of the Honiton-Ilminster direct road (avoiding Chard) is exceedingly rough and loose. Riders are therefore advised to go via Chard and Yarcombe. Also the direct road from Lichfield to Rugeley is very rough at present; a better route is through Handsacre and Armitage.

## Is Everyone Using Substitutes?

The return of summer-like weather over the week-end resulted in many machines being seen on the roads, and to all appearances there seemed as many riders, at any rate in the vicinity of the towns, almost as before the petrol restrictions came into force at the beginning of August. Thus we have further proof, if it were needed, of the popularity of petrol substitutes.

## Motor Cyclists on the Film.

At one of the picture houses in Coventry last week there was shown the film of Triumph testers performing all sorts of feats, from climbing 1 in 2 grass banks to riding through water with the engine half submerged. It is an excellent picture, and should do a lot to popularise motor cycles and at the same time demonstrate their complete controllability even under the most exceptional conditions.

## A Morgan Wanted Badly.

If any reader has a Grand Prix Morgan for sale, there is an offer in the advertising columns of our last issue of numerous vehicles for it in exchange. The advertiser referred to will give all the following for such a machine: "Well-known 1913 light car, two motor cycles, tricar, and Dennis car, and perhaps some cash." Some cash!!



## Rover Modifications for 1917.—

(Continued from page 275.)

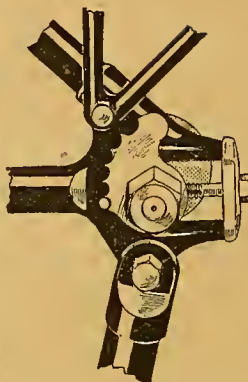
The mudguards, too, are effectively valanced, and in order to maintain the accessibility of the rear tyre and to facilitate the removal of the rear wheel a neat and efficient type of combined hinged carrier and guard has been devised. By merely loosening two nuts the carrier complete with the whole rear portion of the mudguard and tool-bags can be swung up quite clear of everything.

## British Magneto.

The engine has remained practically unaltered since the outbreak of war, and still has dimensions of 85 x 88 mm., which give a capacity of 499 c.c.

On the machine which we saw an M.L. Coventry-made magneto was fitted. This magneto had a most business-like appearance, and was hard to distinguish from the one-time popular German-made machines.

Another simple fitting is a kind of disc adjuster on the rear spindle,



Rover belt adjustment.

whereby a certain amount of variation in the belt tension may be obtained without shortening the belt, which, in view of the somewhat short length of belt necessary with a countershaft gear, would undoubtedly at times prove extremely useful, allowing for more minute adjustment to be obtained.

To sum up, the fortunate purchaser of the present 3½ h.p. Rover will undoubtedly have one of the best thought out single-cylinders obtainable, and withal of irreproachable workmanship. Even these few small detail improvements go to prove that motor cycle manufacturers are not entirely unaware that improvements are possible, and when eventually peace arrives we anticipate with pleasure many surprises in the way of new designs.

## What is Motor Spirit?

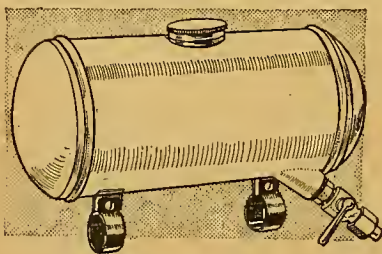
THE great question at the moment is, of course, what is motor spirit, and, at the time of writing, it seems utterly impossible to obtain any definition from any of the Government Departments concerned. The Petrol Committee absolutely refuses to express a definite opinion, even though it is obvious that by refraining from doing so the Committee is encouraging the local police throughout the country to institute proceedings such as were taken recently against the proprietors of charrs-à-bancs at Conway, Bournemouth, and elsewhere.

The fact of the matter is, that whether or not paraffin and petrol substitutes of the white oil variety are to be regarded as motor spirits depends upon the Customs authorities. If these authorities succeed, as we believe they wish to do, in taxing paraffin and white oils as coming within the definition of motor spirit, the Petrol Committee will be bound to insist upon any sales of these fuels being recorded on the petrol licences. At the moment, however, the Petrol Committee is by no means anxious that the heavier hydro-carbons shall be included in the

definition, for the Committee would be involved in a great deal of additional correspondence if it was bound to control the sale of paraffin and white oils. We may take it, therefore, that at the moment the interests of the Customs authorities and of the Petrol Committee are antagonistic to one another. In all probability we shall not arrive at any solution of the problem until either the appeal from Conway has been decided by a Divisional Court, or the Law Officers of the Crown have been instructed by the Government to frame a definition.

## Auxiliary Petrol Tanks.

THERE is at the present time considerable demand for auxiliary petrol tanks which will fulfil two purposes. Firstly, to carry a small reserve of petrol, now that so many restrictions are placed upon the purchase



Brown Bros.' spare petrol tank.

of this fuel; and secondly to use the tank as an auxiliary for the purpose of starting the engine on petrol and allowing the petrol to be turned off after the engine has been warmed up, so that the driver can continue on paraffin or any petrol substitute.

Two sample tanks of this description are illustrated herewith. The first is a half-gallon tank, sold by Brown Bros., Ltd., 15, Newman Street, London, W., which is secured to the top tube by the aid of two spring clips. It has a large filler cap, a petrol union and tap complete, and is well finished in aluminium paint.

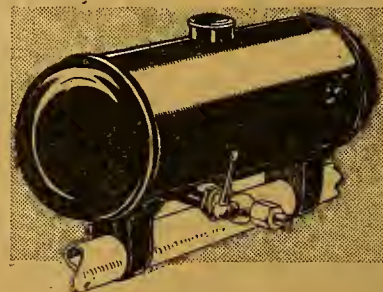
The other tank is made by A. Pilkington and Co., 54, Aston Road,



MOTOR ROLLER SKATES.

The power plant, a miniature V-type engine, is in this case used for the right foot, the other skate being merely a trailer. It is interesting to compare this with the Auto-ped illustrated on page 250 of our last issue. The motor skate hails from France.

Birmingham. It is finished in black, and holds two quarts of spirit. One of the chief features about this tank is the style of clip employed, which is quite secure, and yet allows the tank to be easily removed, and has a particularly strong fixing. A convenient petrol tap and union are supplied, while the only criticism we have to make is that the filler cap and orifice are rather on the small side.



Pilkington's spare petrol tank.

## 1,000 WOUNDED SOLDIERS BY CAR AND SIDECAR.

On Sunday last the National Motor Volunteers conveyed 1,000 wounded soldiers to a concert at the Albert Hall. A large fleet of cars and sidecars collected men from various hospitals around London, and the vehicles were divided into fourteen sections, all under the control of Commandant George F. Doland.



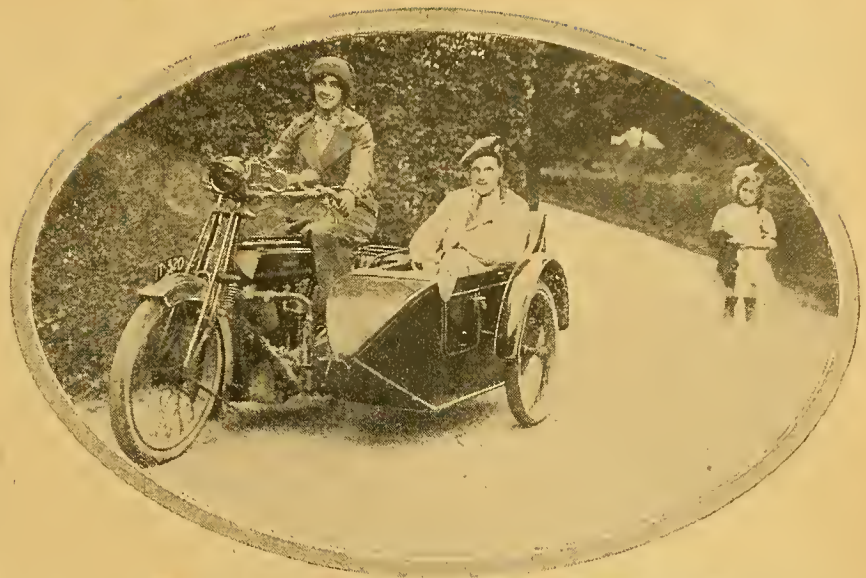
## BRISTOL AVOIDING ROUTE.

REFERRING to the paragraph in our issue of August 31st, a correspondent reports that the route suggested includes a hill which is in very bad condition owing to recent timber hauling operations, and suggests the following alternative: "Descend Rownham Hill, taking first turning to left over the bridge, or, as an alternative, go past the Zoological Gardens to the fountain, down Bridge Valley Road, follow the river towards Bristol as far as second bridge at the entrance to Cumberland Basin. Cross this and make for Long Ashton."

We now understand that the timber hauling work is practically finished, and when we passed this way a few weeks ago road repairs were about to be commenced. The hill should therefore soon be much improved, and even now is not impassable. We did not give our correspondent's route originally, as it might prove somewhat difficult for a stranger to follow. The roads on his route have also been considerably broken with military and motor 'bus traffic.

## PETROFIN AND POPS.

MAJOR NICHOLL, who is shown in a photograph on this page, has officiated as judge on the occasion of numerous A.C.U. trials. He is a clever amateur mechanic, and recently fitted a home-made mild steel inlet valve, which cost but half a crown and is giving excellent service, to his Bradbury. At present the machine is running on Petrofin, which gives good results, but is hard



A lady owner of a Hobart sidecar takes a convalescent soldier for a run.

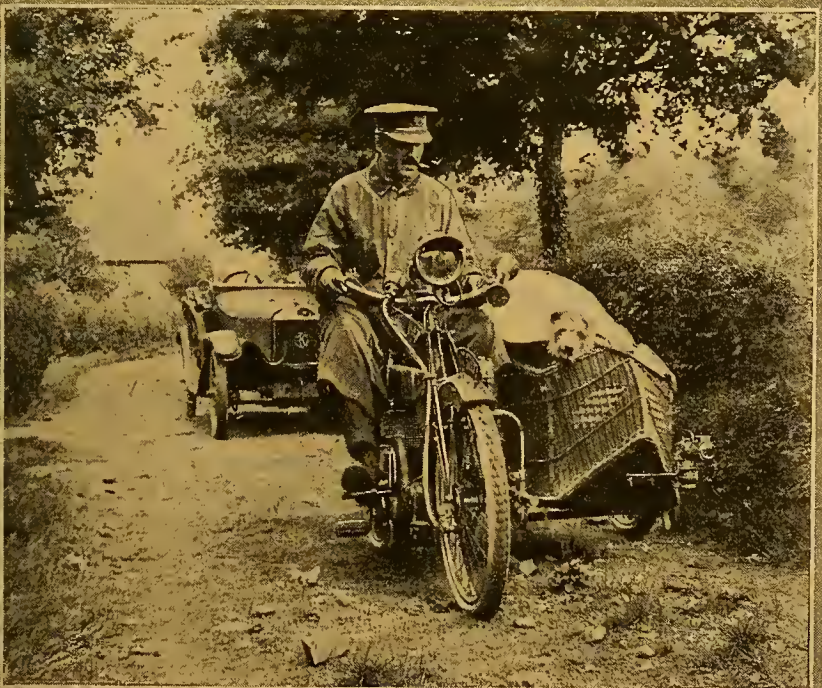
to start on cold mornings. On a recent occasion, when no petrol was available for starting purposes, the difficulty was overcome by pouring a kettleful of boiling water over the carburetter.

"Pops" is as devoted to the sidecar as his master, and absolutely takes possession of any vehicle in which he is invited to sit, and should the poor owner attempt to move him or even take his coat off the seat "Pops" curls his upper lip, shows his teeth, and growls. He is a much-travelled animal, and once spent some time at Gibraltar.

## Average Prices OF Second-hand Machines.

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within five weeks.

Make.	Year.	H.P.	Average for last week.	Latest average obtainable
A.J.S. ....	1914 6	3-sp. sidecar ..	—	£61
" .....	1916 2½	3-speed .....	£51	—
" .....	1915 6	3-sp. sidecar ..	£87	—
Aillon .....	1915 2½	2-sp. 2-stroke ..	—	£27
Bat .....	1913 8	sidecar .....	—	£40
Bradbury ..	1913 4	3-speed .....	—	£28
B.S.A. ....	1916 4½	3-sp. sidecar ..	£64	—
" .....	1915 4½	3-sp. sidecar ..	£62	—
Chater-Lea .	1914 6	sidecar .....	—	£45
Calthorpe ..	1915 2½	2-speed .....	£24	—
" .....	1916 2½	2-sp. 2-stroke ..	£30	—
Clyno .....	1914 6	3-sp. sidecar ..	—	£50
Connaught .	1914 2	2-speed 2-stroke ..	£23	—
Douglas ...	1912 2½	2-speed .....	£24	—
" .....	1913 2½	2-speed .....	£34	—
" .....	1914 2½	2-speed .....	£37	—
" .....	1915 4	3-sp. sidecar ..	—	£66
Enfield ....	1916 6	2-sp. sidecar ..	£79	—
" .....	1915 6	2-sp. sidecar ..	£69	—
" .....	1915 3	2-speed .....	—	£39
H.-Davidson	1915 7-9	3-sp. sidecar ..	£69	—
Humber ...	1913 3½	3-sp. sidecar ..	—	£28
Indian .....	1915 7	3-sp. sidecar ..	£69	—
" .....	1916	Powerplus sidecar	£80	—
James .....	1914 4½	3-sp. sidecar ..	—	£40
" .....	1916 4½	3-sp. sidecar ..	—	£71
Lea-Francis	1915 3½	twin sidecar ..	£70	—
Matchless ..	1914 8	2-speed .....	£49	—
New Hudson	1915 2½	2-sp. 2-stroke ..	—	£27
" .....	1915 4	3-sp. sidecar ..	—	£55
New Imperial	1916 2½	2-speed .....	£32	—
P. & M. ...	1914 3½	2-sp. sidecar ..	—	£41
Premier ....	1914 3½	2-sp. sidecar ..	£42	—
Rex .....	1914 6	3-sp. sidecar ..	—	£45
Rover .....	1914 3½	T.T. ....	—	£35
" .....	1914 3½	3-sp. sidecar ..	—	£45
Rudge .....	1914 3½	multi gear .....	£35	—
" .....	1915 3½	multi gear's car	—	£43
Scott .....	1913 3½	2-sp. sidecar ..	£34	—
" .....	1914 3½	2-sp. sidecar ..	—	£40
Sunbeam ...	1914 3½	3-sp. sidecar ..	—	£62
Triumph ....	1915 2½	2-sp. 2-stroke ..	£35	—
" .....	1914 3½	3-sp. sidecar ..	£53	—
Williamson .	1915 8	3-sp. sidecar ..	—	£52
Zenith .....	1913 6	Gradua sidecar	—	£55
" .....	1915 8	Gradua sidecar	£60	—



Major D. F. Nicholl, D.S.O., and his faithful rough-haired fox terrier "Pops," who accompanies him to camp in the Bradbury every morning.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Salisbury Plain.

Sir,—In the article by "Bona Satis" in *The Motor Cycle* of last week, it is stated, "Beyond Roundway Hill, Salisbury Plain proper is entered." Roundway Hill lies to the north of Devizes, right away from the Andover Road, and there is only a second-rate by-road up to it. I conclude your correspondent means "Red Hone," on the direct Salisbury road from here, but even to one knowing the district it is not clear just what route was taken.

L.A.H.

Devizes.

#### Our Youngest Reader.

Sir,—The other day I journeyed by train from Norwich to Peterborough. At one of the intervening stations a lady, accompanied by a little boy, entered the compartment. The lady had in her hand a copy of *The Motor Cycle*. I wondered what she could be doing with it, for she was evidently not a motor cyclist. At length the secret was out. Turning to the little boy, whose age I learned was three and a half years, she said, "I have bought you your *Motor Cycle*, my dear." Then the little fellow, seated in the corner of the compartment with a huge Teddy bear upon his knees, perused the pages of your journal with an earnestness worthy of a keen motor cyclist. The lady told me that there was no paper he liked so much as *The Motor Cycle*. Surely among your many readers you have none so young, and few more enthusiastic than this little boy of three and a half years.

(Rev.) G. H. BEBB.

#### A Simple Vaporiser.

Sir,—Petrol having gone up in price, I endeavoured to economise with a vaporiser, but without success until I tried the following idea. I procured a small brass cap that would fit the top of the jet, drilled the other end, fitted a bit of fine wire gauze (as used for straining petrol), and then burred the edge over to prevent it being drawn out by suction. With this arrangement I can get more miles per gallon, more power, easier starting, a cooler engine, and can use more air. As I have derived benefit from the various hints in *The Motor Cycle*, I pass this tip on to anyone who cares to try it.

WIRE GAUZE



J. SIMONS.

#### 520 Miles on Four Gallons.

Sir,—It will no doubt interest "Ixion," after seeing his comment on "Auriga's" performance, to hear that I have just finished a run on a 1911 2½ h.p. Douglas of 480 miles on a trifle under three gallons of petrol and paraffin mixed half and half.

My route was by Lancaster, Garstang, Blackpool, Lytham, Preston, Wigan, Warrington, Chester, Wrexham, Oswestry, Shrewsbury, Ludlow, Leominster, Hereford, Ross, Gloucester, Worcester, Bromsgrove, Stourbridge (my tank ran empty at Stourbridge; I had used seven quarts—289 miles = 164 m.p.g.), Wolverhampton, Walsall, Lichfield, Derby, Matlock, Baslow, Chapel-en-le-Frith, Stockport, Didsbury, Stretford, Patricroft, Walkden, Chorley, Preston, Lancaster, and Benthams. I lost a good few miles about Baslow and on the outskirts of Manchester through missing my way, but have not included these.

As I am very keen on economy in running, I have been most particular in my figures. I fitted a hot air intake and covered the induction pipes with asbestos. I have to prime with petrol to start. I had no trouble at all with the machine. Some of the roads in Lancashire were so bad that I could hardly keep on the bicycle. Not bad for an old machine, is it?

W. H. GREENEP.

#### Petrol Substitutes.

Sir,—Being a rider of a Harley-Davidson, I wish to inform other riders of this machine that I have been running on pure Kempol without the use of petrol. Machine fires right off from first kick. I have been using it for the last two months, and I must say that I do not care if petrol is stopped altogether.

OTTO VIOLA.

Sir,—Recent letters from various correspondents on "Petrol Substitutes" at prices ranging round 2s. 6d. per gallon are a splendid indication of the way in which the public is exploited at times like the present. With petrol at 2s. 9d. per gallon, in which is included a tax of 6d. per gallon, the "substitute" is actually dearer than the petrol, which itself carries a large distribution and dealers' profit.

No substitute in existence is worth more than 2s. per gallon at present c.i.f. prices, and the balance is merely extra profit.

In common also, with some other trade periodicals, you have from time to time mentioned that Sir Hiram Maxim and other inventors were coming to the "rescue" by trying to invent some new process to render paraffin suitable for motor engines (page 255, September 21st). However, there is no need to invent any such process, three at least having been in large commercial use for many years converting paraffin and heavier petroleum oils to petrol itself.

There is no reason to-day why the public should not have petrol, if it wants it, at about the same price as is being charged for substitutes, or less, but its inability to combine where its interests are affected prevents it.

FRANCIS HYNDMAN (Lt.) R.G.A.

#### Four-cylinder Motor Cycles.

Sir,—Once in Capetown, some six years ago, I saw a machine with wheel steering, low bucket seat, spring frame, and four-cylinder engine, as near as I can remember. Was it not called the T.A.C.?

In these days of progress it appears to me that there was in the old T.A.C. the germ of a very fine 'bus. Why did it not succeed? Can you tell me?

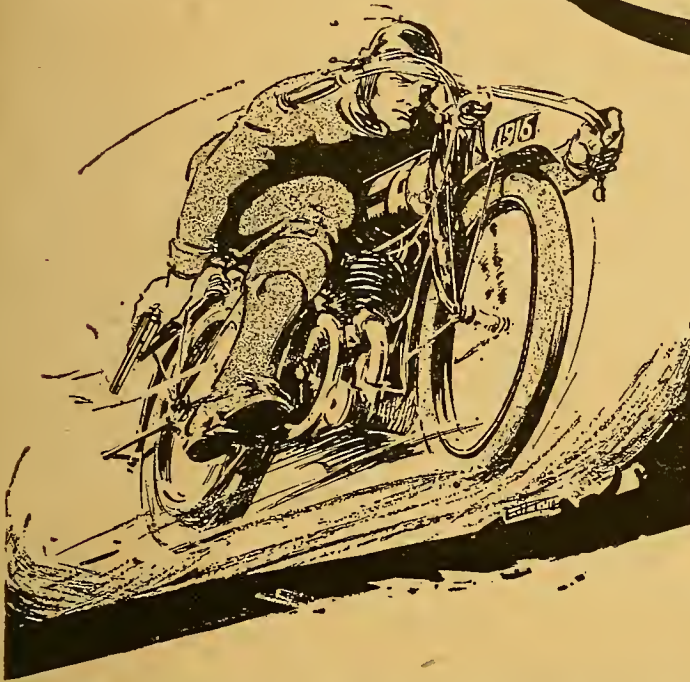
Discussing the machine with the few motor cyclists I have met who ever saw one of its kind, I find we always finish on a note of regret that such a cycle is not to be had now. I shall never forget the thrill it gave me to sit in that bucket seat only about 18in. from the ground. And had not the machine three speeds with gate change? One is tempted to say such a machine must be the ideal specification.

FRED ROBERTS.

[The manufacture of the T.A.C. (later known as the T.M.C.) was largely disorganised owing to the war. Possibly a machine on the same lines will be revived ere long, as we have evidence that certain manufacturers are turning their attention to four-cylinder motor bicycles, and we have already proved the feeling of the riding public by articles in these pages. Similar machines to the T.M.C. are the 7 h.p. F.N., the Henderson, and the Militaire model.—Ed.]



"Not too proud  
to Spark."



# C.A.V. Magnetos

BRITISH THROUGHOUT

"After the lot of trouble experienced with certain magnetos I thought it only fair to let you know how satisfactory your productions are. I have never had occasion even to take the mag. cover off except for retiming, and speaking to an officer he said for twelve months he had not seen inside his mag., which was also a C.A.V., and in his words your magnetos are IT, and we have to fear German goods no longer."

Corporal, Royal Engineers,  
B.E.F., France.

Write for Art Folder and Spare Parts List.

**C.A. Vandervell & Co., Ltd.**  
Electrical Engineers, ACTON, LONDON.

## THE DUNHILL M.C. JACKET & OVERALLS

AS SUPPLIED TO H.M. GOVERNMENT.

Planned on the saddle, so to speak, the garments combining smartness with perfect ease and freedom. Built of Paramatta Twill of the finest Proofing, and quite impenetrable to wind and rain.

The quality is unequalled anywhere for the price

**GUARANTEED ABSOLUTELY  
WATERPROOF.**

### PRICES:

- Cheapest quality Jacket (belt extra) £1-1-0
- Seatless Trouser Overalls 15/6
- Best Quality: Jacket with belt £2-2-0
- Seatless Trouser Overalls £1-4-0

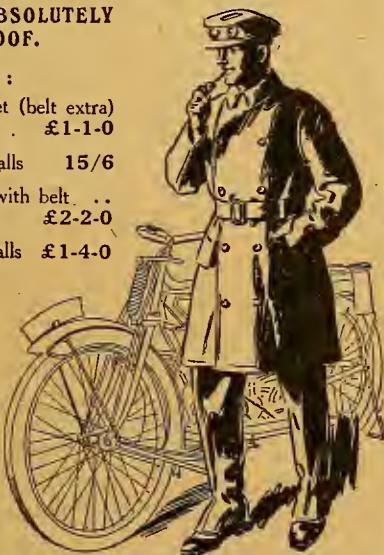
## Dunhills,

Ltd.,  
359-361, Euston Rd.,  
London, N.W.

2, Conduit St., W.  
42, Lombard St., E.C.

Manchester:  
90-92, Cross Street.

Glasgow:  
70, St. Vincent Street.



Fit

# Wood-Milne

## Motor Cycle Tyres

and experience real "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

Wood-Milne,  
Ltd.,



Preston

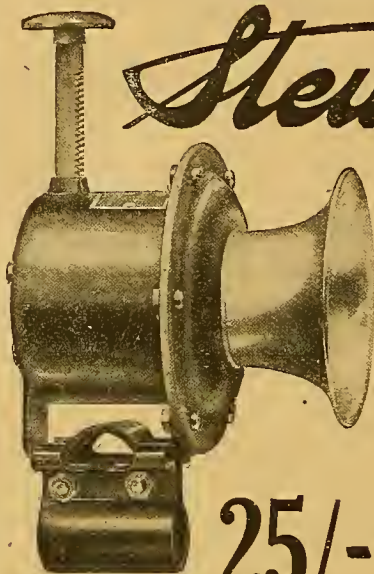
Wire—"Comfort, Preston."  
Phone—Preston 418.  
LONDON: Manchester Avenue, E.C.  
Wire—"Byturning, London."  
Phone—City 477.  
Birmingham, Leeds, Manchester, Bristol, Belfast, Dublin, Glasgow, Etc.



In answering these advertisements it is desirable to mention "The Motor Cycle."



Now this is a Warning Signal that people understand—it's the



## *Stewart* WARNING SIGNAL

—a full-throated instrument that makes them pay attention. The slightest pressure on the plunger produces a far-carrying sound that is obviously an imperative warning. It is just the kind of signal you need on your motor cycle. It is beautifully made in black finish, with Nickel Projector. Note the specially strong bracket, which is supported at each end, and will stand any amount of hard wear. Attaches to top tube or handle-bar.

25/-

Obtainable from all Traders, and from

The COOPER-STEWART ENGINEERING CO., Ltd.,  
11, Broad Street, Bloomsbury, London, W.C.

The Food Drink which promotes fitness and efficiency is

# HORLICK'S MALTED MILK



A glass of Horlick's is always the best invigorator. Taken before a ride it will give strength and endurance, and after strenuous exertion there is no better pick-me-up. At all times it gives and maintains fitness and stamina, and is especially useful to men on Active Service.

**SUPERIOR TO TEA, COFFEE, COCOA, AND BEEF EXTRACTS.**

READY IN A MOMENT WITH HOT OR COLD WATER ONLY. NO COOKING.

Served in Hotels, Cafés, and Railway Refreshment Rooms

Also available as delicious food tablets to be dissolved in the mouth. Relieve hunger and thirst and prevent fatigue.

Supplied in Sterilised Glass Bottles, at 1/6, 2/6, 11/-, by all Chemists and Stores  
The Tablets also in convenient Pocket Flasks at 6d. and 1/- each.

Liberal sample of either powder or tablets sent post free for 4d. in stamps.

**HORLICK'S MALTED MILK COMPANY, SLOUGH, BUCKS, ENGLAND.**



### Adulterated Petrol.

Sir,—I have for some time suspected that petrol is being adulterated with paraffin, and I have been experimenting in order to find some chemical test which will demonstrate the adulteration. The following test will prove, more or less conclusively, whether petrol contains paraffin or not: Take a quarter of a test tube of petrol and add three or four drops of nitric acid ( $\text{HNO}_3$ ). There will be a distinct dividing line or meniscus formed which splits the solution into two halves. The top layer is petrol; the bottom is paraffin. Add a few drops of chloroform ( $\text{CHCl}_3$ ) and shake. A deep yellow precipitate will fall to the bottom of the tube, while a pale green precipitate will form at the top of the solution. This test is perfectly simple, and should be of use to motor cyclists who are doubtful as to the purity of their petrol.

E. J. LL. JONES-EVANS.

### The Cause of Overheating.

Sir,—As no abler pen than mine has replied to the letter of Mr. Clifford C. Fenton (September 7th), I should be glad if you will allow me space for a few words. Mr. Fenton is right when he says as the fuel expands with heat a smaller quantity will enter the engine, but, in my opinion, the difference will be but slight. When, however, he begins to employ figures he gets woefully "off the map." Boyle's law refers to degrees Centigrade, in which scale  $273^\circ$  is equal to nearly  $500^\circ \text{F.}$ ; the gas will, therefore, not double its volume in rising from  $50^\circ \text{F.}$  to  $300^\circ \text{F.}$  The size of the engine is immaterial. Can it be that Mr. Fenton is connecting a  $250^\circ$  rise in temperature in some way with a 500 c.c. engine?

Further, Mr. Fenton supposes that in extreme cases the quantity of gas which enters the engine is so small that the increase in volume caused by the explosion is practically negligible. This means that there is no noticeable increase of heat. But how can the incoming gases approach even distantly the heat of the explosion? They can only be heated by the hot parts of the engine with which they come into contact, and this is far below the explosion heat, for the heat is being rapidly carried away partly into the exhaust and partly by conduction through the cylinder walls and cooling ribs, or the whole engine would rapidly become red hot. Moreover, long before the explosion heat was reached,

pre-ignition would occur, with violent backfiring. It must be remembered, too, that the time in which the incoming gases would have to be heated (and the heating would, I think, have to be by convection, for the conductivity of gases is not high) is extremely small, about half a revolution or one-sixtieth of a second at 1,800 r.p.m.

I fear that Mr. Fenton's theory is not very enlightening, but Mr. Stephenson's article interested me exceedingly.

JOHN BONYTHON.

### Severe Scottish Road.

Sir,—It would be very interesting to me, having just covered the ground, to hear or know the experiences of Scottish and English tourists from Cock Wig to Tomintoul or *vice versa*. Roads so atrocious have to be seen to be understood; my pen absolutely refuses to describe their condition. What are the gradients in their steepest part? I used to imagine the Devonshire roads pretty bad and hilly, but the foregoing in the land of cakes "takes the bun." My machine—a 5-6 h.p. Bradbury—which has done 3,000 miles with cleaning, went over without a hitch, and it is a tribute to the workmanship and material that the frame stood the racket. The load was 33-34 stone.

Leslie, Fife.

S 5780.

[Our correspondent has undoubtedly selected a very severe stretch of the Highland roads to compare with the Devonshire ones. The particular stretch mentioned was included in the 1913 and 1914 Scottish Six Days Trials, and those who competed in those trials will have cause to remember the severe nature of this stretch. In most cases it is the length of the Scottish hills, rather than their actual gradient, which renders them so severe.—Ed.]

### Sidecar Outfit up Gibraltar Rock.

Sir,—I thought it would be of interest to you to know that the famous Rock of Gibraltar has been climbed by me on a 6 h.p. A.J.S. and sidecar, with Mr. Andrews, R.N.A.S., as passenger, combined weights twenty-five stone; this is the first motor cycle and sidecar to reach the top, I believe. The track leading to the summit rises 1,400ft. in a mile and half, and is composed of loose sand and boulders. Several times we had to lift the machine over waterways to avoid

### A SPORTING COMBINATION.

W. L. Horwood, R.N.A.S., who has climbed the famous Gibraltar rock on his 6 h.p. A.J.S. sidecar outfit. The track to the summit rises 1,400 feet in  $1\frac{1}{2}$  miles—1 in  $5\frac{1}{2}$  average.



hitting the crank case. A speed of more than seven miles an hour was impossible, as the machine simply skidded in the loose sand and in places an error would have meant a fall on the rocks hundreds of feet below. As an engineer and motor cyclist from the early days, I can fully appreciate the slow pulling qualities of the A.J.S. engine. The machine is a beautiful example of a modern sidecar outfit.

W. L. HORWOOD, R.N.A.S.



### American Motor Cycles.

Sir,—I do not wish unduly to occupy the space you could more profitably utilise in other directions, but I should like to make a brief rejoinder to Capt. Lindsay's letter, chiefly referring to the conservative policy of the manufacturers of my "leading single."

The term I used was "well-informed conservatism"—and justly so, since the policy of the Triumph Co. (to name my leading single) was never that of placing the client in the position of the experimental department, nor even to follow standard practice, but rather, as a result of ceaseless testing of every innovation, to create standard practice.

It was not want of knowledge of speed gears that caused the Triumph to be so long before the public as a single-gear machine, nor lack of experience in rigid drives that caused its adherence to the belt, but rather the reverse in each case.

The comment, spontaneously uttered by experienced workmen when discussing the merits of many machines, "if only the Triumph had made it!" is a tribute to Triumph workmanship which must be admitted without question.

I hope my praise is understood to be disinterested, since in civilian life it is rather to my disadvantage than otherwise to do so; at present, as a repairer in the M.T., A.S.C., I sincerely thank Capt. Lindsay for his offer of information concerning the Triumph he is so fortunate in using in more glorious circumstances than I am permitted to share, and would only remind him that, amongst the endless variety of machines used by the Army, I have every opportunity of observing which machines require the most frequent and extensive repair.

D. H. SMITH.

Sir,—As a regular reader of your paper, I always enjoy a perusal of the various letters you receive, and have lately been amused with the correspondence concerning the "points" of British machines of various types and the American high-powered models. Surely this question depends entirely upon the basis from which we start, i.e., what factor is to be the deciding one—speed, weight, reliability, economy, or what?

Speaking of my own case, which is probably analogous to the greater proportion of motor cyclists, I require a machine to take me from one point to another with the greatest possible (1) reliability, (2) economy, and (3) accessibility in case of breakdown. An extra mile or two per hour matters nothing. We are supposed to have a speed limit of 20 m.p.h., and it is quite fast enough travelling—except for the so-termed "knuts"—if a combination will do 30 m.p.h. in comfort.

My experience is that, taking the above as the three prime factors, there has been nothing yet evolved to beat the  $4\frac{1}{2}$  h.p. single-cylinder all chain-drive, with a good variable gear of three speeds. I am entirely unconnected with the motor trade (nor have I any relative in it), so have not even part of an axe to grind! I think honour ought to be given where it is due on the following facts. I bought a new outfit last Easter, as my old one was getting shaken to bits by the roads. I wanted a Norton. I could not get one. I bought a  $4\frac{1}{2}$  h.p. Quadrant combination of above type. Although I had not seen the machine before, I rode it straight through Manchester up to Skipton, from there over the worst Yorkshire hills with passenger and luggage to Pateley, then across country to Leeming Lane, and up to Corbridge-on-Tyne, over Alston to Penrith, and over Shap back to Skipton without a single hitch of any sort. I have ridden every day since, have done a 400-mile week-end run down to Hertfordshire and back, and have now done about 4,400 miles without a single stoppage from trouble. I have had no puncture, save a slight one in the sidcar tyre, which was mended in ten minutes. I changed the front tyre on to the back between 3,000 and 4,000 miles. Can one wish for anything better? Facts speak louder than words. My argument for reliability needs no addition.

As regards economy, I carefully tested the petrol consumption on my 400-mile trip, and did 75 m.p.g. with passenger and luggage, including about twenty miles of low gear work and pottering. Some of your

readers would appear to think such a result as this almost impossible.

As regards accessibility, my cylinder is exceedingly easily detached single-handed, and can be taken off, cleaned, and put back in an hour, and all other parts are quite as accessible as any reasonable being wants. I find one pumpful of oil per seven miles quite sufficient. Six pumpfuls make one gill. This combination will climb anything, starts quite easily with the kick starter, or, if preferred, can be started at a walking pace on low gear. The silencer is effective, and Terry's spring links added to the original spring forks make the roads of to-day quite comfortable riding. On my particular combination the tyres are extra heavy Dunlops. The gear is a B.S.A. three-speed, and the sidcar is a Canoelet; it is good to look at.

As regards the merits of the twin-cylinder, I maintain that in taking an equal number of cases of each the latter gives more trouble than the single. Your correspondence columns have proved this to me, apart from experiences of the road.

H.F.M.

Leeds.

### The Scott Sociable.

Sir,—It is with the greatest interest that I have read your account of the new Scott passenger machine in your issue of July 27th. The vehicle described appears to be a very good attempt to combine the proved qualities of the motor bicycle and sidcar with protection and comfort for the driver as well as the passenger, and if it can be produced at a moderate price its future looks rosy. It is the thing I have been looking for for years, and there must be thousands of motor cyclists with the same wants as myself, to whom it will offer an irresistible appeal.

Mayniyo, Burma.

R. STANLEY BAKER.

Sir,—May I, through you, congratulate Mr. Scott on his new sociable? His machine will give both driver and passenger the comfort of a car.

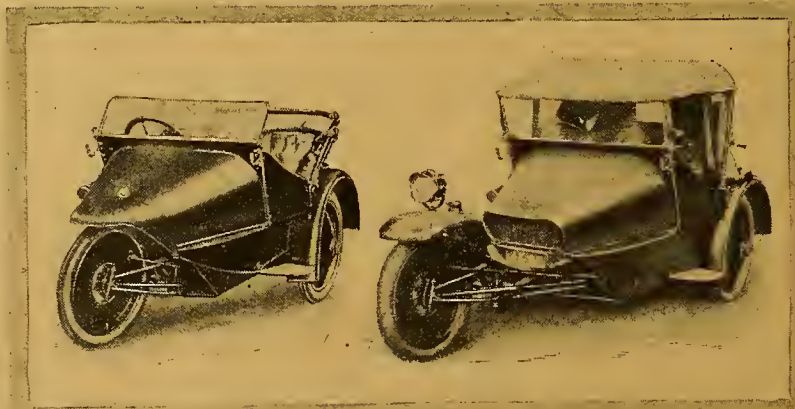
Cleanliness is a problem which will be solved both as regards the machine and driver. The latter will not require to wear the special clothing which is essential when riding the sidcar combination.

I see no reason why one of your correspondents condemns the design as being lop-sided. Why does he not say the same of the sidcar? Although in the accompanying design I have made an alteration, I do not suggest there is any fault to find with Mr. Scott's design, and comfort is the chief thing to study, of course combining elegance as far as is practicable. Great credit is due to Mr. Scott for producing a machine which has already been tested for a large number of miles and proved to be satisfactory, and which will without doubt prove to be very popular when it is placed upon the market.

I should like to add that I read *The Motor Cycle* with great interest, having it sent out to me every week by my brother, as I am in a place out here where it is not possible to obtain it.

S. WAY (Sgt.)

E.E.F.



Suggested alteration to Scott Sociable by placing front wheel in centre. (See letter from Sgt. S. Way.)



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All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

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For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

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Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

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Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON, 3½ h.p., in grand condition and running order.—160, Boundary Rd., Walthamstow. [2366]

### A.J.S.

**A** J.S., 2-speed, splendid condition: war bargain, £30.—T. H. Nice, Bury St. Edmund's. [2360]

**A** J.S., new 2½ h.p. model, in stock: £58.—Buckingham and Sons, Trindal St., Chelmsford. [2467]

**A** J.S., new 1916, 4 h.p., in stock, £76: 1913 6 h.p., in magnificent condition, £44.—Crow Bros., Guildford. [2151]

**A** J.S., 2½ h.p., 3-speed, 1916, new, also 4 h.p. combination, in stock.—Pickering, Mordol, Shrewsbury. [X8240]

**A** J.S., 2½ h.p., 1914, semi T.T., 3-speed, kick start, lamps, horn, speedometer; £39.—Bithell, Mostyn, Chester. [X8200]

**A** J.S., 1914, 2½ h.p., 2-speed, all accessories, and speedometer, perfect condition; £32.—169a, Lower Clapton Rd., N.E. [X8296]

**A** J.S., late 1914, 2½ h.p., 3-speed, nearly new Dunlop tyres; £38.—Elice and Co., 15-16, Bishopsgate Av., Canonville St., E.C. [2352]

**A** J.S., April, 1916, 4 h.p. combination, ridden 1,000 miles, perfect condition; £87.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X8276]

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No.	h.p.		
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10644.	6	1914 ZENITH Gradna & Sidecar.....	£70 0
10649.	3½	1913 single-speed B.S.A.....	£25 0
10650.	4	1914 single-speed BRADBURY.....	£20 0
10657.	4	1914 3-speed TRIUMPH and Sidecar.....	£55 0
10660.	3½	1914 ZENITH Gradna.....	£45 0
10661.	6	1913 ENFIELD and Sidecar.....	£45 0
10663.	7-9	1914 2-speed INDIAN.....	£35 0
10664.	7-9	1913 2-speed INDIAN & Sidecar.....	£37 10
10668.	4	1914 2-speed DOUGLAS.....	£42 0
10673.	4½	1914 3-speed B.S.A. & Sidecar.....	£45 0
10674.	6	1915 CLYNO and Sidecar.....	£67 10
10680.	2½	1913 2-speed DOUGLAS.....	£27 10
10688.	4½	1915 3-speed JAMES & Sidecar.....	£55 0
10610.	2½	1914 3-sp. NEW HUDSON and Sidecar.....	£45 0
10614.	3½	1911 single-speed HUMBER.....	£25 0
10620.	7-9	1915 3-sp. INDIAN and Sidecar.....	£75 0
10624.	2½	1914 2-speed DOUGLAS.....	£35 0
10627.	3½	1914 3-speed MAXIM.....	£15 15
10628.	1½	1914 single-speed DAYTON.....	£12 10
10629.	3½	1914 3-sp. ROVER and Sidecar.....	£50 0
10630.	3½	1913 3-sp. C'shaft TRIUMPH.....	£35 0
10632.	4	1915 3-sp. DOUGLAS & S/c.....	£72 0
10633.	4	1914 3-sp. SINGER & Sidecar.....	£45 0
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10517.	3½	single-speed 1912 TRIUMPH.....	£25 0
10519.	3½	1914 2-sp. PREMIER.....	£35 0
10523.	2½	1913 2-sp. DOUGLAS.....	£44 0
10527.	5-6	1912 2-sp. F.N.....	£30 0
10533.	4½	3-sp. 1912 QUADRANT.....	£27 10
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10320.	2½	1915 2-sp. WOLF-J.A.P.....	£30 0
10306.	3½	2-sp. FAFNIR.....	£12 10
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## MOTOR CYCLES FOR SALE.

### A.J.S.

**23** h.p. A.J.S., 1913, clutch, 2-speed, kick starter, 4 Palmer cord tyres, splendid condition; £25.—Yeasley, Canterbury St., St. Helens. [X8260]

**19** 14½ h.p. A.J.S., Millford Empress S.C., special hood, screen, spare petrol tank, vaporiser; £70, or near offer.—Scott, Sutherland, Chislehurst. [X8277]

**A** J.S., 2½ h.p., 1911, chain driven, 2-speed, hood, controlled clutch, climbs anything, new Cliecher Dreadnought back; £22.—37, Richmond St., Hall. [X8281]

**A** J.S., 2½ h.p., 3-speed; April, 1916, lamps, accessories, complete, new condition; owner leaving country; £50.—Cheshire, 99, Shrewsbury Rd., Birkenhead. [X8094]

**6** h.p. A.J.S.—1913, with Gloria sidecar, hood, screen, luggage carrier, all new tyres, excellent running order, just been overhauled; £37.—2, Disraeli Rd., Putney. [2537]

**19** 14 h.p. A.J.S. Combination, in splendid condition; £68, or would entertain solo machine in part payment, B.S.A. or Triumph preferred.—Williams, 6, Pittville Parade, Cheltenham. [X8232]

**A** J.S., 4 h.p. Combination, 1916, Lucas dynamo lighting set, spare wheel, Stewart horn, speedometer, spring seat-pillar, tools, spare, perfect condition, every refinement, equal to new; inspection; £98.—3, Chester Bridge, Crewe. [X8089]

**A** J.S., 6-h.p., 1916 model, mechanical condition as new, Bicks carburetter, 4 gn. F.R.S. head light, separate rear and sidecar lights, Jones speedometer, Stewart's mechanical horn, 18 gn. 2-seater Montgomery sidecar, wind screen, apron, luggage grid and box, numerous spares; 90 gns.—Woodhead, Hutton Av., West Hartlepool. [X8259]

### All days.

**A** LLON, 2-stroke, 1916, lamps, etc., machine like new; £29.—King, Chemist, Sutton. [2503]

**A** LLON, 2½ h.p., 2-stroke, 2-speed, 1916; in stock.—Pickering, Mordol, Shrewsbury. [X8241]

**A** LLON, 1915½, 2-stroke, single speed, lamps; £25.—Arrowsmith, 21, Village Way, Beckenham. [2401]

**A** LLON, 1915½, 2½ h.p., 2-stroke, perfect condition; £25, or nearest.—Jarvis, Whitehill Rd., Gravesend. [2306]

**C** OLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

**A** LLDAYS Allon, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [0765]

**A** LLDAYS Allon, 2-stroke, 2-speed, late 1915, condition good as new; accept £35.—Arch Jones, Motor Cycle Works, Bornstaple. [8190]

**S** ECURE This Bargain.—Nearly new Alldays 2-stroke, hardly used, complete; first caller or cheque for £18 secures; no offers.—Webb, Jeweller, Chesterfield. [X8299]

**B** RAND New 1916 Alldays Allon, 2-speed, fully equipped, just cost £45; must sell, called up since purchased; sacrifice £35, nearest.—349, Lillie Rd., Fulham. [2235]

**A** LLON, 2½ h.p., 2-speed, done 600 miles, new in June, 1916 Miller head and tail lamps; owner going abroad.—2nd Lt., Wills, Southside Cottage, Gerrards Cross, Bucks. [2336]

### Antoine.

**6** h.p. Antoine, mag., coach sidecar, good tyres; £10.—51, Cowper Av., Satton. [2454]



## MOTOR CYCLES FOR SALE.

## Ariel.

**ARIEL**, 1913, 3½ h.p., 3 speeds, sidecar, speedometer, in first-class order and condition; £26.-6, Warren St., London. [X2491]

**ARIEL**, 3½ h.p., semi-T.T. model, with variable pulley, gear, a topping mount at bargain price, £25.—Laytons Garage, Bicester, Oxon. [X8316]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [X797]

**ARIEL**, Nov., 1914, 5-6 h.p. twin, grey coachbuilt combination, 3-speed countershaft, clutch, kick starter, 2 adjustable wind screws, passenger's and child's, apron, speedometer, lamp, accessories, many spares, small mileage, unpunctured heavy Dunlops, genuine, sound, running perfectly; reason for selling given; trial; cost nearly £100, £58, offers.—Rev. Waterhouse, 10, Mundania Rd., Honor Oak, S.E. [X2544]

## Arno.

**3 1/2 h.p. Arno**, 1912, good condition, recently overhauled; £22 bargain, £16.—Cullis, 57, Clarence St., Loughborough. [X8203]

## Auto-Wheels.

**1914 Auto-Wheel**, latest improvements, with cycle perfect; £9.—3, Bolt Court, E.C. [X2561]

**£7.—Wall Auto-Wheel**, had little wear, good tyres.—Apply, Harris, Homestead, Birmington. [X2237]

**WALL** Auto-Wheel, special shock absorber, good condition; £8.—Court, Martley, Worcester. [X8153]

**AUTO-WHEEL**, very fast, and good running order; £8.—Buckingham and Sons, Trindal St., Chelmsford. [X2465]

**AUTO-WHEEL**, perfect condition, £8, or exchange anything useful.—Archer, 102, Cherryhinton Rd., Cambridge. [X2233]

**AUTO-WHEEL**, B.S.A., and Swift cycles, Dunlops; £15/15, or wheel only £11/11.—Bately, 44, Torrion Rd., Catford. [X2353]

## Bat.

**BAT-J.A.P.** 4 h.p. Motor Cycle and Sidecar, Bosch mag., 2-speed, splendid condition; £20, or reasonable offer.—Seen, 79, Myddleton Rd., Bowes Park, London, N. [X2440]

## Bradbury.

**BRADBURY**, 1912, 4 h.p., 2 speeds, in good order; £17.-6, Warren St., London. [X2495]

**BRADBURY**, 1913, 4 h.p., 2-speed, new coach sidecar; £29/10.—29, St. Leonard's St., Bow. [X2484]

**BRADBURY**, 1913, 3½ h.p., 2-speed, free engine, new tyres, good condition; £50.—Broadhead, Field Lane, Stafrford, Barnsley. [X2238]

**BRADBURY** 1913 Standard Combination, 3-speed, fully equipped, as new; 26 gns.—Watson, 14, Greenbank, Falmouth. [X2523]

**1912 4 h.p. Bradbury**, perfect condition, Dunlop, Wood-Milne, all accessories; £17/10; after 7.—21, Semley Rd., Norbury. [X2381]

## Blackburne.

**1915 Blackburne** and sidecar, splendid condition, lamps, horn, wind screen, petrol saver; bargain.—Bannister, Railway St., Chatham. [X8216]

## Blumfield.

**BLUMFIELD** Twin, very fast, single gear; £18.—Buckingham and Sons, Trindal St., Chelmsford. [X2470]

**1914 Blumfield** 5-6 h.p. Combination, 2 speeds, countershaft, chain-cum-belt, kick starter, 3 lamps, horn, Stewart speedometer; price £24; will exchange higher power, or for light car.—216, Wolverhampton St., Dudley. [X8261]

## Bradford.

**1913 Bradford** 4 h.p. Motor Cycle and sidecar, N.S.U. 2-speed, free engine, in good condition; £20, or offer.—12, Blackhore Lane, Walthamstow. [X8278]

## Brough.

**1916 3½ h.p. 3-speed** (Sturmer-Archer countershaft) Horizontal Twin Brough, not done 300 miles, very fast; £57/10.—Wilkin and Co., Hunter's Bar, Sheffield. [X8217]

## Brown.

**3 1/2 h.p. Brown**, 2 speeds, and sidecar; £18, or offer.—336a, Strerford Rd., Manchester. [X8139]

## B.S.A.

**1916 B.S.A.'s** in stock.—Parker and Son, St. Ives, Hunts. [X2515]

**B.S.A.**, new 1916 models H and K actually in stock.—Moss, Wem. [X8265]

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [X7938]

**B.S.A.**, 1913, 2 speeds, and Milford sidecar, new condition; £54.—15, Warwick Court, Holborn. [X2541]

**B.S.A.** Model H, with B.S.A. Canoelet sidecar, just delivered; £80.—Wippell Bros. and Row, Exeter. [X7994]

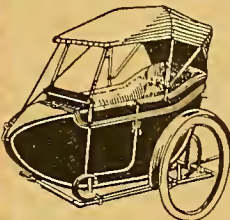
**B.S.A.**, 1914, model K, condition perfect, sidecar, all accessories; £50.—Pegler, Hollydene, Wantage, Berks. [X2319]

**B.S.A.**, 1913, 2-speed, chain drive, New Hudson pattern coach sidecar; £38.—80, Hampton Rd., Redland, Bristol. [X7995]

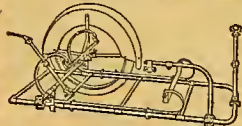
**B.S.A.**, 1915, 4 h.p., fitted with 3-speed gear box, in splendid order; a bargain, £40.—Smith, Evesham St., Redditch. [X8334]

## CORONET SIDECARS.

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**B.S.A.**, 4½ h.p., 3-speed K, December, 1915, under 2,000, perfect, £50, sidecar, £3; good Dunlops part.—53, Lonsdale Rd., Oxford. [X8308]

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**1916 B.S.A.** 4½ h.p. Combination, in perfect order, all accessories; fine bargain, £64, or nearest offer; exchange T.T. countershaft Norton; seen any time.—Hurlock, 63, Denmark Hill, S.E. [X2372]

**4 h.p. B.S.A.**, with special Canoelet sidecar, late 1915 model, speedometer, Lucas horn, 3 P. and H. lamps; this machine is in perfect condition, and is very smart, mileage driven is under 2,000; bargain at £75.—Apply, Beadle, Motors, Dartford. [X2312]

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**1915 Calthorpe-Jap**, 2½ h.p., Enfield gear; £27.—35a, Lyric Rd., Barnes. [X8196]

**CALTHORPE** 1916 Lightweight Combination, run 100.—Williams, 17, Church Rd., Redfield, Bristol. [X8231]

**CALTHORPE-J.A.P.**, 2½ h.p., 1915, 2 speeds, little used; £25.—Buckingham and Sons, Trindal St., Chelmsford. [X2474]

**CALTHORPE**, 1916, 2½ h.p., 2-stroke, Enfield gears, lamps, horn, unscratched; £30.—Bates, Draper, St. Lyes, Bedford. [X2387]

**CALTHORPE-J.A.P.**, 1915, 2½ h.p., Enfield 2-speed, little used, perfect condition; £24.—T. E. Skves, 90, Newsoms Rd., Huddersfield. [X8284]

**2 h.p. Calthorpe Junior**, 1914, 2 speeds, lamp and horn, good running condition; price £15.—T. W. Hobling, Bank House, Northam, N. Devon. [X8165]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [X7099]

**CALTHORPE** Junior, 1914½, 2 h.p. Precision engine, 2-speed, adjustable pulley gear, thoroughly overhauled, new valves, etc., excellent condition; £14.—Holmes, 1, M.C.A., Coventry. [X8193]

**2 h.p. Calthorpe-Jap**, delivered April, 1916, Stewart 4 speedometer, horn, lamps, etc., perfect condition; £30; property of officer returning to duty.—Woodbank, Bennett's Hill, Oxtou, Birkenhead. [X7998]

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**CAMBRIDGE-J.A.P.**, 3½ h.p., Brooklands model, new Amac, O.H. valves, E.I.C.; £22.—Trieber, 8, Manor Rd., Romford. [X8293]

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**1915 2½ h.p. 2-speed** Campion-Jap, as good as new; £26.—Wilkin and Co., Hunter's Bar, Sheffield. [X8226]

**CAMPION-J.A.P.**, 8 h.p., 2 speeds, and sidecar; £42.—Buckingham and Sons, Trindal St., Chelmsford. [X2468]



## MOTOR CYCLES FOR SALE.

## Chater-Lea.

CHATER-LEA No. 7 Combination, 8 h.p. J.A.P. twin, magnificent condition; £55.—12, Gray's Inn Residence, 180, Clerkenwell Rd., London. [2487]

CHATER-LEA, genuine No. 7 combination, 3-speed, fitted with latest 8 h.p. J.A.P. engine, as new; £55.—24, Gwendolen Av., Putney, S.W. [2448]

## Chater-Lea-Fafnir.

CHATER-LEA-FAFNIR, 3 h.p., mag., Saxon forks, a.c.i.v.; splendid condition; £10.—McIlroy, Clonavan Rd., Ballymena, Ireland. [X8187]

## Chater-Sarolea.

5 h.p. Twin Chater-Sarolea, Millford sidecar, spares; photo; £14; exchange lower power.—88, Ashville Rd., Leytonstone. [2277]

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1912 Civno Combination, with lamps; only £35.—Offers to Parker and Son, St. Ives, Hunts. [2514]

CLYNO 2-stroke, complete usual accessories, excellent condition; £24.—P. J. Evans, John Bright St., Birmingham. [X8251]

CLYNO, 2-stroke, late 1914, 2-speed, handle-bar clutch, Lucas lamps, horn, tools, 110 m.p.g., fast, excellent order, only used week-ends, new tyres; £30.—Keer, Stoke St., Ipswich. [X8295]

## Connaught.

1914 Connaught, in perfect condition; £17; seen any time.—Bounds, Garage, 225, High Rd., Kiburn. [2530]

CONNAUGHT, 1914, 2-speed gear box, perfect; £26.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1966]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models; prices from £28/17/6.—87-91, John Bright St., Birmingham. [X8246]

## Dalm.

DALM 2-stroke, 1915, 3 speeds, clutch, nice machine; £24.—11, Luna Rd., Thornton Heath, S.E. [2527]

## Douglas.

DOUGLAS, 1915, 4 h.p. 3 Speeds Combination.

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DOUGLAS 1911 2½ h.p. 2 Speeds; all in perfect order.—6, Warren St., London. [2493]

2 h.p. Douglas, 1913, good running order, good tyres; £4 3/3.

2 h.p. Douglas, 1912, just been overhauled, tyres nearly new; £27.—2, Israeli Rd., Putney, S.W. [2534]

DOUGLAS T.T., 1912, re-enamelled, 2-speed; £25.—Smith, 16, Haverstock Hill. [2510]

1915 Douglas, War Office model, all-black; £46.—12, Church Circle, Farnborough. [2457]

4 h.p. Douglas Combination, splendid accessories, everything like new; £70.—Banting, Harrow. [2502]

1914 T.T. Douglas, lamp, tools, in splendid condition; £36.—1, Beverstone Rd., Thornton Heath. [X8280]

DOUGLAS, 2½ h.p., first to view will purchase; £15, no offers.—14, Dodbrooke Rd., West Norwood. [1541]

1914 T.T. Douglas, 2½ h.p., model V, complete, lamps, etc.; £34.—Cross, Jeweller, Rotherham. [X8214]

DOUGLAS, 1915, 2-speed, new condition, with accessories; £45.—Pickering, Mardol, Shrewsbury. [X8239]

DOUGLAS, 1911, new belt, tyres, lamps, generator, fast, powerful; £17/10.—77, Hammersmith Rd., W. [2545]

DOUGLAS, 1913 (Nov.), 2-speed, clutch, large tyres, accessories; nearest £37.—10, Sangley Rd., Catford, S.E. [2390]

2 h.p. Douglas, 2 speeds, just overhauled; £35.—The East Putney Garage, 118, Israeli Rd., East Putney, S.W. [2232]

2 h.p. Douglas, in excellent condition, all spares and accessories; 18 gns.—J. Richards, 25, Jeffreys Rd., Clapham, London. [X8169]

DOUGLAS, 1915, T.T., 2½ h.p., Lucas accessories, long exhaust, very fast, excellent condition; £44.—Vernon, Gayford, Esher. [X8167]

1915 4 h.p. Douglas, Colonial model, 3-speed, sporting coachbuilt sidecar, in good order; £58.—179, Balaam St., Plaistow, E. [2556]

DOUGLAS, 1915, 2½ h.p., T.T., 3 speeds, perfect condition, fully equipped, Jones speedometer; £45.—Broad, High St., Esher. [2432]

DOUGLAS, 1914, 2½ h.p., 2 speeds, clutch, kick start, absolutely like a new one; snip, £36.—3, The Mews, Victoria Rd., Clapham, S.W. [2332]



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DOUGLAS, 1914 model X, 2-speed, clutch, kick starter, Lucas lamp set, machine as new; £35.—Ray, 32, Upperton Rd., Eastbourne. [2542]

DOUGLAS, 1914, 2½ h.p., 2 speeds, clutch, speedometer, excellent condition; £36.—H. Williams, 322, Canterbury St., Gillingham, Kent. [X7351]

DOUGLAS, late 1914, War Office model, 2-speed, kick starter, clutch, condition perfect, trial, accessories; £38.—Wells, Butcher, Wanstead. [2428]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

MOTOR Cycle For Sale, Douglas 2½ h.p., 2-speed, new September, 1914; owner ordered France; excellent condition; £35.—Housekeeper, 56, Victoria St., Westminster. [2307]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

1914 Douglas, 2½ h.p., model W, clutch, kick-start, head lamp set and horn, just overhauled, engine guaranteed perfect, condition excellent; £38.—Robinson's Garage, Green St., Cambridge. [2412]

DOUGLAS, October, 1914, 3½ h.p., 2-speed, kick start, Bramble coachbuilt sidecar, perfect condition; any trial; low mileage, plenty spares; £45.—Frank Fowler, Oak Farm, Hatterton, Cannock, Staffs. [2249]

1912 Douglas, 2½ h.p., 2-speed, model U, footboards, upturned handle-bars, Amac, engine thoroughly overhauled, excellent tyres, P. and H. lamp set, horn; £28.—Robinson's Garage, Green St., Cambridge. [2414]

DOUGLAS, latest model, 2½ h.p., U, 2-speed, Thomson-Bennett mag., 2 lamp sets, Lucas horn, ridden 100 miles only, statement guaranteed; see test card; genuinely new machine.—Robinson's Garage, Green St., Cambridge. [2413]

## Elbro.

ELBRO, 6 h.p., and sidecar, chain-cum-belt drive, 2-speed, splendid condition; £18, or exchange for solo, Douglas preferred.—200, St. James's Rd., South Becondsey. [2329]

## Elswick.

1914 2½ h.p. Elswick, 2-speed, kick, P. and H. lamps, speedometer, Clincher tyres; £28.—19, Sydenham Rd. N., Croydon. [2337]

## Enfield.

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

1916 6 h.p. Enfield Combination, complete, as new; £78, no offers.—4, King's Rd., Miteham. [2283]

ENFIELD 1914 Lightweight, splendid condition; £28/10.—20, Milkwood Rd., Herne Hill. [X8000]

1918.—1912 Enfield twin, 2-speed, 2½ h.p., accessories; trial by appointment.—L, 134, Addison Gardeas, West Kensington. [X8137]

ENFIELD, 1915, 6 h.p., 2 speeds, coachbuilt sidecar, new tyres, in real good order; £40.—6, Warren St., London. [2492]

ROYAL Enfield 2½ h.p. Twin, Bosch, B. and B., countershaft, chain, perfect; £18.—Sullivan, Parkhurst Rd., Guildford. [2301]

ENFIELD 6 h.p. Combination, lamps, screen, horn, perfect condition; photo, any trial; £50.—Kershaw, Lonsdale Rd., Dorking. [X8309]

1916 Enfield Combination, not soiled, run 200 miles; £75 cash, no offers.—F. Powell, Grocer, Green End, Whitechurch, Salop. [X8263]

1916 2½ h.p. 2-stroke Enfield, 2-speed, latest model, in stock for immediate delivery.—Robinson's Garage, Green St., Cambridge. [2415]

1913 3 h.p. Enfield, excellent condition, lamp, horn, speedometer, new covers; £35, or near offer.—Dr. Kough, County Asylum, Gloucester. [X8294]

1914 6 h.p. Enfield Combination, new tyres, lamps, horn, tools, first-class condition throughout; £55, lowest.—Thornele, 88, Division St., Sheffield. [X8274]

1916 6 h.p. Enfield Combination, 90 gns.; 1916 3 h.p. twin, 55 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0838]

ENFIELD, late 1915, 2½ h.p., 2-stroke, 2-speed clutch, lamps, horn, etc., original tyres, new condition; cost £45, accept £33.—Bruce Wood, Horn Park Farm, Lee, S.E. [2256]

1914 3 h.p. Enfield Combination, in splendid condition, Lucas accessories, spare valves and inner tube; £52, open to offer.—2, Welcome Villas, Whyteleafe, Surrey. [2290]

ROYAL Enfield 1913 3 h.p. Lightweight, 2 speeds, chain drive, speedometer, lamps, horn, watch; here's a snip; £26/10.—3, The Mews, Victoria Rd., Clapham, S.W. [2406]

ENFIELD Combinations, latest models. We have them in stock, and desire your enquiries concerning either exchange or extended payment propositions; very high prices allowed for good machines.—Laytons' Garage, Bicester. [X8317]



## CASH OR EXCHANGE.

### NEW MODELS.

EXCELSIOR (American), 7 h.p., 3 speeds ..	£75 0
OVERLAND, 12 h.p., 4-seater, electric start- ing and lighting (tax £4 4s.) .....	£225 0
RITZ 4-cylinder 2-seater Light Car .....	£145 0
ROYAL RUBY, 2½ h.p., 3-speed, 2-stroke ..	£36 10
ROYAL RUBY-J.A.P., 2½ h.p., 2-speed .....	£39 10
WILLIAMSON Cy-el-ca, W.C. Douglas eng.	£126 0

### 1916 (U.S.A.) EXCELSIOR.

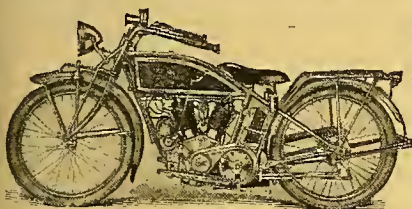
7 h.p., twin, 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyres, finish Excelsior grey; £75.

One only late 1915 new 7 h.p. 3-speed model, electrical equipment, at pre-tax price of £71 10s.

Exchanges quoted. Easy payments 2½% extra.

We are sole Yorkshire distributors. Liberal terms to trade.

Coachbuilt PERFECTION SIDECARS to suit, £13 10.



### SOLO MACHINES.

VILLIERS, 1915, 2½ h.p., 2-speed .....	£27 10
DOUGLAS, 1914, 2½ h.p., 2-speed .....	£37 10
DOUGLAS, 1914, single gear, chain-belt ..	£28 10
DOUGLAS, 1913, 2-speed .....	£34 10
INDIAN, 1914, 7 h.p., 2-speed, spring frame	£44 10
INDIAN, 1912, 4 h.p., 2-speed .....	£29 10
1912 3½ h.p. ZENITH-GRADUA .....	£26 10
1912 3½ h.p. 2-sp. BRADBURY, chain drive	£29 10
1912 3½ h.p. Silent ROACH .....	£24 10
1913 6 h.p. 2-speed CLYNO .....	£39 10
HUMBER, 3½ h.p., 2-speed .....	£25 10
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TRIUMPH, 1911, 3½ h.p., 3-speed .....	£26 10
TRIUMPH, 1909, 3½ h.p., 2-speed .....	£24 10
TRIUMPH, 3½ h.p. clutch model .....	£21 10
TORPEDO, 3½ h.p., 1911 model .....	£17 10
MINERVA, 2½ h.p., wants attention .....	£4 10
DOUGLAS, 2½ h.p., twin, spring forks .....	£15 10

### SIDECAR COMBINATIONS, &c.

1916 4-h.p. COVENTRY EAGLE Combina'n	£72 10
1914 Sporting MORGAN .....	£65 0
1914 7-h.p. 2-speed INDIAN Combination ..	£53 10
1913 Standard MORGAN .....	£57 10
1913 7 h.p. 2-speed ARIEL and Sidecar ..	£42 10
1913 3-speed TRIUMPH and Gloria Sidecar	£39 10
1911 3½ h.p. 3-speed TRIUMPH and Sidecar	£27 10
QUADRANT, 7-9 h.p., 2-speed, twin, chain drive, and coach Sidecar. Fine lot .....	£45 10
S.P.K., 3½ h.p., 3-speed, and Sidecar .....	£29 10
1912 3½ h.p. 2-speed PREMIER and Sidecar	£33 10
1909 3½ h.p. 2-speed TRIUMPH and Sidecar	£26 10
FORD 5-seater Touring Car .....	£65 0

## Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone—766.

Telegrams—"Perfection."

### MOTOR CYCLES FOR SALE.

#### Enfield.

1915 6-h.p. Enfield Combination, 2 P. and H. lamps, Lucas horn, spare tyre, spare tube, plug, tools, in good condition; £65.—Seen at Bounds' Garage, 223, High Rd., Kilburn. [2341]

ENFIELD, 3 h.p., late 1914, Lucas lamp, speedometer, horn, and accessories, hardly used owing to owner on active service; £35.—Mrs. Long, Moorlands, Frog-ham, Fordingbridge, Hants. [2270]

ENFIELD Combination, 1916, 6 h.p., 2-speed; delivery from stock; 90 gns.; exchanges or extended terms quoted.—Elee and Co., 15-16, Bishopsgate Av., Carno-mile St., E.C. Enfield agents. [2284]

ENFIELD Combination, 6 h.p., late 1915, D.A. lighting set, speedometer, P. and H. lamps, Lucas horn, in excellent condition, and any trial; £70.—81, High St., Thornton Heath. [2520]

ENFIELD, 1916, 2-stroke, 2-speed, and free engine, chain drive, just arrived from works; immediate delivery; make sure of this now; £44/2.—Wilkins, Simp-son, and Co., 11, Hammersmith Rd., London, W. [2273]

ENFIELD 1916 Combination, complete with hood, screen, lamps, Cowey speedometer, tools, in new condition throughout, mileage 2,000; accept £75; ex-change Douglas.—Box L2,204, c/o The Motor Cycle. [2284]

ENFIELD, late 1913 3 h.p. twin, 2-speed, clutch, handle start, Amco, new Dunlop studded tyres, semi T.T. bars, complete with Lucas head lamp, rear lamp, horn, speedometer, and spares, all in excellent condition; £30; exchanges entertained.—Ideal Cycle Co., Thundersley, Essex. [2550]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91 John Bright St.—Immediate delivery all models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X8245]

ENFIELDS.—Four models actually in stock, ready to ride away; two 6 h.p. standard combination 90 gns., electrically equipped 6 h.p. 105 gns., 3 h.p. touring model 55 gns. and T.T. model 55 gns.; liberal ex-changes; generous deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [2344]

#### Excelsior.

1914 5-h.p. Excelsior and coachbuilt sidecar, in per-fect condition; £40; seen any time.—Bounds, Garage, 223, High Rd., Kilburn. [2339]

EXCELSIOR (American), new 1916 model, 7 h.p., 3 speeds; £75; liberal allowance for Harley-Davidson.—68, Horton St., Halifax. [0848]

#### Forward.

1914 2½ h.p. Forward, T.T., good condition; £20.—Particulars, 12, School St., Barrow-in-Furness. [2257]

#### F.N.

F.N., 2-speed, 4-cyl., late model, splendid condition, with sidecar; £27.—T. H. Nice, Bury St. Edmund's. [2261]

F.N., 4-cyl., Bosch, spring forks, h.b. control, foot-boards, good tyres; £10, offers.—118, Stow Hill, Newport, Mon. [2524]

F.N., 4-cyl., 4-5 h.p., bought new 12 months ago, very little used; what offers?—Beaumont, 205, Ark-wright St., Nottingham. [2452]

F.N., 1912-13, 5-6 h.p., clutch model, just been over-hauled, and like new throughout; £15.—3, The Mews, Victoria Rd., Clapham, S.W. [2333]

#### Harley-Davidson.

BRAND New Harley-Davidson Sidecar Combinations.—See below.

MODEL F, 7-9 h.p., 3-speed, opachbuilt sidecar, enam-elled to match; £90.—Below.

MODEL J, 7-9 h.p., 3-speed, with dynamo lighting outfit, 2 rear brakes, and other 1916 improvements, coachbuilt sidecar; £97.—Below.

BRAND New, complete with full tool equipment, in-struction handbooks, etc.; 12 months' full guar-antee; no easy payments at these prices.—To be obtained only from The Premier Motor Co., Aston Rd., Birming-ham. [2391]

1916 Harley-Davidsons, all models in stock.—Parker and Son, St. Ives, Hants. [2516]

7-9 h.p. Harley-Davidson Combination, 1916, in stock.—Pickering, Mardol, Shrewsbury. [X8238]

HARLEY-DAVIDSON, 1914, 2-speed, splendid con-dition; war bargain, £45.—T. H. Nice, Bury St. Edmund's. [2262]

HARLEY-DAVIDSONS, 1916 models; immediate de-livery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

HARLEY-DAVIDSON, 1915, 4 h.p. clutch model, new condition; £38.—P. J. Evans, John Bright St., Birmingham. [X8252]

HARLEY-DAVIDSON, late 1915, scarcely used, 11F. runs 75% paraffin; bargain, 50 gns.—Cooper, Baker, Windsor. [1748]

HARLEY-DAVIDSON, electric, Nov., 1915, and Swan sidecar, combination practically new, 2,500; any examination; no time to ride; £72/10.—Wyatt, Grocer, Southall. [2300]

## SHOP - SOILED SIDECARS!!

We have a few new but showroom-soiled FARLOW Sidecars, which we offer as follows:

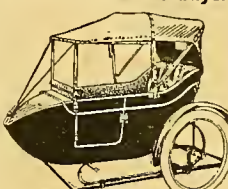
Model No. 1. Usual price £11. SALE PRICE £8.  
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[0480]

All carrying our usual guarantee.

## FARLOW SIDECARS

Built throughout in our own factory.

Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyers' ideal.



Model 1.

Underslung Chassis, with Luggage Carrier combined.

Splendidly made and built for hard work.

£11 0 0

Hood ..... £2 4  
Screen ..... £1 0

This is

Model No. 2.

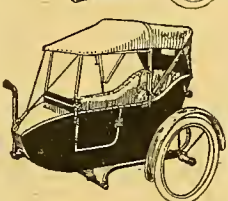
A BEAUTIFUL LIGHT SIDECAR.

PRICE ..... £10 0

Hood ..... £2 4

Screen ..... £1 0

Delivery from Stock.  
Your Agent will supply



### NEW STOCK FOR IMMEDIATE DELIVERY.

1916 6 h.p. ENFIELD Combination, c/built 90 gns.	
1916 5-6 h.p. ENGLISH EXCELSIOR Big	
Single, 3-speed. 68 gns.	
1916 2½ h.p. OMEGA-J.A.P., c/shaft gear ..	38 gns.
1916 FORD Ambulance, 20 h.p. ....	£165 0
1915 11 h.p. TRUMBULL Light Car, new ..	£120 0

### SECOND-HAND BARGAINS.

1915 2½ h.p. DOUGLAS, 3-sp., Colonial model	£45 0
3½ h.p. SCOTT, and smart Sidecar .....	£30 0
1914 3½ h.p. twin JAMES, 3-speed, counter- shaft gear, speedometer, and Sidecar ..	£33 0
1915 6 h.p. ENFIELD Combination, beauti- ful condition, well fitted up .....	£70 0
3½ h.p. HUMBER, 2 speeds, handle starting, fine goer .....	£22 0
1911 3½ h.p. P. & M., 2-speed, chain drive, M.O.V., nearly new Dunlops .....	£22 0
1915 2½ h.p. WOLF, 3-speed, done 900 only	£25 0
1914 3 h.p. OMEGA, 2 stroke .....	£16 0
1913 6 h.p. A.C. Sociable, fine condition ..	£41 0
1915 6 h.p. NEW HUDSON, 3-sp. counter- shaft gear, kick starter, Farlow Sidecar	£59 10
18-22 h.p. SIDDELEY Lorry, 4 speeds, chain drive, 2 ignitions .....	£50 0
10 h.p. HUMBER Lorry, 3 speeds, two ignitions .....	£40 0



### NEW MOTOR CYCLE FRAMES.

Fully Guaranteed.

25/- each.

### ODD BARGAINS.

Dropped Top Tube Frame, new .....	£3 0
Lycett's 1916 La Grande Saddle, soiled only	15/-
Rigid Sidecar, no tyre .....	17/6
New Splitdorf-Dixie Magneto, single, anti ..	£4 0
Latest Mechanical Horns, black and nickel	£1 0
F.R.S. Lamp Set, 500ft. beam, shop-soiled	35/-
F.R.S. Lamp Set, 1,000ft. beam, shop-soiled	45/-

## FARRAR'S MOTORS

(Telephone 919)

Hopwood Lane, HALIFAX.



## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**HARLEY-DAVIDSON** 1916 Combination, Indianapolis from new, run 850 miles; £85; fully equipped.—6, Warren St., London. [2489]

**COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**1915** 8hp. Harley-Davidson, with 1916 22 in. Fifta coupe sidecar; £67/10; fitted specially for one-legged rider.—Graham, Spring Rd., Wrexham. [2244]

**HARLEY-DAVIDSON** (late 1915), 7.9hp., 3 speeds, Montgomery coachbuilt sidecar, lamp set, Lucas horn, just like new, perfect; best offer.—8, Stockwell Park Walk, Brixton. [2386]

**1915** Harley-Davidson, 11J, 7.9hp., 3-speed, electric lights and horn; £55, carriage paid; approval; will take 3½hp. or lightweight part exchange.—Macrae, 2, Castle Terrace, Edinburgh. [1944]

**1915** Harley-Davidson and Bramble coachbuilt sidecar to match, 3-speed, hand and foot clutch, complete equipment; price £67/10, or close offer; exchanges.—Newham, 223, Hammersmith Rd., W. [2421]

**HARLEY-DAVIDSON** Combinations, with their newest sidecars, actually in stock, £101/15, and £110; deferred payments if desired; liberal exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2346]

**HARLEY-DAVIDSON** Combination, 7.9hp., late 1915, electric lighting set and hooter, original tyres, new condition; would take lower power machine and cash, or sell £75, or near offer; bargain.—Mr. Ayers, Garage, Kensington Palace, London. [2278]

**HARLEY-DAVIDSON**, 1916, done 280 miles, splendid coach sidecar, 3 disc wheels, hood, screen, speedometer, and dicky seat to hold 2 children or adult; lot cost June 1910; photo; sacrifice £100.—Cuthbert, 33, Hanley Rd., Finsbury Park, London. [X3302]

**HARLEY-DAVIDSON**, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

**1916** Harley-Davidson, model 16J, 7.9hp., 3-speed, dynamo electric lighting outfit, fitted with special coachbuilt sidecar, enamelled to match, combination cost new £110, has not done 1,000 miles, guaranteed perfect in every respect; £85.—The Premier Motor Co., Aston Rd., Birmingham. [2392]

## Hazlewood.

**1915½** 6hp. Hazlewood-Jap, 3-speed, lamps and spares, £14/14 sidecar, hood and screen, perfect turnout; £58.—Barton, 153, Park Rd., Wigan. [X8272]

## Henderson.

**HENDERSON**, 1916, 4-cyl., elaborately fitted, shop-soiled; £76/10.—11, Luna Rd., Thornton Heath, S.E. [2528]

**1914** Henderson, 8-10hp., 4-cyl., countershaft gear, chain drive; £46/10, or exchange.—Collier, Deal St., Halifax. [0849]

**HENDERSON**, 1913, 4-cyl., 2 speeds, 12hp., with Gondola sidecar, speedometer, electric lamp and horn, hood, wind screen, in splendid condition; £55.—Radcliffe Villa, Athenaeum Rd., Whetstone, N. [2276]

## Hercules.

**1915** 4½hp. Hercules Combination, 3-speed, hand clutch, speedometer, Bosch, Seaspray, horn, spares, as new; £60.—24, Cottage Grove, Surbiton. [2358]

## Humber.

**2½**hp. Humber, 1914, excellent condition; £31/10, or 4 near offer.—G., 9, Hazlewell Rd., Putney. [2465]

**2½**hp. Humber Twin, 1913, T.T., good tyres, lamp; 4 toolbags; £20.—Smith, 16, Haverstock Hill, Chalk Farm. [2509]

**HUMBER**, 3½hp., new tyres and belt, mag., good order; £10.—Smith, 16, Haverstock Hill, Chalk Farm. [2508]

**HUMBER**, 2hp., £15, or exchange with cash for cheap combination.—Chatfield, High St., Tonbridge. [2287]

**3½**hp. Humber Combination, exceptional good condition; first good offer secures.—Serne, 7, Homefield Rd., Chiswick, W. [2294]

**1915** 3½hp. 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]

**1912** 3½hp. 2-speed Humber, with coachbuilt sidecar, in good order; £32/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**HUMBER** Combination, 3½hp., 2-speed, Binks carburettor, all new tyres and belt, first-class lot; price £40, no offers.—Reeve, 70, Philip Lane, Tottenham, N. [2289]

## Imperi.

**1915½** 2½hp. 2-speed Holidays Imperi, sound condition throughout; deposit system; price £24.—Newman, Haltwhistle, Northumberland. [X8166]

## PROMISE &amp; FULFILMENT

**We don't want to Boast, but it IS gratifying—when we recall our first advertisement in 1910 announcing a New Business, which would be run on absolutely straight lines—to be able to publish in 1916 (6 years afterwards) extracts from letters received from five different customers (all in the Army) expressing appreciation.**

**ALL THESE TESTIMONIALS ARE OF RECENT DATE, AND THE ORIGINALS CAN BE SEEN AT OUR OFFICE:**

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I am sure it is a pleasure to do business with you, and shall have every confidence in recommending you on every opportunity as a Straightforward British Business House.

2

Your treatment of me through this transaction has been most considerate, not to say liberal, and I assure you that I shall lose no opportunity of sounding your praises in the far North.

3

I am very much obliged to you for yours of 14th inst., enclosing cheque. It is to my mind an evidence of your straightforward dealings, and I shall remember it.

4

I am very pleased to hear that you have disposed of my Indian—it is one more proof of the excellence of your firm.

5

I paid you £35 for the mount, and my friends with one accord agree with me that I have got a real bargain in motor bikes.

**If you want a New or Second-hand Machine it will pay you to write for our List.**

**Exchanges. Easy Terms.**

**GODFREY'S LTD.**  
208, Gt. Portland Street,  
LONDON, W.

'Phone: 7091 Mayfair (2 lines).

## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN**, 5-6hp., 1915, 3 speeds; £42.—Buckingham and Sons, Trindal St., Chelmsford. [2466]

**7-9hp.** Indian, 1915, coachbuilt sidecar, complete, as new; £63.—Tompsett, Moors, Marden, Kent. [1954]

**INDIAN**, 1915, 7.9hp., T.T., in first-class order and condition; £36.—6, Warren St., London. [2496]

**INDIAN** Combination, 1916 Powerplus, fully equipped, run 300 miles only; cost £115, accept £90.—6, Warren St., London. [2488]

**7-9hp.** Powerplus Semi T.T. Indian, not unpacked; cannot take delivery; what cash offers?—L2, 227, c/o The Motor Cycle. [2550]

**1916** 7.9hp. T.T. Indian and sidecar, very little used, burns substitute; £75, no offers.—Muirhead, 102, London Rd., Salisbury. [X8188]

**1915** (August) 5hp. Tourist Trophy Indian, 3 speeds, mechanical horn, and lamps, splendid condition; £48.—Alfred Proctor, Chepstow, Mon. [X8303]

**7hp.** Indian, T.T., 1915 model, large exhaust pipes, extremely fast, disc wheel at rear; accept for quick sale £45.—Embree Motor Co., Charlotte St., Hull. [2272]

**INDIAN**, 7hp., late 1915, 2-speed, lamps, with Millford 1915 coachbuilt sidecar, thoroughly overhauled; £45, or near offer.—3, Carson Rd., W. Dulwich. [2445]

**SPORTING 1915½** 7.9hp. Indian and sidecar, just been overhauled, done very little mileage; will take £40; owner must sell.—Apply, Twiddy, London Rd., Sevenoaks. [2305]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X8248]

**INDIAN** 1916 Powerplus Model, with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £80.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]

**INDIAN** Powerplus, 7hp., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X8249]

**7-9hp.** Indian, 1913, spring frame, 2 speeds, clutch, electric lamp and horn, kick starter, 3 new tyres and tubes, coachbuilt sidecar; price £45; lightweight part.—46a, West Sq., Marlborough Lines, Farnborough. [2400]

**BIRMINGHAM** Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5hp. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X8247]

**1915½** Model C Indian and Montgomery coachbuilt sidecar, with screen, electrical outfit, tyres good, only done 3,000, all in good condition; £62/10, or nearest.—Robinson, 190585, c/o Y.M.C.A., Osterley Park Camp, Middlesex. [2384]

**1914** Indian Combination, 7.9hp., 2 speeds, electric equipment, speedometer, coachbuilt sidecar, in good condition, carefully ridden, very powerful and fast; first offer of 40 gns. will secure this bargain.—797, c/o The Motor Cycle. [X8155]

**INDIAN**, 1916, 5hp., T.T. model, countershaft 3 speed gear, kick starter, clutch, 28x3in. extra heavy Dunlop tyres, Stewart speedometer and mechanical horn, condition as new; £60.—The Premier Motor Co., Aston Rd., Birmingham. [2393]

**LATE** 1914 Spring Frame Indian Combination, 7.9hp., 2-speed, clutch, kick start, 3 electric lamps, and horn, speedometer, Canoelet 30 in. 2-seater sidecar, new storm apron, exceptional condition, little used; £60, or offers.—55, Buisstode Rd., Hounslow, Middlesex. [2324]

**INDIAN** 1916 Combination, 7.9hp., Powerplus de Luxe, spring frame, magneto dynamo, electric lamps and horn, speedometer, absolutely perfect; trial, expert examination; done 400 miles; £85, nearest offer, cost £110.—St. Martin, R.M.S.M., Blyth, Northumberland. [X8138]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5hp. 3-speed model, £70; 7hp. T.T. Powerplus, £75; 7hp. 3-speed, spring frame, and electric light, £78; special de Luxe 7hp. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X8244]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**JAMES** 1914½ Combination, faultless condition; sacrifice £45.—173, Victoria Rd., Wood Green. [2382]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES**, 4½hp., late 1913, C.B. combination, 3-speed countershaft, good tyres, speedometer, hood, etc.; £37/10.—Boyce, 27, Turnpike Lane, Harnsey. [2478]

**JAMES** 1916 4½hp. Combination, 3-speed, clutch, and kick starter; delivery from stock; £80/15.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

**1913** James Combination, 3-speed countershaft, all chain drive, recently overhauled, and new parts fitted, 2 tyres new, lamps, tools, and spares; £40, close offer.—D. Rayner, 45, Sprules Rd., Brockley, S.E. [2295]



## MOTOR CYCLES FOR SALE.

## James.

JAMES, 1915, 2½ h.p., 2-speed, 2-stroke lightweight, with Lucas accessories, £34/10, reduced to £31/10, spot cash only; also 1916 (May) 4½ h.p. electrically equipped combination, hood, screen, speedometer, electric horn, mileage 1500 only, £74/10, reduced to £69/10; special price for spot cash, great bargain.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2349]

## J.A.P.

J.A.P., 6 h.p., good condition; £5/10.—Swanston, Sherston, Durham. [X8275]

1914 2½ h.p. J.A.P., Chater-Lea, Lucas lamps, horn, tools and spares; £18.—188, Walsall St., Wolverhampton. [X8189]

J.A.P., 3½ h.p., 1914, mag., Senspray, Grado-multi gear, spares; £15;—must sell, worth double.—Cheesman, 1, West St., Dorking. [2426]

## J.E.S.

J.E.S., splendid condition; a bargain, £13/13.—B. Hollis, Broughton, or, Brigg, Lincs. [2532]

J.E.S., fitted to Arch bicycle; £12; in good condition.—Walpole, Ludgershall Rectory, Wilts. [X8087]

## Kerry.

1912 3½ h.p. 2-speed Kerry-Abingdon, in good order; £21/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0843]

## Kynoch.

KYNOCH, 1914, J.A.P. engine, 4 h.p., Sturmey-Archer 3 speeds, sidecar combination, in perfect running order; £32/10.—Frost, 86, St. John's St., Bury St. Edmunds. [2495]

## Lea-Francis.

LEA-FRANCIS, in new condition, detachable wheels, countershaft, specially tuned, fast and slow, over 100 to the gallon, separate lamp sets, 2 pairs handle-bars, spares, etc.; £58.—47, Hamilton Rd., Reading. [2521]

## Levis.

LEVIS, 1916, Enfield 2 speeds, chain driven, as new; £33.

LEVIS, 1916, brand new; special price £30.

LEVIS, 1916, as new, run 200 miles; £26.—6, Warren St., London. [2494]

LEVIS, 2½ h.p., in excellent condition; £17/10.—Bourne, Alcester Lane End, Birmingham. [2543]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

LEVIS, 1916, Enfield 2-speed, chain drive; £38.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [1965]

1916 2½ h.p. Popular Levis, F.R.S. lamps and horn, not done 60 miles; £25.—Wilkin, Hunter's Bar, Sheffield. [X8221]

LEVIS Populars, £32; immediate delivery; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [0764]

1916 Levises Popular and Model E's; delivery from stock; cash or easy terms.—Wilkin and Co., Hunter's Bar, Sheffield. [X8222]

1915½ Levis Popular, engine guaranteed as new, lamps, etc.; £21.—L. Cpl. Moore, C. Coy., K.O.Y.L.I., Rugeley, Staffs. [X8192]

LEVIS 1916 Latest Lightweight, one special sample in stock; also a few bargains in shop-soiled.—Laytons' Garage, Bicester, Oxon. [X8326]

LEVIS, No. 1 model, 2½ h.p., re-enamelled and overhauled, easy starter, 80 gallon, 35 hour, two up; cost £39/10, bargain, £19/10.—Boulter, 108, City Rd., E.C. [X8279]

LEVIS 1916 Popular Model, run under 50 miles, fully equipped, best necessities, and in perfect condition; accept 25 gas.—136, Dalmainy Rd., Addiscombe, Croydon. [2435]

LEVIS Populars, £32, model E with 2-speed gear, rustless rims, £47/10; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2343]

## Matchless.

6 h.p. Matchless, 1913, with sidecar, excellent condition, tyres good, engine perfect; £38/10.—2, Diamel Rd., Putney. [2535]

MATCHLESS 8 h.p., 1915 Combination, new hood, screen, horns, 3 lamps, equipped Binks complete outfit, speedometer, as new; £76.—Cressley, Knebworth. [2360]

MATCHLESS 6 h.p. Coachbuilt Combination, 2 speeds, pedal start, accessories; £40; consider lightweight part.—Bramica, Charlton Rd., Shepperton-on-Thames. [2530]

MATCHLESS Combination, 1914-1915, 8B model, M.A.O. engine, 3-speed countershaft gear, fully equipped, in perfect condition.—B. Ivydene, Dukethorpe Rd., Sydenham, S.E. [2560]

MATCHLESS 1912 Twin, J.A.P. 6 h.p., and Phoenix torpedo cane sidecar, Bosch mag., 2-speed, kick starter, perfect condition, good as new; price £45, bargain.—27, Southchurch Rd., Southend-on-Sea. [X8096]



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**A.J.S. & British Excelsiors.**

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## THIS WEEK'S BARGAINS.

1916 7-9 h.p. H.D. Combination, electric equipment, latest model, new, cancelled order—cost £110 ..... Price £99

1916 4 h.p. A.J.S. Solo, new .... Price £76

1916 4½ h.p. B.S.A. countershaft, chain drive, 3-speed, just delivered ..... Price £64

1915 4 h.p. A.J.S. Combination, fully equipped, spare wheel, etc. .... Price £80

1915½ 6 h.p. ENFIELD Combination lamps, mechanical horn, etc. .... Price £72

1916 2½ h.p. EXCELSIOR, 2-speed and clutch, new ..... Price £44 2

1916 4 h.p. CALTHORPE Combination, new, Price ..... £70 7

1916 Lady's CALTHORPE, 2-speed, new, unused, cancelled order; cost £35 14s. Price ..... £33

1916 2½ h.p. CALTHORPE-JAP, 2-speed, new, Price ..... £37 16

1916 4½ h.p. EXCELSIOR, 3-speed, chain drive, shop-soiled; cost £67 4s. .... Price £55

1913 3½ h.p. ARIEL, 3-speed, and Sidecar, Price ..... £40

1912 3½ h.p. P. & M., 2-speed, and Sidecar, Price ..... £33 15

1912 2½ h.p. A.J.S., 2-speed, and Sidecar, Price ..... £26

1914 6 h.p. A.J.S. Combination .... Price £65

1915 2½ h.p. DOUGLAS, W.O. model, Price ..... £45

For further Bargains in high-class Combinations and Solo Mounts, write for list. Extended Payments arranged.

## WHITE SPIRIT.

The New Petrol Substitute. 2/3 per gallon. 50 gallon steel barrels sent carriage paid for London delivery.

1916 Tyre Catalogue now ready, post free.  
SPECIAL AGENTS for REX and J.A.P. PARTS.  
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## MOTOR CYCLES FOR SALE.

## Matchless.

MATCHLESS-J.A.P. 1914 Twin, 5-6 h.p., chain drive, 2-speed, kick start, tyres good, thorough running order, side chair coachbuilt, Canoelet, with wind screen; £50, or near offer.—Budgen and Son, Wincanton. [2264]

MATCHLESS Combination, 8 h.p., late T.T. model, only run 5,000 miles, mechanism and appearance as new; £45 lowest, or exchange with cash for medium-powered car, low price.—Mill, 201, Sandfields, Lichfield, Staffs. [X8313]

## Minerva.

MINERVA, 2½ h.p., thoroughly overhauled and modernised July, excellent order; £17.—Seen at Elliston and Fell, Perry Vale, Forest Hill. [2367]

## Motosacoche.

MOTOSACOCHE, 2½ h.p., Bosch, Whittle belt, tyres and tubes good, engine perfect, very low, plating like new, absolute bargain, £13.—Clark, Garage, Long Melford, Suffolk. [2321]

## New Hudson.

NEW HUDSON, 2½ h.p. J.A.P. engine, 3-speed, clutch, in perfect condition.—Mitchelmore, 13, Poplar Ave., Willesden Green. [X8171]

NEW Hudson, 4 h.p., accessories, Cowey speedometer, Paragon sidecar, goes through 30 in. door; £43.—7, Regent's Park Rd., N.W. Tel.: 3368 Hampstead. [2234]

NEW Hudson, 1914, 4 h.p., coachbuilt passenger combination, 3-speed, clutch, equal new lamps, horn, spares.—Pickard, Schoolmaster, Rolleston, Burton-on-Trent. [X8163]

NEW Hudson, 2½ h.p., 2-stroke, 2-speed gear; £38; several of these machines in stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

NEW Hudson, 1915, shop-soiled, magnificent coach combination, 6 h.p. twin, 3 speeds, hood, screen, lamps, speedometer; £67/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X8257]

NEW HUDSON Model 9B 6 h.p. Fawn Combination in stock, deferred payments if desired, exchanges; also 1916 4 h.p. 3-speed combination, usual price £65, special sale price £59/10; also 1912 3-speed 2½ h.p. model, usual price £21, sale price £18/10, spot cash only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2347]

## New Imperial.

NEW Imperial-Jap, latest models in stock; £38 and £44/8.—Crow Bros., Guildford. [1262]

NEW 6 h.p. New Imperial-Jap, 3-speeder, in stock; £75/5.—Crow Bros., Guildford. [2132]

1916 New Imperial-Jap, practically as new; £30.—Parker and Son, St. Ives, Hunts. [2517]

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

1915 2½ h.p. 2-speed Imperial-Jap, splendid order; £22.—Wilkin and Co., Hunter's Bar, Sheffield. [X8225]

NEW Imperial, 1916 models in stock; cash or gradual payments 2% only.—Referee Cycle Co., 332, High Holborn. [0765]

1916 (May) New Imperial-Jap, 2½ h.p., latest, perfect, 300 miles. 505 Brixton.—193, Rosendale Rd., Dulwich. [2253]

NEW Imperial 1916 Current Models in stock, also one or two bargains, shop-soiled.—Laytons' Garage, Bicester, Oxon. [X8318]

NEW Imperial, 1915, 2 speeds, speedometer, lamps, etc., new tyres; sacrifice, £24.—11, Luna Rd., Thornton Heath, S.E. [2529]

NEW Imperial, 1914, 2-speed, new Dunlop tyres, splendid condition, little used; £21, or nearest.—Dryden, Lilliput Hall, Blackpill, Glam. [2429]

NEW Imperial-Jap, 1916, 2½ h.p., 2-speed, T.T. bars, lamp set, horn, etc., very little used; £36.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

NEW Imperial-Jap, 1915, in good order, for sale, or exchange with cash for a higher powered motor cycle.—Joseph Pavitt, Aveley, Furfleet, Essex. (D) [X7859]

NEW Imperial-Jap, 2½ h.p., 1916, 2-speed, clutch, kick start, only soiled; usual price £44/8, reduced £37, special cash price only.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2349]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X8243]

NEW Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool district, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Culmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [0814]

## Norton.

T.T. Norton, just arrived; first cheque £54/12 secures it.—Plastow, Grimsby. [X8268]

1913 3½ h.p. T.T. Norton, very fast; £27.—Wilkin and Co., Hunter's Bar, Sheffield. [X8220]

NORTON, 4½ h.p., very fast, perfect; £30.—Richardson, 41, Braemar Av., Wood Green. [2464]



## MOTOR CYCLES FOR SALE.

## Norton.

1915 (October), B.R.S. Norton, Philipson pulley, lamps, and horn; bargain, £48.—Wilkin and Co., Hunter's Bar, Sheffield. [X8219]

## N.S.U.

N.S.U., 2½ h.p., 2-speed, twin-cyl., fitted complete, condition as new; war bargain, £30.—T. H. Nice, Bury St. Edmund's. [2264]

6 h.p. N.S.U., 2-speed gear (almost new), Bosch, E. and B., 1914 spring forks, coachbuilt sidecar; sacrifice for £16.—5, Milverton Av., Dover. [2327]

## N.U.T.

N.U.T., 1914, 3½ h.p. twin, 3-speed, clutch, kick starter, lamps, etc., fast and reliable; owner going abroad; £36.—Broad, Earlsate, Watford. [X8170]

## O.K.

O.K.'s in stock, M.A.G. 42/10, J.A.P. £38.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [2037]

O.K., 1916, special 2½ h.p. J.A.P., 2-speed, clutch, 2½ tyres, Brooks saddle—5, York Rd., Lemington. [X8237]

O.K. Junior, 1915, 2-speed model, new; special bargain, £29/10.—Referee Cycle Co., 332, High Holborn. [2352]

## Omega.

OMEGA 2-stroke, £18, or exchange with cash for cheap combination.—Clatfield, High St., Tonbridge. [2251]

## P. and M.

P. and M., 3½ h.p., 1913, good condition, with lamps and accessories; £35.—Barclay E. Lines, Purfleet, Essex. [2292]

P. and M. Combination, P. and M. coachbuilt sidecar; £50.—12, Gray's Inn Residences, 180, Clerkenwell Rd., London. [2486]

1913 P. and M. Coachbuilt Combination, chain drive, 2 speeds, kick start, quite new condition; £40.—72, Longridge Rd., Earl's Court. [2540]

## Peugeot.

PEUGEOT Twin 4h.p. Motor Cycle, with sidecar, good condition; £19.—P.F., 183, Blythe Rd., Hammersmith. [2330]

PEUGEOT 7h.p., 2-speed, sidecar, condition perfect, including tyres, complete accessories, lamps, speedometer, spares; £25.—Dawson, 38, Studley Av., Highams Park, Chingford. [2315]

## Precision.

5-h.p. Precision Combination, 3 speeds, Bosch, Amal, lamps, horn, C.B. sidecar, good tyres, good condition; £45, near offer.—Rose, Brampton, Hants. [2373]

PRECISION Twin, T.T., 4h.p., specially built, Jardine countershaft 2-speed, Druids, Palmers, low position, exceptionally fast, comfortable, splendid condition; bargain, £34.—46, Harrington Rd., Leytonstone, N.E. [2480]

## Premier.

PREMIER, 3½ h.p., F.E., fast, good condition; £16, bargain.—160, Boundary Rd., Walthamstow. [2365a]

1911 Premier 3½ h.p. Combination; what offers?—Housekeeper, 133-9, Finsbury Pavement, London. [2379]

LATEST Model 3½ h.p. 3-speed Premier, absolutely new; no reasonable offer refused.—F. Liddiard, Prittlewell. [X7993]

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 3½ h.p., Grado gear, running on substitute, good condition, tyres as new; £28.—39, Claremont Sq., Islington. [2375]

1913 Premier, 3½ h.p., 3 speeds, clutch, 100 m.p.g.; £25, or exchange big twin.—Loweth, 6, Mount Pleasant Rd., Enlugh. [2437]

BARGAIN.—3½ h.p. Premier 2-speed motor and sidecar, complete less engine; £14.—15, Holden Park Rd., Southborough. [2374]

PREMIER, 2½ h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X8319]

LATEST Model 1916 3½ h.p. 3-speed Premier; £64; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Ltd., Plymouth. [0841]

1915 Premier, 3½ h.p., 3-speed countershaft, kick starter, coachbuilt sidecar, spares, perfect condition; any trial; £45.—47, Ransom Rd., Coventry. [X8330]

PREMIER, 3½ h.p., 3-speed countershaft, Dec. 1914, little and carefully used, like new, Watsonian coachbuilt sidecar; must sell; £40.—Cheesman, 1, West St., Dorking. [2427]

## Quadrant.

QUADRANT, 4½ h.p., 2-speed gear box motor cycle, will sell for £12, or exchange for new cycle and accessories.—Particulars from A. S. Plowman, Halkirk, Cuthbert. [2309]

## Radco.

RADCO, 2-stroke, in good running order and condition; £11.—W.F., 55, Forest Rd., Lower Edmonton. [2293]

RADCO, 1916 model, 2½ h.p., 2-stroke, excellent running order, easily adapted to run on cheap fuel; £20, can be seen any evening after 6.—Griffiths, 140, Brampton Rd., St. Albans. [2328]

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to buy your new machine is through the SERVICE CO. We give **Best Terms for Cash**; most liberal allowance on your present Motor Cycle in part exchange and the **Easiest Extended Payment Terms**. We can arrange Exchanges and Extended Payments combined, i.e., our allowance on your present Motor Cycle can stand as deposit, and the balance arranged in 12 monthly instalments. Get in touch with us at once, and send for particulars.

New 1916 MODELS Actually in Stock. Enfield, Hazlewood, James, and American Excelsior Combinations.

Enfield, 3 h.p., and James 3½ h.p. Medium-weights.

O.K. Junior, New Imperial, Aildays Allon, Sun, Connaught, Royal Ruby, Coventry Eagle, J.H. Campion, and Wolf Lightweights, &c. SIDECARS.—Service, Watsonian, Millford, Canoelet, and Ivy Coachbuilt Models. RIGID, coach-built splendid condition £5 0

**THIS WEEK'S BARGAIN!**  
Brand New COVENTRY EAGLE, with Villiers Engine and 2-speed gear, 42 Guineas. Single gear, 35 Guineas.

NO EXTRA for Extended Payments.

Stock **SECOND-HAND MACHINES.**

No.	h.p.	Specification.	Price.
181.	2½	WOLF, 1915, 2-stroke, very slightly used.....	£20 0
282c.	2½	ENFIELD, 2-speed.....	£20 0
947.	2½	O.K.-PRECISION.....	£16 0
179.	2½	VELOCETTE, 1915 2-sp. chain drive.....	£28 0
242.	2½	ALDOYS MATCHLESS, 1916 2-sp. chain drive.....	£24 0
288c.	1½	ROVER, 1914, T.T. model.....	£35 0
599.	6	GLYN, 1914, chain drive, No. 6 Sidecar, hood and Screen, lamps, etc.....	£65 0
216c.	3½	LEA-FRANCIS, twin 2-sp. 240 0	
222.	3½	PREMIER, 1914 3-speed, c/shaft, Canoelet Sidecar	£48 0
97.	4	TRIUMPH, 1914, N.S.U. gear, Gloria Sidecar.....	£42 10
265.		DOUGLAS, 1913, and Sidecar.....	£42 10
259.		ALLON, 1916, 2-sp., clutch.....	£35 0
287.		1915 BROUGH, 3-speed, clutch model.....	£45 0
284.		1915 BROUGH, 2-speed.....	£45 0
283.		INDIAN Sidecar.....	£15 0
...		1915 BRADBURY, 2-sp., N.S.U. perfect.....	£35 0
291.		RUDGE, 1912, N.S.U., 2-speed	£20 0
—		INDIAN, 1914, 7-9 h.p., electric lighting, as new.....	£40 0
—		DOUGLAS, 1913, T.T., 2-speeds. Fine machine.....	£36 0
278.		O.K. JUNIOR, 1915, 2-speeds.....	£20 0
—		ENFIELD, 3 h.p., twin, 1915, 2-speed, kick-starter.....	£38 0

### LIGHT CARS IN STOCK.

—	ENFIELD, 10 h.p., 1916, dynamo lighting, 5 wheels, many extras.....	£200 0
—	ENFIELD, 10 h.p., 1915, as above.....	£170 0
125.	11 LAGONDA, 1915, 4-seater fine order.....	£145 0
127.	10 BAYARD, 4-seater, dynamo lighting, almost new condition.....	£225 0
126.	6-8 BABY PEUGEOT, very slightly used, 1915.....	£155 0
104.	20 FORD Van, 1916, new, delivery London.....	£134 0
35.	20 FORD, 2-seater, 1915, done 3,000 miles.....	£95 0
—	12 OVERLAND, 5-seater brand new, just in.....	£225 0

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289-95 High Holborn

## MOTOR CYCLES FOR SALE.

## Radco.

1915 Radco, single speed, 2-stroke, handy little machine, with T.T. bars, runs perfectly on petrol substitute; accept £18 cash, or will pay cash difference for a 3½ h.p. combination of recent date.—Newham, 223, Hammersmith Rd., W. [2422]

## Revere.

1916 2½ h.p. 2-speed Revere, as new; £32.—Wilkin and Co., Hunter's Bar, Sheffield. [X8218]

## Rex.

R EX 6h.p. Combination, 1912; a bargain, £20.—John Knox, 65, Port St., Evesham. [X8090]

R EX Combination, coachbuilt sidecar, bought new last year; cheap.—Spencer, 181, Edward St., Nuneaton. [X8135]

1912 6h.p. 2-speed Rex Sidette, exceptional condition; £30.—Wilkin and Co., Hunter's Bar, Sheffield. [X8224]

R EX de Luxe Combination, 1911-12, new tyres, mag., etc., just overhauled, F.E., 2-speed; £18.—Webb, 363, Walworth Rd., S.E. [2334]

R EX 5h.p. Twin, side entrance, underlong sidecar, good running order, tyres nearly new; offers.—58, Transmere Rd., Earlsfield. [2539]

R EX, 5-6h.p. twin, T.T. clutch model, tyres and belt new, machine in splendid condition; £20.—14, Dodbrooke Rd., West Norwood. [1543]

R EX, 1916 (brand new), just delivered, 6-8h.p. twin, mag., 2 speeds, magnificent turnout; list 85 gns., ours 68 gns.—Wandsworth Motor Exchange, Ebury St., Wandsworth (Town Station). [X8256]

1914 Rex 6h.p. Twin, 3-speed combination, with 2-gear sidecar, complete with accessories, in first-rate order; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham N. [2749]

1913 Rex de Luxe 6h.p. twin-cyl. Combination, luxuriously sprung sidecar, 2-speed, free engine, handle starter, completely overhauled, in first-class order; £30.—The Premier Motor Co., Aston Rd., Birmingham. [2394]

## Rex-Jap.

R EX-J.A.P., 6h.p., coachbuilt sidecar, 2-speed, handle starter, speedometer, all accessories, excellent condition; £45, or near offer; seen by appointment.—57, West Side, Clapham Common, S.W. [2354]

## Rover.

ROVER, new 1917, 3½ h.p., 3-speed countershaft combination, just arrived.—Moss, Wem. [X8266]

1914 3½ h.p. 3-speed Rover Combination, splendid condition; £50, or offers.—Parker and Son, St. Ives, Hants. [2518]

ROVER, 3½ h.p., clutch model, sonod, but not smart; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X8316]

ROVER, 1916, T.T., Philipson, plating and enamel as new, lamps, horn, all accessories; 40 gns.—Rover, The Red House, Sidcup. [2442]

ROVER, 1913, 3-speed, clutch, Millford coach sidecar, 2 new tyres, under 100 miles; £35, lowest; trial by appointment.—Harwood, 21, Warwick Lane, E.C. [2554]

FOR Sale, London district, 1914 3½ h.p. T.T. Rover, splendid condition, new belt; owner willing to ride to meet buyer; price £28.—Box L2,229, c/o The Motor Cycle. [2659]

ROVER, 3½ h.p., 1915, excellent condition, gradual pulley; £35, or exchange for Harley-Davidson combination, with cash remittance.—Hale, 68, Teddagar St., Risca, Mon. [X8191]

1914 3½ h.p. 3-speed Rover, splendid order, engine perfect, lamps, horn, speedometer, new belt, tyres good; £35, no offers.—Edwin Simpson, Carlton, Middleham, Yorks. [X8228]

1916 Rover 3½ h.p. Combination, brand new, left works last week, all the latest improvements; on the premises for immediate delivery.—Robinson's Garage, Green St., Cambridge. [2416]

3½ h.p. Rover and Sidecar, Nov., 1915, countershaft 3-speed, chain and belt drive, condition and tyres excellent, complete with lamps and speedometer (Stewart); £65.—Barge, F. Coy., London Scottish, Richmond Park Camp, S.W. [2259]

1914 Rover (bought March, 1915), 3-speed, P. and H. lamp set, horn, Dunlop extra heavy unpunctured tyres, new inch Pedley belt, Millford 13 gns. coachbuilt sidecar, new June, 1915, perfect and unsprayed; £48/10.—Peak, 45, Grosvenor St., Derby. [X8269]

## Royal Ruby.

1916 Royal Ruby, 2-stroke, 2-speed, new; £30.—205, St. George's, Bolton. [X8211]

ROYAL Ruby, 2-stroke, brand new latest model; offers wanted.—T. H. Nice, Bury St. Edmund's. [2263]

1915 2½ h.p. Royal Ruby, good condition; £20.—Wilkin and Co., Hunter's Bar, Sheffield. [X8223]

RUBY-J.A.P., 2½ h.p., 1915, little used, single gear; £22.—Buckingham and Sons, Trindal St., Chelmsford. [2471]

3½ h.p. Royal Ruby, 3-speed hub, and almost new Mills-25 Fulford coachbuilt sidecar, splendid condition; £44; any trial; fitted with extra tank, etc.—Box L2,222, c/o The Motor Cycle. [2449]



**MOTOR CYCLES FOR SALE.**

**Royal Ruby.**

**ROYAL Ruby**, 1916, 2½ h.p., 2-stroke model, counter-shaft 2-speed gear, Moseley tyres, lamp, horn, and full lamp, condition as new; £28.—The Premier Motor Co., Aston Rd., Birmingham. [X2396]

**6 h.p.**, 1915 Royal Ruby-Jap, stand testing, sidcar, 3-speed, excellent tyres, spares, new belt, outer tyre (Sunstone-Avon), 4 tubes, 9 balls, oil; others called up.—Middleton, Wood St., Glossop. [X2441]

**1916 Models Royal Ruby** in stock for immediate delivery; 2½ h.p., 2-stroke, £29/10; 2½ h.p., 2-speed, fitted with J.A.P. 4-stroke engine, counter-shaft gear, etc., £39/10; exchanges arranged.—The Premier Motor Co., Aston Rd., Birmingham. [X2395]

**Rudge.**

**1916 Rudge** and Brannable sidcar, complete; £44.—Cross, Effingham Sq., Rotherham. [X8215]

**1912 3½ h.p.** Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [X0785]

**RUDGE Multi**, 1915, fully equipped, in first-class order and condition; £38.—6, Warren St., London. [X2499]

**RUDGE** and Sidcar, 2-speed, disc wheels; £35.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X1964]

**RUDGE Multi**, 1913, and light sidcar, new belt, etc., fine order; £30.—Smith, 16, Haverstock Hill, Chalk Farm. [X2507]

**RUDGE Multi**, late 1913, just overhauled, and re-enamelled, condition as new; £30.—T. H. Nice, Bury St. Edmund's. [X2266]

**RUDGE**, 1913, 3½ h.p., new tyres, mudguard, Grado Multi pulley, just overhauled, lamps, all complete; £25.—Powell and Son, Abergavenny. [X8140]

**1915 Rudge Multi**, 5-6 h.p., coachbuilt sidcar, fully equipped, trip speedometer, spares, little used; £44/10.—111, Malden Rd., New Malden. [X2383]

**32 h.p.** Rudge Multi and sidcar, excellent condition, spare tyre, tube, belt, etc.; £38; solo, £35; or exchange lightweight and cash.—Elhott, Ellerslie, Kilsyth. [X8093]

**RUDGE Multi**, clutch, Sept., 1914, 3½ h.p., speedometer, meter, lamps, horn, tools, and new belt, good condition; 38 gns.—G.W., 77, Raynton Rd., Enfield Wash, Middlesex. [X2443]

**RUDGE**, 1913, 3½ h.p. T.T. roadster model, semi T.T. handle-bars, new Dunlop and Kempshall tyres, N.S.U. 2-speed gear, free engine, lamps, and horn, appearance as new, guaranteed in perfect condition; £30.—The Premier Motor Co., Aston Rd., Birmingham. [X297]

**Scott.**

**COLMORE Depots**, Birmingham and Manchester, for Scott motor cycles. [X0806]

**SCOTT and Sidcar**, twin, 2-speed, 2-strokes, Bosch, all accessories; £32.—Ronald Smith, Drybrook, Glos. [X7922]

**SCOTT**, 1913, 3½ h.p., coachbuilt sidcar, in real good order, Binks carburetter; £33.—6, Warren St., London. [X2490]

**SCOTT**, 1911, special T.T. model, rotary valves, new tyres, good mechanical condition, lamps, tools, spares; £27, or offers.—B. A. Hill, 9, Eaton Rd., Coventry. [X8154]

**SCOTT**, 1915, accessories, complete, engine No. 3322, makers' guarantee, and test card, B.B. Pilot carburetter, perfect; sacrifice £50.—139, St. Michael's Hill, Bristol. [X2481]

**1915 Scott**, luxurious combination, lamps, horn, spares; £60, or exchange for recent 4 h.p. Douglas combination, or 2½ h.p. Douglas and cash.—S. Harris, 22, Hatfield Rd., Stratford. [X2041]

**SCOTT**, 3½ h.p., 1916, as new, 2-cyl., 2-speed, coachbuilt sidcar, very smart turnout, in perfect running order, large quantity of spares; £70.—Writa, Bill, Parkerton Quay Hotel, Parkstone, Essex. [X2269]

**Singer.**

**SINGER**, 4 h.p., nearly new coach sidcar, 2-speed countershaft, pedal start, clutch, lamps, speedometer, good order, ready to drive away; £35.—Watson, Haslingfield, Cambs. [X7771]

**SINGER**, 1913-14, 4½ h.p., and coachbuilt sidcar, clutch, footboards, countershaft gear, spares, accessories, excellent condition; any trial given; £34, bargain, or exchange solo and cash.—A. Vaughan, 81, Merritt Rd., Brockley, S.E. [X2505]

**Sparkbrook.**

**SPARKBROOK**, 2-stroke, latest model, brand new; offers wanted.—T. H. Nice, Bury St. Edmund's. [X2267]

**Spur.**

**SPUR**, 1916, 2½ h.p., 2 speeds, coachbuilt sidcar, in new condition; £30.—6, Warren St., London. [X2497]

**Sun.**

**SUN**, 2-strokes; all models from stock from £29/10.—Colmore Depot, 261, Deansgate, Manchester. [X0828]

**SUN J.A.P.**, 6 h.p., 3 speeds, 1915, and sidcar; £48.—Buckingham and Sons, Trindal St., Chelmsford. [X2469]

**SUN**, 2½ h.p., 2-stroke, 2-speed, little used; owner joined up; price £30.—Crown Hotel, Lyndhurst, Hants [X2291]

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**Full of Improvements and desirable new features. Tell us your wants in any make and receive special offers.**

**TO-DAY'S STOCK LIST READS:**

IMMEDIATE DELIVERY OF THE "EUK" EASY STARTER. 33/- POST FREE.	H.P.	
6 Enfield Combination..	90 gns.	
8 Enfield Combination..	92 "	
6 Enfield, dynamo, Com'n	103 "	
3 Enfield, Mods. 140 & 150	55 "	
2½ Enfield Enfield .....	42 "	
5 Indian, Model B, 3-sp.	£70 0	
7 Indian, Model G, 3-sp.	£70 0	
7 Indian, Model C .....	£78 0	
5-6 latest Glyco Combination, with var finish	100 gns.	
4 B.S.A., Model H .....	£64 0	
4 B.S.A., Model K .....	£62 0	
2 Calithorpe, 2-str., 2-sp.	£32 11	
2 Calithorpe-Jap, 2-speed	£37 16	
2 Excelsior, 2-stroke .....	£30 13	
2 Excelsior, 2-str., 2-sp.	£37 10	
3 3-speed Norton .....	£68 5	
2 O.K. Junior, 2-speed .....	£31 10	
2 O.K. Junior-Jap, 2-sp.	£36 0	
2 O.K. Junior, 2-stroke .....	£25 10	
2 " " 2-sp., M.A.G.	£40 0	
2 Levis Poplar .....	£32 0	
2 Levis de Luxe, 2-speed .....	£47 10	
2 Diamond, 2-stroke .....	£31 10	
2 Diamond-Jap, 2-speed .....	39 gns.	
2 Sparkbrook, 2-speed .....	£40 0	

Canoelet & Henderson Lightweight Sidcars in stock

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**of new 1915 and slightly used second-hand Models are splendid value.**  
 1916 CRESCENT, 2-stroke, 2-speed ..... £24 0  
 1916 CALTHORPE, 2-stroke 2-speed ..... £25 10  
 1915 CALTHORPE-J.A.P., 2-speed ..... £27 0  
 1912 RUDGE, 3½ h.p., 2-speed ..... £27 10  
 1914 2½ h.p. DOUGLAS, 2-sp., kick starter £33 0  
 1913 7 h.p. INDIAN, Sidcar, hood, screen £40 0  
 1916 INDIAN, 2-stroke, 3-sp., kick starter, as new ..... £44 0  
 3½ h.p. LINCOLN ELK ..... £8 10  
 2½ h.p. 1915 2-speed HOBART 2-stroke, new slightly soiled ..... £31 0  
 3 h.p. 1915 ENFIELD 2-speed ..... £36 10  
 2½ h.p. DOUGLAS, 2-speed ..... £17 10  
 5 h.p. 1916 INDIAN, 3-sp., used 40 miles £61 0  
 2½ h.p. 1915 CALTHORPE-J.A.P., 2-speed £27 0  
 1915 ROYAL RUBY, 2-stroke, as new ..... £24 0  
 1916 ENFIELD 180 Combination, 8 h.p. engine, used few miles only ..... £82 0  
 7 h.p. 1914 INDIAN, 2-speed, and Scar £48 10  
 3½ h.p. EDMUND, spring frame ..... £33 0  
 7 h.p. INDIAN and Sidcar, spring frame £45 0  
 7 h.p. B.S.A. 1913, 2-speed ..... £30 0  
 2 h.p. 1915 DOUGLAS, 2-speed ..... £42 0  
 3½ h.p. TRIUMPH ..... £20 0  
 3½ h.p. 1913 RUDGE-MULTI ..... £35 0  
 4 h.p. BRADBURY, 2-speed ..... £23 0  
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 Free of duty in 42 gallon barrels, 2/8 per gallon. Start with a petrol injection, then run entirely on Beatsol. Barrels charged 10/-, but returnable.

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**MOTOR CYCLES FOR SALE.**

**Sun.**

**COLMORE Depots**, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [X0807]

**SUN-PRECISION**, 4½ h.p., 1915, Sturmer-Archer 3-speed, pedal start, new coach sidcar; £38.—29, St. Leonard's St., Bow. [X2483]

**2½ h.p.** Sun-Villiers, 2-speed, late model, fitted complete, grand condition; war bargain, £22/10.—T. H. Nice, Bury St. Edmund's. [X2268]

**Sunbeam**

**SUNBEAM**, 3½ h.p., just delivered; 75 gns.—Wippell Bros. and Row, Exeter. [X8006]

**SUNBEAM**, 1914, 3½ h.p., with sidcar, condition perfect; £52/10, offers.—Webb, Church Rd., Redditch. [X8255]

**1916 3½ h.p.** Black Sunbeam, in perfect condition, new Jupe, belonging to officer; £66.—Fitzsimons, Tipton. [X8002]

**1914 6 h.p.** Sunbeam Combination, good condition; £68; trial; offers.—Milford, 24, Sheridan Rd., Belvedere. [X2430]

**1914 6 h.p.** Sunbeam, and Corvett sidcar, in splendid condition; £75, or near offer.—Williams, 6, Pittville Parade, Cheltenham. [X8233]

**SUNBEAM Combination**, 1914, 6 h.p., 3 speeds, Gloria sidcar, perfect condition; any trial; £67/10.—Apply, Box L2,208, c/o The Motor Cycle. [X2308]

**1915 Sunbeam**, 3½ h.p., and Gloria sidcar, Lucas lamps, screen, apron, luggage carrier, etc., as new, done 3,000; £65.—Barker, 30, Cecil Mansions, Balham. [X2439]

**1916 3½ h.p.** Sunbeam Combination, Mills-Fulford sidcar, perfect condition; 3 lamps, Stewart speedometer, and warning signal, pillar seat, extra springs fitted to front frame.—No. L2,205, c/o The Motor Cycle. [X2285]

**SUNBEAM**, 1916, 8 h.p., and sidcar, Lucas dynamo lighting set, spare wheel, and all accessories complete, only done 3,000 miles, in fine condition; £120 nett.—H. J. Jenkins, 91, Kentish Town Rd., N.W. [X2433]

**SUNBEAM** 1915, 3½ h.p., T.T. perfect, mileage 2,500, brand new cylinder, every high-class accessory, spares; £65, no offers; view or trial by appointment.—Shevloff, 43, Roach Rd., Ecclesall, Sheffield. [X8289]

**3½ h.p.** Sunbeam, 1916 green model, Millford S.C. to 32 match, ridden under 2,000 miles, speedometer, P. and H. lamps, 6in. glass, electric back, Stewart warner, insurance policy 8 months; price £100.—49, Palmerston Rd., Woodston. [X2318]

**1916 Sunbeam**, 3½ h.p., 3-speed, kick start, chain drive, hand-controlled clutch, with Mills-Fulford Skiff sidcar, run a few miles only, really brand new, statement guaranteed.—Sunbeam Agents, Robinson's Garage, Green St., Cambridge. [X2417]

**SUNBEAM**, new 1916½, green, 3½ h.p., war model, 3-speed, best quality Empire sidcar to match, screen, apron, etc., Lucas lighting set, Stewart horn; cost £110, accept 95 gns., lowest; consider 2½ h.p. new Douglas part exchange.—Dickson, Vaughan St., Llandudno. [X8162]

**SUNBEAM** Late 1915 6 h.p. Combination, with hood, screen, and rug, Lucas dynamo lighting set all round, Lucas electric horn, spare wheel (never used), Pillion seat with back, a beautiful turnout; cost £138/10, first offer of £100.—H. G. Broad, 18, St. Martin's Rd., Knowle, Bristol. [X8282]

**T.D.C.**

**DE LUXE T.D.C.**, £22, immediate delivery.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X1967]

**Triumph.**

**3½ h.p.** Triumph, good condition, tyres almost new; £24.—24, Disraeli Rd., Putney. [X2396]

**1915 T.D.C. Triumph**, 3½ h.p., T.T., practically new; £36.—17, Hamilton Terrace, N.W. [X2378]

**TRIUMPH**, in good order, fixed gear; £18.—Buckingham and Sons, Trindal St., Chelmsford. [X2473]

**1914 4 h.p.** Triumph, in fine order, complete, lamps, etc.; £41.—Cross, Jeweller, Rotherham. [X8213]

**TRIUMPH**, 3½ h.p., 3-speed, Gloria spring wheel sidcar; £39/10.—68, Horton St., Halifax. [X0850]

**1911 3½ h.p.** Clutch Triumph, sidcar, new tyres, 2 belts; any trial; £25.—42, Alphonson St., Exeter. [X2275]

**TRIUMPH**, 1912, 3½ h.p., good condition, running order; £25.—160, Boundary Rd., Walthamstow. [X2365]

**1915 Baby Triumph**, accessories, as new; £35.—The Premier Motor Co., Aston Rd., Birmingham. [X2398]

**TRIUMPH**, nearly new, 4 h.p., free engine, speed gear, new sidcar; £30.—29, St. Leonard's St., Bow. [X2482]

**TRIUMPH**, 1910, recently overhauled, new tyres and belt; 18 gns.—Smith, 16, Haverstock Hill, Chalk Farm. [X2512]

**TRIUMPH**, 1912, 3½ h.p., clutch model, Hercules sidcar, splendid condition; £30.—48, Kellerton Rd., Lee. [X2258]

**TRIUMPH**, 1911, free engine, 2 speeds, good condition; £23/10; quickfit sidcar, £3/10.—82, Balamon St., Plaistow. [X2403]



## MOTOR CYCLES FOR SALE.

## Triumph.

LATE 1909 Triumph, Mabon 8-speed, Bates tyres, with light sidcar; £20.—Bols, 279, Fosse Rd. South, Leicester. [X8235]

TRIUMPH, 2-speed, chain-cum-belt, smart sidcar, condition as new; £42/10, or separately, -76, Broad St., Birmingham. [X8335]

TRIUMPH and Gloria Sidcar, Philipson muley, free engine, splendid condition; £36, or nearest offer.—Eden, Leyland St., Derby. [2446]

TRIUMPH, late 1913, 3 speeds, clutch (1914 improvements); £30.—Elice and Co., 15-16, Bishopsgate Av., Canonville St., E.C. [0492]

TRIUMPH, 3½ h.p., good tyres and belt, with speedometer, good condition; £20.—Carr, 35, Arlington Rd., Camden Town, London. [X8331]

1914 Triumph, 4 h.p., 3-speed Sturmer-Archer, F.R.S. and Lucas lamps; £38.—Grundy, Gaukrodger Farm, Sowerby Bridge, Yorks. [X8264]

1908 Mabon Clutch Triumph, in good running order, rear tyre (Dunlop) new; £18, offer.—D. Rayner, 45, Sprules Rd., Brockley, S.E. [2296]

TRIUMPH, 3½ h.p., free engine model, complete with all fittings, in splendid order; war bargain, £20.—T. H. Nice, Bury St. Edmund's. [2265]

3½ h.p. 1912 Free Engine Triumph, in excellent order, with accessories and extra petrol tank; £27.—Lt. Adams, 40, High St., Haverfordwest. [X8291]

LATE Triumph, 3½ h.p., 2-speed, free engine, speedometer, all lamps, perfect; war bargain, £28, or nearest.—Pooley, 1, Wastdale Rd., Forest Hill. [2533]

TRIUMPH, 3½ h.p., 1911½, free engine, clutch, good condition; sell or exchange higher power; price £24; speedometer.—Chas. Amos, Redhill, Surrey. [2288]

TRIUMPH and sidcar, N.S.U. 2-speed, spare cover, tube and belt, and tools, perfect condition; absolute bargain, £17.—Lyon, 4, Southbrook Rd., Lee, S.E. [2402]

1913 T.T. Triumph, lamps, Stewart horn, engine guaranteed perfect, new belt, tyres good, enamel like new, very fast; £29.—Eimpton, Gillingay, Sandy. [2462]

TRIUMPH, 1910, 3½ h.p., F.E. model, with Bowden countershaft 2-speed gear, thoroughly desirable; £30, or reasonable offer.—Laytons' Garage, Bicester, Oxon. [X8320]

TRIUMPH, 1911, 3½ h.p., Bosch, lamps, horn, numerous spares, and tools, new belt and tyre, perfect condition throughout; £18; after 5.—317, Cambridge Rd., E. [2555]

TRIUMPH, 3½ h.p., late 1913, Sturmer-Archer 3-speed gear, with Fulford sidcar, splendid condition, guaranteed perfect; £40.—Huxley, Elm Bank, Stoughton, Guildford. [2325]

1914 Triumph, 4 h.p., 3-speed, clutch, and Middleton cane sidcar, engine re-bushed, and gears perfect, all accessories, tyres and belt new; £40.—172, Thorpe Rd., Norwich. [2297]

1914 4 h.p. 3-speed Triumph, foot controlled clutch, Sturmer-Archer gear, 26×2½ Clincher de Luxe tyres, Bosch mag., lamps, and horn; £45.—The Premier Motor Co., Aston Rd., Birmingham. [2399]

TRIUMPHS, second-hand, guaranteed good condition: 1913 3-speed coachbuilt combination, £38; 1912 clutch model, £27; 1911 semi-T.T., long frame, £25.—P. J. Evans, John Bright St., Birmingham. [X8250]

TRIUMPH, 1912-13, fitted with new N.S.U. 2-speed gear, new Burbury sidcar, plating and enamelling as new, complete with full set of lamps and horn; £40.—Claude Hims, Ham Green, near Redditch. [X8333]

1914 Triumph and underslung coachbuilt sidcar, 4 h.p., Sturmer-Archer 3-speed, completely equipped, excellent condition, and very smart appearance; bargain, £48/10; exchanges.—Newham, 223, Hammer-smith Rd., W. [2420]

3-SPEED Triumph, new from works Nov., 1913, receipt shown, engine overhauled this season, new extra heavy Dunlops, cane Gloria spring wheel sidcar; combination 40 gas, no offers.—Ernest Orton, 10, Oxford St., Earl Shilton. [2261]

TRIUMPH, 1913-14, 3½ h.p., 3-speed and clutch, P. and H. front, Lucas rear lamps, Klaxon horn, tools complete, and spares (petrol and oil), excellent condition; £35, offers; also beautiful coachbuilt sidcar, if desired.—O. Johnson, 64, Parsonage Rd., Withington, Manchester. [2438]

TRIUMPH, late 1915, 3-speed countershaft gear, with £25 model Gloria coachbuilt sidcar, Stewart speedometer, P. and H. lamps, Lucas horn, mileage 2,100 only, condition perfect, spares include new Pedley belt, exhaust valve complete, cover, and tube; £85 cash.—Hatton, Stag Inn, Lower Walton, Warrington. [X8172]

## Trump.

TRUMP J.A.P. 5-h.p. Canoelet Sidcar Combination, 3 speeds, free, handle start, Bosch, B. and B., new condition, new tyres every imaginable accessory; bargain, £35.—14, Doddbrook Rd., West Norwood. [1542]

## Vindec.

VINDEC, 1915½, 2½ h.p., 2-speed, 2-stroke, long horn, Stewart, lamps, and generator, 100 m.p.g.; bargain, £27/10.—Robinson, 18, Chesterton Rd., Plaistow. [2357]



**BIG REDUCTION FOR PROMPT CASH ON SECOND-HAND MACHINES before Stock-taking.**  
Our numerous Sales are the best testimony of Lamb's Value. Courtesy and Promptitude are given to every Customer without distinction.

	Usual Net Sale	Price.	Price.
GONNAUGHT, 2½ h.p., 1915, s/s, shop-soiled, T.T. bars	£36 3 6	£30 0	
HOBART, 2½ h.p., 2-sp., 2-st., 1915, s/s, s/p'd, tour. mod. (Sold)	£36 0	£30 0	
CALTHORPE, 2½ h.p., 1916, 2-sp., 300 miles, Lucas access. (Sold)	£34 10	£33 0	
NEW HUDSON, 4 h.p., 1916, 6B Com., 3-sp., c/shaft, lamp.	£65 0	£59 10	
JUNO-VILLIERS, 2½ h.p., 1916, 2-speed, 100 miles	£33 10	£29 10	
JAMES, 2½ h.p., 2-sp., new tyres, and accessories	£34 10	£31 10	
JAMES, 4½ h.p., May, 1916, 3-sp. Com., hood, screen, dynamo set	£74 10	£69 10	
NEW IMPERIAL J.A.P., 2½ h.p., 1916, 2-sp., k/start, nearly new	£44 8	£37 0	
RADCO, 2½ h.p., 1916, single-speed	£19 10	£16 10	
QUADRANT, 4½ h.p., B.S.A. c/sh. gear, Canoelet Com'o. (Sold)	£52 10	£48 10	
ENFIELD, 6 h.p. Com., 1914, lamp, horn (b'aul'd by Esfelds) (Sold)	£60 0	£52 0	
ENFIELD 3 h.p., k/start, 1916, hardly any mileage	£52 0	£48 10	
B.S.A., 4½ h.p., 1914, 2-speed, and Phoenix Sidcar	£48 10	£42 10	
BRADBURY, 4 h.p., 1912, 2-sp. and coach Sidcar (Sold)	£34 10	£26 10	
ENFIELD, 6 h.p., 1915, Modele de Luxe, elec. equip., hood, screen	£89 10	£82 10	
ALLDAYS ALLON, 1915, clutch 2-speed, k/start and accessories	£38 10	£35 0	
NEW HUDSON J.A.P., 2½ h.p., 1912, 2-speed, pedal start	£21 0	£18 10	
ALLDAYS ALLON, 2½ h.p., 1915, 2-sp., clutch k/start, acc. (Sold)	£42 0	£37 0	
TYLER-PRECISION, 2½ h.p., 1915, only shop-soiled, and access.	£21 0	£19 0	
B.S.A., 3½ h.p., 1912, clutch model	£28 10	£25 0	
DOUGLAS, 2½ h.p., 1913, 2-speed clutch	£39 10	£34 10	
BRADBURY, 6 h.p., 1914, 2-sp., Combination, Lucas accessories	£59 10	£52 10	
ROVER, 3½ h.p., 1912, T.T. mod., P & H lamp, horn, fast machine	£32 10	£29 10	
AUTO-WHEEL, 1914, with Chater Lea lady-back Tandem	£15 10	£12 10	
ENFIELD, 3 h.p., 1915, twin 2-sp. and accessories	£42 0	£37 10	
TRIUMPH, 3-sp., 1914, & Swan S/car, pedal-start, many spares	£47 10	£45 0	
LEVIS, 2½ h.p., 1915, single-speed, and accessories, like new	£24 10	£22 10	
ENFIELD, 6 h.p., 1913, Com., many valuable accessories (Sold)	£45 10	£41 10	
FORD, 18-20 h.p., 1915, Standard Car, carefully used, valuable spares	£105 0	£100 0	
ENFIELD, 6 h.p. Standard Com., one month old, all accessories	£88 10		

## 1916 MODELS, Actually in Stock.

NEW HUDSON Big Six Combination, fawn finish	£92 8
15-seater Touring Car (carriage extra)	Sold £135 0
2 FORD Vans (carriage extra)	Both Sold £130 0
B.S.A., 4½ h.p., chain drive (Sold)	£64 0
B.S.A., 4½ h.p., belt-cum-chain (2 in Stock)	One sold £62 0

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## MOTOR CYCLES FOR SALE.

## Vindec.

VINDEC, 6 h.p., Bosch, Amac, 2-speed, kick start thoroughly overhauled, Millford spring wheel coach sidcar, Jones trip, lots of spares, everything good. £32; drive 50 miles.—Allen, West Bridge, Leicester. [2447]

## Williamson.

1914 8 h.p. Williamson, air-cooled (Douglas engine) wicker sidcar, good order; offers wanted.—12, Myddleton Rd., Bowes Park. [2356]

## Win-Precision.

WIN-PRECISION, 3½ h.p., and semi-torpedo side car, good tyres and condition; £20.—14, Dodbrook Rd., West Norwood. [1545]

## Wolf.

2½ h.p. 2-stroke, 2-speed and free engine and clutch, 2 Wolf, 1914-15 machine; £20.—Curd, 24, The Parade, Upper Tooting Rd., S.W. [2548]

## Wooller.

WOOLLER, 1915, 2½ h.p., 2-stroke, speeds, clutch; absolute bargain, and like new; £22/10.—3, The Mews, Victoria Rd., Clapham, S.W. [2407]

## Zenith.

ZENITH-GRADUA, 1912, 4 h.p. J.A.P., in good condition; £20.—46, Western Rd., Tring. [2380]

1913 (late) 6 h.p. Zenith, Gradua gear, kick starter, and sidcar, fully equipped, condition as new; £42.—697A, Old Kent Rd., S.E. [2504]

ZENITH, 1913, 6 h.p., and wicker sidcar, fully equipped, just overhauled; bargain, £38.—Elice and Co., 15-16, Bishopsgate Av., Canonville St., E.C. [0491]

## Ladies' Motor Cycles.

CONNAUGHT, 2½ h.p., 2-stroke, Sturmer 3-speed, kick start, will run on paraffin; £33.—Miss Davis, 2, King Edward Rd., Nuneaton. [X7816]

2½ h.p. Norton, J.A.P. engine, Bosch, B. and B., clutch 24 model, splendid condition throughout, well guarded for dress; any trial; bargain, £18.—Clark, Garage, Long Melton, Suffolk. [2322]

DOUGLAS, lady's model, new 1914, kick starter, complete with lamps, horn, and in guaranteed order; a bargain, £37.—Douglas Agents, Embro Motor Co., Charlotte St., Hull. [2274]

## Miscellaneous.

COLLIER'S Motorcycles for cash bargains or exchanges.—Address, Deal St., Halifax.

COLLIER'S—1914 2½ h.p. Douglas, £26/10, fixed gear; 2½ h.p. 2-speed F.N., shaft drive, £17/10.

COLLIER'S—1914 2½ h.p. 2-speed Douglas, £27/10; 2½ h.p. 2-speed Douglas, wants little attention, £18/10.

COLLIER'S—2½ h.p. mag. P. and M., £12/10; 3½ h.p. 2-speed Rover, clutch model, £26.

COLLIER'S—1913 7.9 h.p. Quadrant and coach sidcar, £45/10; Royal Ruby, 2-speed, 2½ h.p. J.A.P. engine, slightly shop-soiled, £33/10.

COLLIER'S—N.S.U. 3½ h.p., 2-speed, £17/10; 4½ h.p. 3-speed countershaft James, chain drive, coach sidcar, £43/10.

COLLIER'S—1916 7 h.p. American Excelsior and coach sidcar, only done 500 miles; £69/10.

COLLIER'S—Triumph, mag., new tyres, £15/10; Clyno, 6 h.p., 3-speed countershaft, interchangeable wheels, £35/10.

COLLIER'S—1909 2-speed Triumph and sidcar, £26/10; 1911 3-speed Triumph and sidcar, £27/10.

COLLIER'S—Royal Ruby, 2½ h.p., 2-speed, 2-stroke, slightly shop-soiled, £31/10; Douglas magneto light-weight, £14/10.

COLLIER'S—1912 3½ h.p. 2-speed Alldays, £25/10; Excelsior, 3½ h.p., 3 speeds, free engine, spring forks, £16/10.

COLLIER'S—1913 2½ h.p. 2-speed Douglas, £34/10; 1912 3½ h.p. 2-speed Premier, £22/10; sidcar, £23/10 extra.

COLLIER'S—3½ h.p. Indian, countershaft gear, £29/10; 3½ h.p. S.P.K., countershaft 3-speed, chain drive, £26/10.

COLLIER'S—1912 3½ h.p. Zenith-Gradua, £24/10; 1913 3-speed free engine Triumph, fine condition, £35.

COLLIER'S—New Rex coach sidcar, £14/10; new Rex sidcar chassis, £7/15; latest models.

COLLIER'S—3½ h.p. free engine Rndge, £19/10; 3½ h.p. free engine Triumph, special value, £19/10.

COLLIER'S—1914 7 h.p. 2-speed Indian combination, £52/10; Rex twin frame, wheels, forks, etc., £3/10.

COLLIER'S quote the keenest exchanges. Send for full list.—Address, Deal St., Halifax. [0826]

EXCELSIOR, shop-soiled model only, £68; also Harley-Davidson.—Turpins, 22 and 29, Preston Rd., Brighton. [0716]

1915 2½ h.p. 2-stroke Motor Cycle, complete, less magneto; bargain, £13, or nearest offer for quick sale.—W. Gill, Grindleford, Sheffield. [2525]



## MOTOR CYCLES FOR SALE.

## Miscellaneous.

NEW Hudson, 3½ h.p., 3-speed, and sidecar, £32; Triumph, 3-speed, solo, £30; T.D.C. de Luxe, 2-stroke, £18; exchanges entertained.—County Eng. Co., 64, Staines Rd., Hounslow. [2220]

2-STROKE Lightweights.—We have a stock and can offer delivery of Sun, Culthorpe, Diamond, Wolf, Lewis, all models; cash or exchange.—Colmore Depot, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0816]

MOTOR Mart, Eastbourne.—New Enfields in stock, 5 and 8 h.p. combinations, trade delivery combinations, and 3 h.p. models. Also several good second-hand models, including one 1916 6 h.p. outfit, equipped with lamps, electric horn, Watford speedometer, only done 300 miles; £85.

1916 6 h.p. Zenith Countershaft Model with Swan sidecar, Lucas lamps, Smith speedometer, tyres and belt as new; £85.

A GOOD Selection of second-hand machines in stock.—Phone: 861 Eastbourne. [2531]

## TRICARS FOR SALE.

RILEY Tricar, less engine and gear box, well sprung, wheel steering, good 700×80 tyres; £4/10.—103, Holmdene Av., Herne Hill, S.E. Phone: Victoria 6553. [2460]

HUMBER, 5-6 h.p., water-cooled, 2-speed, F.E., 11, and B. carburetter, coachbuilt, recently overhauled, easily converted to trade carrier, new dry battery, petrol free; £15.—Clark, Garage, Long Melford, Suffolk. [2320]

## SIDECAR ATTACHMENTS.

GLORIA Coachbuilt Sidecar, spring wheel type; £12.—Laytons' Garage, Bicester. [X8324]

GOOD Sidecar, complete; a bargain, 30/.—Smith, 16, Haverstock Hill, Chalk Farm. [2513]

SIDECAR Chassis, brand new, Chater-Lea; accept £4/10 to clear.—6, Warren St., London. [2501]

WATSONIAN Featherweight Sidecar, wicker body, nearly new; £4/15.—Laytons' Garage, Bicester. [X8325]

LIGHTWEIGHT, coachbuilt, slipper shape, slightly soiled; £5/17/6.—709, High Rd., Leytonstone. [2376]

PHENIX Wicker Torpedo Sidecar, quick detachable joints, nearly new; £4/10.—18, Terrace Rd., Hackney, N.E. [2479]

WATSONIAN New Lightweight Sidecar; exchange for gen't 26 B.S.A., Sunbeam.—Sims, Causeway, Teddington. [X6916]

CHATER-LEA Sidecar, side door, quick detachable luggage grid; £2/10.—W.M., 42, Newington Green Rd., London, N. [2314]

DOUBLE-SEATER (side by side) Sidecar and chassis to be sold cheap.—Write, The Royal Leicester Sidecar Co., Leicester. [0718]

1916 Henderson Sidecar, absolutely new chassis, rod sporting body, suitable for Indian; £10.—Cecil, 100, Victoria St., S.W. [X8271]

BASTONE'S.—The cheapest house for sidecars and bodies. See last week's adverts.—228, Fentonville Rd., King's Cross, London, N. [2450]

WICKER Sidecar and Chassis, complete with tyre, in new condition; £2/10, or exchange 2-speed gear box for 3½ h.p. Premier.—798, c/o The Motor Cycle. (D) [X8201]

GROSVENOR Sidecars, special sporting model lightweight sidecar for Douglas, and similar machines; £9/15. Catalogue free.—Grosvenor Motor Co., Bradford St., Bolton. [7574]

WATSONIAN and Juno Sidecars, 9 models, immediate delivery; cash, prices from £5/13/6; gradual payments from 12/3 monthly.—Juno Works, 248, Bishopsgate, London. [8919]

MILLFORD Sidecar, coachbuilt, torpedo front, 4 connections, with bicycle, excellently sprung, recently re-tired; £6.—Apply, Major Waters, 14, Hereford Rd., Harrogate. [2444]

MUST Sell this week.—Sidecar, cane body, cost £12, good 26×2¼ Dunlop; accept £3; or with extra nearly new torpedo coachbuilt body, £4/10 the lot.—Millards, Chesterfield. [X8297]

SPECIAL Sidecars to suit American Excelsior and Harley-Davidson; Cape hoods 30/., wind screens 17/6; splendid value in lightweight model at 28.—Melville Sidecars, Halifax. [X1034]

GLORIA 235 Indian Coachbuilt Sidecar, 6 couplings, luggage grid, petrol tin carrier, cupboards, etc., etc., 215/10 secured; new 224 Swan Indian sidecar, £14 secured.—Millard, Chesterfield. [X8298]

SIDECARS, touring, 2-seaters, lightweights, etc., for any motor cycle. Bodies, chassis, hoods, and screens supplied separately. Enquiries welcomed. Trade supplied.—T. Williams and Co., Sidecar Manufacturers, Collyhurst St., Manchester. [2053]

## SIDE-CARRIERS AND PARCEL-CARS.

CLEMENT Twin Van, runs paraffin; £55; photo.—20, Milkwood Rd., Herne Hill. [X8001]

SIDECAR Tradesman's Carrier, Kerry-Abingdon, brand new; cost £14/14, accept £9.—6, Warren St., London. [2500]

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All goods sent on 7 days' approval against remittance.

A 3/- Repair Outfit presented free to all purchasers of goods to value of 20/- or over.

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26 × 2 for Lightweight Machines.	Our Price.	List Price.
Continental, standard .....	11/-	19/6
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Peter Union, heavy ribbed ..	16/-	28/-

28 × 2½	Our Price.	List Price.
Continental, standard .....	14/-	22/6
Clincher A Won, rubber studded	19/6	32/-
Clincher de Luxe, rubber stud'd	21/-	32/-
Kempshall, heavy anti-skid ..	22/6	32/-
Kempshall, heavy non-skid ..	30/-	42/-
Hutchinson, passenger ribbed ..	26/6	42/-

28 × 2½ Oversize for 2½ Rims.	Our Price.	List Price.
Clincher de Luxe, heavy .....	23/-	30/6
Clincher de Luxe, extra heavy ..	25/-	33/-
Pirelli, heavy rubber studded ..	25/-	39/-
Kempshall, heavy anti-skid ..	23/6	37/6

28 × 2½ × 2½ Oversize for 2½ Rims.	Our Price.	List Price.
Continental basket pattern ..	21/6	28/9
Continental heavy rubber stud ..	26/6	37/6
Clincher de Luxe, extra heavy ..	25/-	36/6
Clincher Dreadnought .....	32/6	40/-
Wood-Milne, grip ribbed .....	22/6	32/9

2½ × 2½ for 2½ Rims.	Our Price.	List Price.
Clincher A Won, rubber stud'd ..	22/6	30/9
Clincher A Won, ribbed .....	12/6	26/6
Kempshall, heavy non-skid ..	39/-	48/-
Wood-Milne, heavy grip ribbed ..	20/-	31/6
Wood-Milne, ex. heavy grip rib ..	25/-	39/-

28 × 3 for 2½ Rims.	Our Price.	List Price.
Wood-Milne, heavy grip ribbed ..	21/6	36/6
Clincher, rubber studded .....	25/-	38/-

28 × 2½ × 2½ for Indian Machines.	Our Price.	List Price.
Kempshall, heavy racing .....	30/-	48/3
Hutchinson, passenger ribbed ..	20/-	45/-

28 × 3 for Indian and other American Machines.	Our Price.	List Price.
Dominion, special for back wheel	50/-	—
Clincher de Luxe .....	35/-	48/-
Wood-Milne .....	27/6	44/-

650 × 65	Our Price.	List Price.
Pedley, heavy 3-ribbed .....	44/9	50/6
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Wood-Milne, heavy square tread	30/-	40/6

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26×2 .....	4/8	6/9
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26×2½ .....	5/9	8/3
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26×2½ .....	5/8	8/9
26×3 .....	7/8	9/6
28×2½ .....	7/6	9/3
28×3 .....	8/6	11/9

Butted, 1/8 extra.

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¼ in. section .....	per ft. 1/-	1 1/11
8 ft. 6 in. × ¼ in. lengths only ..	7/-	13/9

PEDLEY.		
¼ in. section .. 1/3	per ft. 1 1/11	1 1/11
10. " " 1/5	per ft. 2/4	2/4
¼ in. section 1/8	per ft. 15% allowed for old belt.	

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TRADESMAN'S Sidecar, Mills-Fulford chassis, what offers? Also required, 15 or 16-toothed sprocket for 1914 B.S.A.—F. Keel, Hatchford Park, Cobham, Surrey. [2236]

HANDSOME 4½ h.p. Precision Tradesman's Combination, Mills-Fulford sidecarrier chassis and box, with sliding trays, Bosch mag., Scuspary, Roc 2-speed gear and free engine, speedometer, lamps, and horn, car tyres all round unscored, guaranteed perfect; £36/10.—Clarke, 54, Cotswell St., Louth, Lincs. [2461]

## BODIES.

CAMBER Coach Bodies, £3/12/6, splendid finish.—Bright and Hayles, Church St., Camberwell. [1968]

CAMBER Tandem Bodies, £4/17/6.—Bright and Hayles, 73, Church St., Camberwell, London. [1989]

CONVERT Your Sidecar to coach; estimates free.—Bright and Hayles, 73, Church St., Camberwell. [1990]

ZEPP Cigar Torpedo Sports Coach Bodies, upholstered and finished; 50/.—Venus Car Co., Seven Sisters Rd., N. [1866]

COACH Bodies, latest; great sacrifice, 25/-; brand new.—Venus Sidecar Co., 746, Seven Sisters Rd., Tottenham. [3723]

COACH Bodies, 2-seaters, 1916 bargains, 70/-; direct from Venus Sidecar Factory, 746, Seven Sisters Rd., Tottenham. [1087]

SIDECAR Bodies.—Coloured sketches of original designs and working drawings supplied; first-class work guaranteed.—Coope's Vehicle Journal, Ltd., 19, Garrick St., Long Acre, London. W.O. Tel.: Gerrard 2425. [0818]

## RUNABOUTS AND CYCLE CARS.

1916 Sporting Morgan, hood, screen, done 500 miles; £90.—T.D., 195, Cambridge Rd., Mile End. [2405]

A.C. 1914 2-seater, 6 h.p., Bosch, hood, screen, lamps, first-class condition; £42/10.—1, Ebner St., Wandsworth. [X8258]

1914 Morgan, in new condition, new tyres, complete hood, screen, lamps, etc.; £78.—Cross, Effingham Sq., Rotherham. [X8212]

A.C., June, 1913, perfect order, newly painted, completely equipped, spares; £55.—160, Croydon Rd., Beckenham, Kent. [X8286]

MORGAN New 1916 w.c. Grand Prix Model, oversize tyres, M.A.G. engine, with or without full equipment, in stock, immediate delivery.—Potter, Leicester Grove, Leeds. [X8236]

9 h.p. Twin Water-cooled 2-seater Cycle Car, 3-wheeled, dual ignition, 3 speeds, reverse, powerful climber, fast; £30, or exchange good 2-stroke or Douglas; photo, stamp reply.—Mead, Draper, Amersham, Bucks. [2252]

CHATER-LEA-ARIEL Cycle Car, large 2-seater, 6-10 h.p., water-cooled, 3 speeds and reverse, fitted with hood, screen, lamps, tyres, hood, excellent condition; £55, or nearest offer.—Hart, 48, Herne Hill Rd., Loughborough Junction, S.E. [2370]

KENDALL Carriage, Birmingham built, 1913, 8 h.p., underslung, light, and sporty, hood, screen, lamps, spare tyres, belts, chains, valves, etc., will run London to Brighton on top gear on one gallon petrol, fitted with double tank for substitute; £50, no offers; take motor cycle part payment.—8, Half Moon Lane, Herne Hill. Tel.: Brixton 1964. [2453]

## CARS FOR SALE.

FORD 5-seater, oversize tyres, well equipped; £65.—68, Horton St., Halifax. [0651]

FORD Touring Car, good and cheap; no dealers.—Greyhound Lodge, Glensford. [1656]

RITZ, new, 10 h.p., 4-cyl., 2-seater; £145, or exchange.—Collier, Deal St., Halifax. [0652]

DARRACQ, 8-10 h.p., 2-cyl., smart 2-seater, in real nice condition; £40.—6, Warren St., London. [2498]

2-SEATER Clement, good condition; drive away; £35.—Bellamy, 12, Melbourne Sq., Brixton, London. [2355]

HUMBERTTE, nearly new, hood, screen, accessories; £75; combination part.—Brown, 13, Mercer St., London. [2323]

SPORTING 12 h.p. Sizaire-Naudin 2-seater, detachable rims, fine condition; £50.—Owen, 151a, Oxford St., W. [2369]

PILOT Light Car, 8 h.p., 2-seater, torpedo, hood, screen; £45; exchange combination, cash either way.—Write, Newlyn House, Whetstone, N. [2506]

SAXON, 1915, 2-seater, complete, and in fine condition; £105, or reasonable offer; good combination considered in part payment.—Laytons' Garage, Bicester, Oxon. [X8321]

CHELSEA, 1916, new model, 2-seater. Ask us for particulars. We have a great bargain for some lucky individual, but—delays are dangerous, so write now.—Laytons' Garage, Bicester, Oxon. [X8322]

TRUMBULL, 4-cyl., 2-seater, quite complete, and almost new, worth £125, reasonable offers wanted; good combination considered in part payment, balance by deferred payments if desired.—Laytons' Garage, Bicester, Oxon. [X8323]



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**EXTENDED Payments.**—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618]  
**INSURANCE.**—Lloyd's motor policies payable monthly. Before insuring elsewhere write for prospectus.—Manager, General Insurance Co., 199, Piccadilly, London, W. [0810]

## ENGINES.

**J.A.P.**, 7.9-h.p., as new, cycle or car, 85x85; any examination, £21; also 3½-h.p. Brown pattern, £2; after 7.—Vallins, 29, Canterbury Rd., S.E. [2317]  
**POWERFUL** 3½-h.p. Rex Engine, m.o.v., complete with B. and L. carburettor and pulley, perfect running condition; £3/10.—Davies, Berkeley Rd., Poynton, Cheshire. [X8160]  
**24-h.p.** Twin Moto-Reve Engine, with h.b.e. carburettor, £3/10, new condition; magneto for same, £2; would exchange for higher power, or speed gear.—W.M., 42, Newington Green Rd., London, N. [2313]  
**TWIN** Riley Engine, 5.6-h.p., water-cooled, mechanical valves, complete with 3-speed and reverse gear box, also latest Bosch mag., perfect condition: £15.—103, Holmdene Av., Herne Hill, S.E. 'Phone: Victoria 6553. [2459]

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**DIXIE** Magneto for sale, fixed ignition, almost new; £2/10.—Box 802, c/o The Motor Cycle. [X8273]  
**H.T.** Magneto for 6-h.p. engine; exchange 3½-h.p. W.C. De Dion engine.—80, St. Mary's Rd., Portsmonth. [X8288]  
**THE** Runbaken Magneto Co., Ltd., Camp Street Works, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester.  
**MAGNETO** Parts for Bosch, Eisemann, U.H., and American machines from stock; send for illustrated catalogue, post free. Repairs can be returned within 48 hours. Wire or 'phone as your requirements.  
**THE** Runbaken Magneto Co., Ltd., Camp Street Works, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester. [0404]  
**TWO** Bosch Magnetos, DA2, anti-clock, suitable for single-cyl. in good order; £2/10 each.—Smith, 14, Haverstock Hill, Chalk Farm. [2511]  
**MAGNETOS**—Boulton 2½-h.p. variable, waterproof, 55/-; 3½-h.p., 65/-; 4-cyl., 27/10, carriage paid. We can now deliver from stock.—Boulton and Son, Old Hall St., Wolverhampton. [X8227]  
**MAGNETO** Repairs and Spare Parts; all makes. Spare parts suitable for Bosch magnetos a speciality.—Simms Motor Units, Ltd., 191, Wardour St., London, W. T.A.: Simotunit, London. [0746]  
**MAGNETOS** Repaired by skilful workmen; expedition and moderate charges; several 1.2-cyl. machines in stock, every magneto guaranteed.—The Magneto Mart and Repairing Co., 142, Wardour St., W. 'Phone: Gerrard 727. [8814]  
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## TANKS.

**TANKS** Repaired and Re-enamelled, 10/6.—Bright and Hayles, 73, Church St., Camberwell. [1991]  
**SPARE** Tanks, 1 quart, 2 clips, filler, tap, and union, enamelled; 7/6, by return.—Attwoods, 86, Rosebery Av., E.C. [1009]  
**TANKS**—Tanks any shape to order, repaired, or enamelled, all-metal sidecar bodies; general sheet metal work; lists free.—Attwoods, 86, Rosebery Av., E.C. Tel.: Central 12445. [5591]

## TYRES.

**SEE** Bancroftian Advertisement under Miscellaneous. [0845]  
**BASTONE'S**—The cheapest house for covers and tubes. Huge stock to be cleared at low prices.  
**BASTONE'S**—Michelin heavy Trident beaded-edge covers (clearance), 26x2 19/-, list 26/6; 26x2 21/-, list 28/6; 26x2 2 23/-, list 31/-; 28x2 2 28x3 rim, 20/-; 700x65, 20/-, ditto wired edge, 26x2 2 18/-, list 28/-; 26x2 2 19/-, list 30/-; each including 3/- outfit free. Other bargains see last week's advert.—228, Pentonville Rd., King's Cross, London, N. Tel.: 2481 North. [2451]

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**ECONOMIC.**—Pirelli 26x2½ oversize 25/- (listed 39/-), 26x2½ 20/-, 28x3 Kempshall sidexar 16/6.  
**ECONOMIC.**—Special clearance of fully guaranteed but shop-soiled 26x2½ Kempshall heavy non-skids, 38/-, listed 48/-.  
**ECONOMIC.**—Kempshall clearance non-skids, 26x2½ 30/-, specials 32/6, 26x2½ oversize 35/-, 650x65 50/-, including free plug.  
**ECONOMIC.**—Kempshall clearance anti-skid, 26x2½ 22/-, 26x2½ oversize 23/6, 28x2½ 26/6, including free plug.  
**ECONOMIC.**—Enfield riders note 650x65 Kempshall extra heavy steel-studs, embedded in fibre, 47/6, fully guaranteed.  
**ECONOMIC.**—Special for Saxons, Indians, and Harley Davidsons. 28x3½ oversize extra heavy Kempshall steel-studs, embedded in fibre, 60/-, fully guaranteed.  
**ECONOMIC.**—Continental 26x2½ wired covers, oversize for 26x2, 10/6, pair 17/6.  
**ECONOMIC.**—Continental basket pattern, 26x2 16/6, 26x2½ 18/-, 26x2½ Model de Course heavy 19/-.  
**ECONOMIC.**—Large numbers of odd 26x2½, and 26x2½ covers from 7/6. State requirements.  
**ECONOMIC.**—Clincher 26x2½x2½ 6-ply Dreadnoughts 37/6, 28x3 fitted 27/6.  
**ECONOMIC.**—Wood-Milne heavy 28x3 grooved 27/6, 28x3 heavy Clincher de luxe non-skids, 35/-.  
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**ECONOMIC.**—Clincher tubes, 26x2 4/9, 26x2½ 5/3, 24x2 3/6; Continental 26x2½ 5/9, 650x65 6/6, 28x3 9/6.  
**ECONOMIC.**—Wood-Milne belting, ¼ 1/3; Continental, ¼ 1/-; Pedley, ¼ 1/3, ¼ 1/5, ¼ 1/8, lin. 1/11, 1½ 2/4; 15% allowance for old belts.  
**ECONOMIC** Tyre Co., 137a, Lewisham High Rd., New Cross. 'Phone: New Cross 1393. [2562]  
**TWO** 650x65 Dunlop Covers, heavy rubber-studded, quite new and perfect; accept 1 gn. each.—Ward, Shipton, Oxford. [X7323]  
**KEMPSTALL** Tyres for Cars and Motor Cycles; delivery from stock; trade supplied.—Depot for Kempshall tyres, 200, Deansgate, Manchester. [2431]  
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**MUST** sell at once, all brand new.—26x2 extra strong Wood-Milne cover, 36/-, accept 18/-; 26x2½ grooved Wood-Milne, 21/-; 26x2½ special heavy Bates, 20/-; 26x2½ Avon Stonehenge, 19/-.—Millards, Drapers, Chesterfield. [X8301]  
**EXCEPTIONAL** Offer for month only, in order to advertise British made motor tyres and belts, absolutely new, direct from works, with makers' guarantee. We will supply any size tyre or tube at reduced prices. Agents wanted for Kempall, the famous petrol substitute.—Kemp's Rubber Works, Hardman St., Manchester. [7527]  
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## The Engine of the Future.

IT is a feather in the cap of the British motor cycle manufacturer that a leading American firm should have followed his lead and introduced for 1917 a type of motor cycle beloved by Britishers. We refer to the horizontally-opposed twin-cylinder, a type of engine which first appeared on a motor cycle as a marketable production so far back as 1904. Since that date motor cycles with "flat" engines have always been before the public, and it is a significant fact that each succeeding year this type of engine has gathered increasing support from manufacturers, whilst the importance of its achievements on road and track has likewise grown in corresponding ratio. To Mr. J. J. Barter, of Bristol, who first introduced his Fée motor cycle (later known as the Douglas) in 1904, a great deal of the credit is due, and there is no doubt that his missionary work accomplished in the face of immense difficulties has opened up a new field for motor cycle manufacturers, the significance and extent of which it is impossible to estimate at this moment. Of copies there have been many, but no one can be blamed for adopting a design which has been proved by exhaustive tests to be highly suitable for motor cycle work. It is no new suggestion of ours that the horizontally-opposed twin is the engine of the future. It has faults; for instance, the overall length does not lend itself to a neat frame construction, and the rear cylinder in particular is apt to be difficult to remove, but its even firing and almost perfect balance easily outweigh its disadvantages. Quite apart from the fact that there is a choice of half a dozen makes of horizontal twins whose names are well-known, we hear privately of others on the stocks which will be introduced after the war. Our remarks refer exclusively to the four-stroke type of engine, no manufacturer having yet got beyond the experimental stage with the two-stroke horizontal twin, but the return of peace will see important developments in this direction.

## Improved Petrol Position.

AT last daylight is seen in the petrol restrictions. Those sanguine users who expected more petrol to be available in the autumn—just at a period, as we have already pointed out, when motoring wanes until the succeeding spring!—will be gratified. In the words of the Petrol Committee, "The position is ever so much better, and we hope to be able to release much more petrol under the new licences when they have to be renewed next month for private motor cars and motor cycles. As soon as we are able to arrive at a definition respecting the new licences the fact will be duly announced." Readers who have husbanded their allotted amount of petrol, by the use of substitutes, can retain their licences until such time as their stated quantity has been exhausted, and those who have not bought their petrol can have the tax returned to them. Meanwhile, from Saturday next, an increase of petrol for commercial and certain professional purposes is promised.

There is no prospect of the Petrol Committee ceasing to exist, as until the Finance Act is amended the war tax of 6d. per gallon will have to be collected, and for that purpose petrol licences will continue to be issued.

At this juncture it would be interesting to know whether the petrol tax is yielding the huge amount it was estimated that the proposed motor car taxes would produce. We doubt it personally, though obviously we have no reliable figures to go upon. In any case if shortage there be, it is due directly to the lack of foresight in arranging sufficient quantities of petrol or checking reckless consumption of the precious spirit at a much earlier date. By sanctioning the use of more spirit, the Exchequer will benefit considerably, for every user of petrol must contribute 1s. tax for every gallon he "consumes," and that is why people who have never yet believed in a dire shortage of petrol were amazed at the meagre allotment.



# FLYING—A MOTOR CYCLIST'S IMPRESSIONS.

I HAD done a slight service for a pilot, and he asked me if I would come to look him up the following Monday, when he would take me on a test flight. Would I go? Would I not? And you may be sure I was round to look him up at the first opportunity.

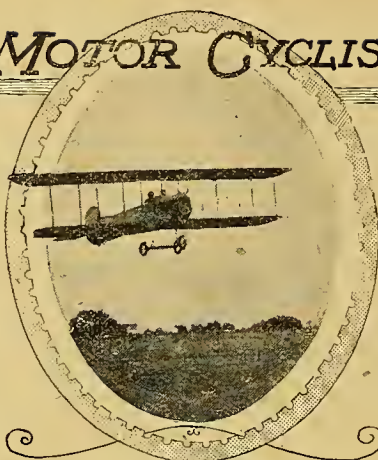
The machine he was going up in was a —. Well, perhaps I had better not say what. It was fitted with an eight-cylinder engine V type in front, the observer's seat being immediately behind the engine and the pilot's seat behind that. There were numerous little odds and ends which I don't know the name of, and if I did it would, of course, be inadvisable to mention them.

## Sensations.

Taking my seat I watched the mechanics pull over the propeller. At last we were ready. "Contact," shouted the mechanic. "Contact," said the pilot, and with a sharper pull than the previous ones the engine started and the propeller vanished. Gee! what a draught. It compares well with going all out down a steep hill against a gale of wind. Distinctive engine noise vanished, and it became more like the drone of several Scott machines running together. Now the mechanics pull the chocks away from the wheels and we move, slowly at first. Soon the motion became like riding an Edmund spring frame machine over a field, with, of course, the difference that there was a tremendous wind when I put my head round the corner of a windscreen not much bigger than this page. We soon lost that sensation, and barring the fact that the ground seemed racing away at a tremendous speed we might have been in a motor cycle race held on a billiard table surface.

## Banking.

This was great; as yet we were only about 20ft. above the ground, and I was not at all prepared for the next surprise, for the pilot suddenly made the machine rise rapidly, and I felt as though my head was being forced into my body by a huge weight. The nearest I could describe the motion was as that of rushing down the straight at Brooklands and going straight up the test hill. Although the body felt like rising the head felt as if it was being forced down. On we went, and soon we were over a place which I had often wanted to see from above, and consequently I leant over to look at it. The pilot took advantage to "bank" in that direction, and for a bare fraction of a second I thought I was falling out. I had been caught napping, and he properly "shot the wind up me." I suppose it was retaliation for shooting it up him when I drove him on the motor cycle and sidecar. Anyway, it felt something like being on the carrier of a solo machine when you expect the rider to turn to the left and he turns to the right, only without being able to know where he is going.



"LITTLE JOHN"

The track of a motor cycle is limited to roads, but an aeroplane can turn anywhere any time. Sitting in front of the pilot the observer does not know when he is going to be suddenly put into a "horizontal position." As we turned I made one violent but unconscious grab for the opposite side, but there was no need. Before the banking was completed I saw a midget figure of a motor cyclist dashing along a road visible between the tips of the wings.

It must have been "some" bank, for in a second or possibly less we were facing in a direction which meant we had gone round at least 270°, or threequarters of a circle. We were now going over sandy country, and although I should judge that we were 1,000 feet up, the tracks of horse transport were clearly visible, showing that a convoy had passed, and in the distance was a cloud of dust which, if we had been reconnoitring, we should have had to investigate. Over in the distance I could recognise landmarks which told me we were at least four miles from our start, and then we turned for home. We swooped down to the sheds and then up again, apparently missing them by inches, but in reality it must have been hundreds of feet. We soared up, and then almost stopping the engine we seemed to come to rest.

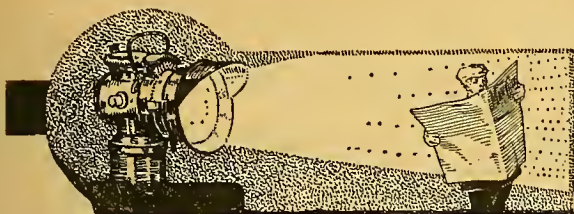
## Landing.

Then down went the nose, and I felt like putting the brake on and switching off; but there is no brake and no switch, and so I resigned myself to banging into that patch of green. Whirr the engine went, and in a twinkling the earth disappeared and the sky was only visible. Again the revs. died down and we seemed to stop—we were stopped—I tried to balance—I felt as though I was on a nine inch plank balancing a heavy twin motor cycle which had come to rest. In a second I must fall. What was I to do. Whirr went the engine, and with a cross between a dive and a bank I found we were gliding gently over the shed rapidly coming down. Now for the bump I thought; but there was none perceptible: right across the aerodrome we went, gradually slackening speed until we automatically stopped, and then turning her round the pilot taxied the plane back again to the starting point. I thanked the pilot and looked at the watch. I had been up for ten minutes, and as near as I could reckon we had done ten miles.

I feel almost that I should like to fly, and yet when all is said and done I would prefer to trust myself to someone else, although on *terra firma* I certainly prefer to hold the controls of a motor cycle in my own hands.

We are informed that a kilometre hill-climb held in Denmark on September 24th was won by a rider mounted on a Harley-Davidson. The winner improved on the previous best timing by 4s.





## Occasional Comments

By Ixion

### From America.

American riders cannot yet have enjoyed much experience of baby two-strokes, but one of their manufacturers knows something. He advises users of what Yankees call the "gasoil" system to stop their engines after a run by turning off the petrol and letting the engine drain the carburetter, or they may have starting trouble next day from oil sludge choking up the fine passage leading to the jet.

### A Modern Surface Carburetter.

I have under test a carburetter which is really a combination of the old surface type and the modern spray pattern. It is known as the G.A.S.P., and is devoid of a jet in the usual sense of the word, the petrol being fed to a small pencil-shaped roll of wire gauze, placed in lieu of the jet in a carburetter which externally resembles the ordinary type. The main adjustment is performed by raising or lowering the gauze pencil, and so varying the amount of petrol-carrying surface exposed to the air. The vaporiser is controlled by a single lever, as it is arranged on straight-through principles, and the throttle piston is so shaped that the amount of the gauze exposed and the area of the air intake uncovered at any setting of the lever are in accurate relation to each other. In other words, it really amounts to a variable jet carburetter, combined with the main merit of the old surface type, viz., that there are no narrow passages which may choke if there is dirt in the spirit. What would not competition riders have given for an unchokable carburetter in the days of the old non-stop trials, when a momentary stoppage put us out for good and all. The vaporiser is thoroughly well-made, develops quite as much power as the standard type, registers a moderate consumption (neither very high nor very low), and is most reliable in use, whilst its single lever control will interest many riders. It should enjoy a good vogue when conditions return to the normal. Not the least of its merits is the simplicity of adjustment, it being possible to adjust the gauze (equivalent to trying a fresh size of jet on standard types) in half a minute by simply unfastening an external lock nut.

### The Power of a Single.

A correspondent considers that the multi-cylinder engine is damned because of its habit of giving up the ghost under hard work on top gear, and calling for a change down where a single will go on plugging away, but that if twins had a separate magneto and carburetter for each cylinder they might display the same rugged characteristics as a single. As a case in point he quotes a recent trip with his big single James and a Canoelet sidecar, the live load with luggage totalling about 28 stone. From Doncaster to Scotch Corner he struck a stiff head wind, but the James took its load up all the rises on top gear ( $4\frac{1}{2}$  to 1) at between fifteen and twenty miles an hour. This sort of performance he very rightly describes as typical of a good single-

cylinder, and as rather beyond the compass of a twin of the same c.c. He considers that comfort is dearly bought at the sacrifice of such potentialities, and questions whether my A.B.C. would equal the performance. It certainly would not. Under such a load I should change down, and, if I so desired, double his speed. To this alternative method the only objection is that in my correspondent's experience and opinion there would be a vast increase of vibration. I have not ridden the big single James, and so exclude it from my reference; but a first-rate horizontal twin of 4 h.p. causes less engine vibration at 20 m.p.h. on an intermediate gear than the best singles I know do at the same speed on top gear. Being familiar with both types, I should infinitely prefer to ride the twin and to change down than to drive a single and remain on top.

### More Judicial.

Dr. Lindsay, the Norton enthusiast, writes from France in a more judicial vein. He frankly admits the broad desirability of pushing designs which reduce engine and road vibration; and interprets his *penchant* for the flying singles as based on the twin desires for extreme speed and extreme reliability. Of course, the days are coming when we shall get vibrationless engines and spring frames in conjunction with the speed, power maintenance, and reliability of the best class singles. For the moment it is true, on the one hand, that the single-cylinder is the more durable engine; that it maintains its power better; that it is—on the whole—speedier. It is equally true that it is grossly uncomfortable.

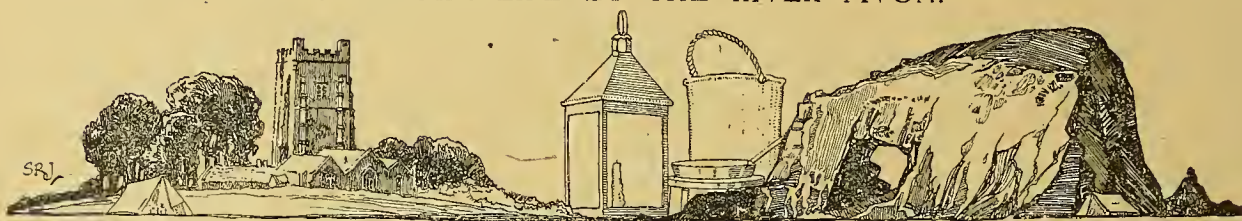
### About Sparking Plugs.

Dr. Lindsay further points out that in the first article he ever wrote for *The Motor Cycle* he underlined the tendency of many sparking plugs to pre-ignite in super-efficient engines. He still pins his faith to the single-point Bosch plug, and by strenuous research in out-of-the-way garages he has maintained a stock of half a dozen or so. He further ingeniously increases his supply by buying up sound multiple point Bosch plugs, and substituting the central electrode from a single-point which has "gone phut." He finds that a quarter of a mile at 45 m.p.h. in a Brooklands Norton renders many British plugs incandescent, though a Blumel and an Ajax behave tolerably well. Another correspondent denounces me for praising German stuff. This is stark folly. We cannot win a world trade by shutting our eyes to facts and pretending that we are top dogs where we are not. Let us all frankly criticise British goods, British methods, and British policy wherever we find a fault until British stuff is uniformly the best. One candid friend is worth a hundred lying toadies any day; and, candidly, some British plugs will stand a lot of improving even yet. I must, however, add the Lodge racer to my list of reliable high-speed plugs; it is, to my thinking, just about as good as the Bosch single-point in most respects except price.



# A RESTFUL HOME FOR WAR WORKERS.

## OPEN AIR LIFE BY THE RIVER AVON.

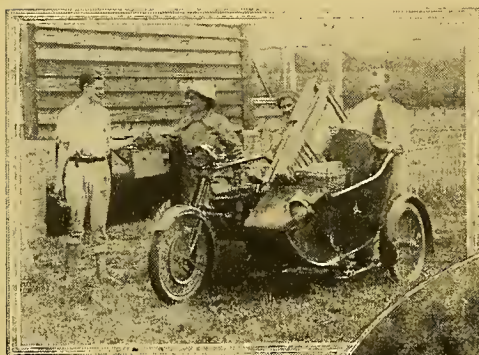


**F**OR many months past war workers, both male and female, have been working at high pressure, and nothing is so conducive to keeping in perfect health in mind and body as a complete rest when the long day's toil is over. The first necessity for restful repose is a complete change of surroundings. In many districts this, unfortunately, is impossible, and all that the worker can do is to retire from the factory or office to the home in close proximity, and either spend an hour or two at a picture house or other place of entertainment or retire to bed. In some districts, particularly in the Midlands, more ideal circumstances prevail, and those possessing motor bicycles or other quick means of locomotion may run into the country and enjoy that fresh air which is unattainable in the hives of industry.

Some war workers in the Midlands this year hit upon a most happy idea in keeping themselves in the best possible condition physically for carrying out the heavy work which they had undertaken and of also enjoying the beauties of an English summer.

### A New Use for a Cricket Pavilion.

In the happy pre-war days they had watched, on an excellent cricket field bordered by the classic Avon, matches between picked teams of the district, and had enjoyed teas in the excellent and commodious pavilion. Since August, 1914, the clubhouse has been empty, and the field, once one of the best in the county, now resembles an ordinary pasture meadow. Most of the players have joined the Forces, and are either in training in England or fighting for their



THE SIDECAR AS  
AN ADJUNCT TO THE  
PROPER ENJOYMENT  
OF OUTDOOR LIFE.



(Top) The 6 h.p. Enfield arrives at the pavilion laden with purchases from town.

(Centre) A pretty snapshot on the River Avon.

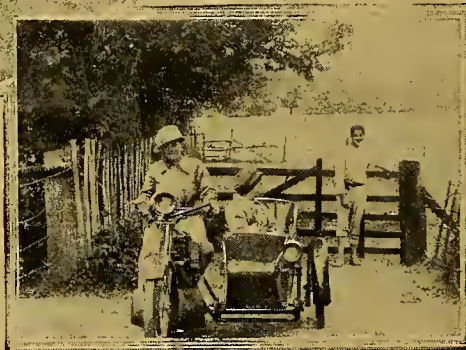


(Top) An instance where the mobility of the sidecar outfit proved useful. Bringing provisions to the boat preparatory to the picnic.



(Left) The ladies arrive for the week-end.

(Right) Speeding the parting guests—leaving the rest home for town life.





**A Restful Home for War Workers.—**

King and country over the seas. Why could not the pavilion be made a summer residence for war workers? thought one of them, and quickly the idea materialised. The cricket club authorities were only too ready to augment their finances, which had suffered, by letting the house at a reasonable rent, and early in July a party of ardent workers took up their residence there.

The dressing rooms made excellent bedrooms, while the large room was available for meals (when the weather was unfavourable), for the storage of various necessities, and when increased sleeping accommodation was needed. Nearly all the meals were served on the extensive verandah, and, with the exception of sleeping, the whole party lived in the open air. All the cooking was done over an open wood fire, and those unaccustomed to camp life would be astonished at the excellence and the variety of the meals served. "Early to bed and early to rise" was the invariable rule. Boys and girls came to the bungalow tired after a heavy day's work, but a swim in the river and an appetising meal put them into the best of humour, and after an hour or so lazily pulling in the boat they were ready for bed. An early morning start presented no difficulties to the manager of the commissariat. A hot breakfast was always ready, and the workers set out on their short journey well equipped for the day's toil. Saturday afternoons and Sundays were the great days at the bungalow. Then visitors from a greater distance were welcomed, and frequently owners of sidecar outfits were to be seen making their way across the field to the pavilion. Bathing, boating, lazing, and talking were the order of the day.

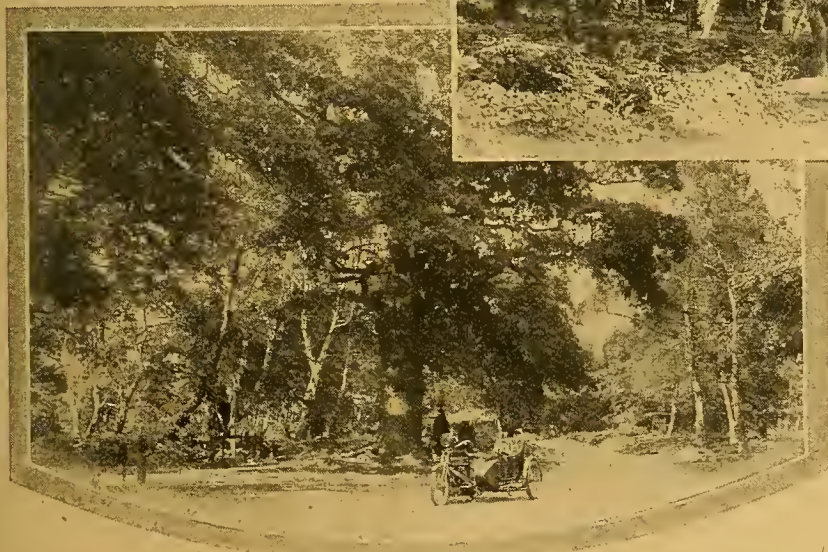
**A Useful Machine.**

One of the tenants was the fortunate possessor of a 6 h.p. combination, and with this reliable machine

he was able to come "home" more frequently than others, and with such a powerful engine, too, he was in a position to be of assistance in carrying the necessities from the nearest town to the pavilion, so our photographs show this vehicle in active service. When the supply of petrol to motor cyclists was reduced to the absurd minimum of half a gallon a week, it was feared that the services of this machine would be lost, and that the visits of its owner would be considerably curtailed, but he thought otherwise. He constructed an auxiliary tank out of an old oil-can, in which he carried petrol, and he filled his tank with paraffin. Starting up from his auxiliary tank, he switched on the paraffin, and the engine when once warm ran magnificently on the crude spirit. As the mornings grew colder he had some difficulty in starting, but with a little help this was soon overcome. He subsequently tried other substitutes, and good results were obtained from Wital fuel, Petrofin, Petrolior, and Beatsol, which he obtained at various prices.

**Stabling Accommodation.**

Among the week-end visitors to the "Home of Rest" were owners of large touring cars and light cars. Accommodation for these larger vehicles pre-

**SCENES OF THE ADVENTURES OF ROBIN HOOD AND LITTLE JOHN.**

sented greater difficulties than that of motor cycles with or without sidecars, which could be pushed underneath the pavilion. With the shorter evenings in September and the restricted lighting regulations the tenancy of the bungalow had to be given up with the greatest regret, but with the firm determination that should, unhappily, cricket be impossible next year a still more lengthy stay will be made on the banks of the Avon by those who this year have so greatly benefited by their sojourn there.

(Top) A typical "Dukeries" landscape. Welbeck Abbey, the Duke of Portland's seat, is close by.  
(Bottom) In the district of mighty oaks. The "Major Oak" is in this neighbourhood.





### A Further Selection of Letters from Readers scattered all over the World.

**W**E continue our efforts to popularise motor cycles the world over by quoting extracts from our Overseas mail bearing upon different aspects of the motor cycle movement. As usual, there are many complaints with regard to the prices, etc., of British mounts, while several correspondents are championing their favourite Yankee mounts. One or two letters contain interesting items with regard to riding experiences abroad, interesting to both readers at home or in the Dominions. Of course, considering the state that the motor trade in this country is in at the present time it is hardly fair for our overseas cousins to be too critical. So far as obtaining delivery of new machines, in many cases they are better off than we ourselves here in England. In visiting various motor factories we continually hear the statement that they are only producing a few machines, and all of those are destined for overseas. In discussing the British *v.* American motor cycle problem for overseas use our overseas contemporary, *Motor Cycling of Australia*, makes the following interesting statement which helps to bear out the remarks made by some of our correspondents:

"In the interests of British motor manufacturers it is most desirable that they should fully realise the great strides American builders have made. The tendency has been to under-rate American competition, and British manufacturers have frequently ignored warnings from their own representatives.

"British manufacturers should not ignore opinions expressed in the Dominions, because if we do not build here we are certainly in an excellent position to test machines under conditions that do not exist in England, and of which the manufacturer is ignorant. American road conditions are mostly similar to ours in Australia, and the Colonies possess good testing grounds from which to obtain data further to improve machines, particularly as regards springing methods and frame construction."

On this very subject of British motor cycles and manufacturers' methods, we are reminded that a letter was received the other day from a Spanish writer which exposes the indifference of some British manufacturers to the foreign market. Before the war we frequently heard that cry, and it is only natural that at the present time it should be

accentuated. The man who wished to purchase a British motor cycle was a Spanish doctor, and knowing the few Englishmen in this settlement asked them to obtain the price of a machine shipped and insured to any Spanish port. The reply they received was curt and to the effect that "our prices are such-and-such, at our works." Delivery date is not mentioned.

We are well aware of the position of the British makers to-day, but even so, a letter explaining fully the situation would have been better than a letter which said in effect, if not in words, "We don't particularly want your business, will you kindly refrain from worrying us."

The writer goes on to say that these actions will be remembered, and that buyers will act accordingly after the war. Although the above case is not exceptional we must, in justice to British manufacturers, point out that it is not usual treatment to expect from English makers. The Overseas Supplement to *The Motor Cycle* gives the lie to a sweeping assertion that British makers are not courteous in replying to enquiries, and that they are indifferent to the foreign market.

#### Long Distance Trips.

MR. H. VIEUSSEUX, Campsie, Australia, writes: "My last machine was a  $3\frac{1}{2}$  h.p. Zenith. I found it a most excellent machine. I think, without a doubt, the roads out here are the worst in the world.

"I used my machine for four months in the summer when it was 100°-108° in the shade. My trips were from Sydney to Geelong—215 miles. This trip I did twice a week, and in the four months the engine was only taken down twice for cleaning. *Re* ground clearance, I would favour five inches."

#### Foot Horns and Indians in the Colonies.

"CEYLON No. 2," Kandy, Ceylon: "In your issue of May 18th I notice a letter from 'Ceylon' on the above subjects. The writer wants a foot-operated horn because it is dangerous to pass bullock carts and passengers or take hairpins with one hand off the handle-bars. But who on earth does such a thing? I have been riding out here for several years, and the invariable custom is to sound the horn well before approaching a cart or human beings, or before taking the hairpin, and then to crawl past or round with both hands on. The man who comes level with a cart before he has a clear way and can keep both hands on is asking for trouble. A curious thing is that often a native's skull is too thick to be penetrated by the sound of *any* horn, but the human voice gets there every time.

"Ceylon' has had three nasty spills—twice through sandy soil and once through a coconut. I would suggest that had he had both hands on the handle-bars it would



A lady motor cyclist in Cape Town, Miss L. Horstirk, riding her Douglas.



# Indian

Motocycles

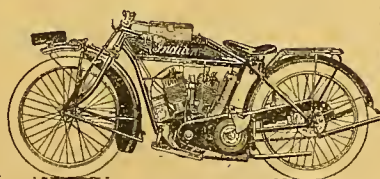
**DISTINGUISHED  
FAST  
and  
SILENT**

**HENDEE MANUFACTURING CO.,**

"INDIAN HOUSE,"

366-368, EUSTON RD., LONDON, N.W.  
Telephone—Museum 1643. Telegrams—"Hendian, Eusroad, London."

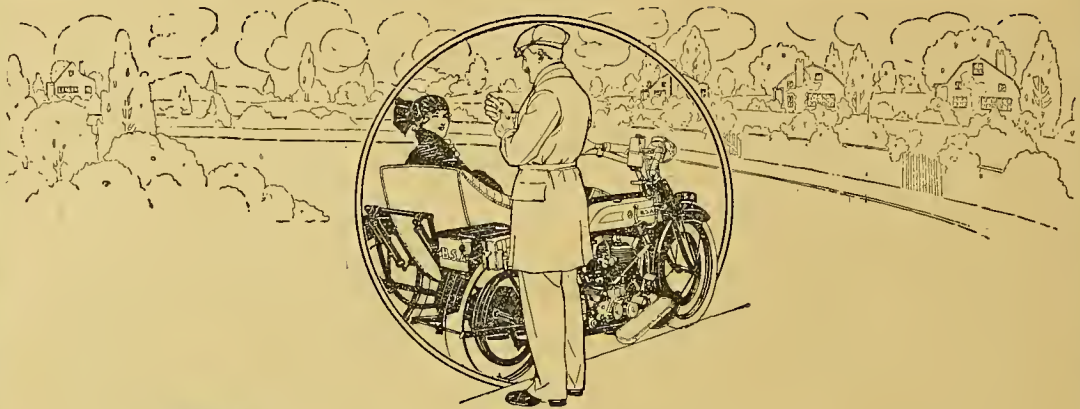
IRISH BRANCH .. 10, Wicklow Street, Dublin.  
AUSTRALIA .. 109-113, Russell Street, Melbourne.  
CANADIAN WORKS .. 12-14, Mercer Street, Toronto.  
AFRICA .. Indian House, 127-9, Commissioner Street,  
Johannesburg.  
Indian House, 579, West Street, Durban.



**NOTE THE INDIANS ON THE ROAD.**

*In answering this advertisement it is desirable to mention "The Motor Cycle."*





The B.S.A.  $4\frac{1}{4}$  h.p. Motor Bicycle fitted with B.S.A. Countershaft Three Speed Gear, runs smoothly, is easy to handle, powerful and economical.

Latest Catalogue free from The Birmingham Small Arms Company Limited, Small Heath, Birmingham



For Solo or Sidecar



## Overseas Opinions.—

have made little or no difference. I have been there myself. As for barging into natives, I have done that, too. But in each case I had sounded the horn *previously* (no effect), and had then yelled—with both hands on the bars. I did 'wake the beggars up with a nasty jar,' and stuck on. I have been clean over dogs, goats, hens, snakes, scorpions, and young pigs, and they have never yet caused a fall. (I touch wood humbly.) I have done many thousands of miles through villages and along the most mountainous tracks in Ceylon, and have had more than one fall, but I can honestly say it has never been the fault of the horn on the bar. If 'Ceylon' will clear the road *in front of him*, use his voice occasionally, and drop his feet when going round hairpins or over sand or loose metal I think he will be content to leave the horn where it is.

"I heartily agree that 'it is far easier riding in London than out here.' I remember some years ago taking a newly delivered machine through Town without stopping the engine, but it was child's play compared with *our* work.

"I must, however, dissent from 'Ceylon' on the question of Indians. It is true they find a ready market, since they are cheap, delivery during war time is practically certain, and spares can always be got through. None of these conditions apply to English machines. Of the eighteen Indians recently imported I believe a good proportion were 5 h.p. models, and, therefore, not rear sprung, so the contention that the rear springs brought customers is scarcely tenable. I would also query the statement that 'there are plenty of English solid framed bicycles for sale.' I have reason to know, as I hunted in Colombo for months. Apart from a few B.S.A.'s and Blackburnes, there has been practically nothing imported from England for over a year. I think most of us would agree that if we could get an A.B.C., A.J.S., Clyno, Douglas, James, P. and M., Rover, Rudge, Scott, Triumph, or other such make we would, *but we cannot*. I got an English 3½ h.p. horizontal twin which happened to blow into Colombo, and after it had done its first 1,000 miles a planter offered its original price at sight!

"Honour to whom honour is due, but hats off first of all to Old England."

## Another Plea for Spring Frames.

MR. W. PEIR, Sydney, N.S.W.: "I hope that you will not let the rear springing agitation drop until it is an accomplished fact on practically all motor cycles. Greater attention to details such as mudguards, better clearance, and hinged to facilitate wheel removal, are points requiring attention. I hope also you will use your influence towards getting us better equipped machines. I daresay it is too early to expect a few vital spares, but surely every machine should have at least a horn and lamp. Cylinder removal without taking the engine out of the frame is important, and it is a pity that the opposed cylinder type really necessitates engine removal to decarbonise."

## American Lightweightes.

MR. ELLIOTT B. HOLTON, Secretary N.J.M.C., New Jersey, U.S.A.: "Just in from an observed lightweight run of 180 miles, in which the Cleveland and Indian featherweight came through with flying colours.

"The average pace was to be 20 m.p.h., but the two men—Waghorn on the Cleveland and Robertson on the Indian—frequently ran into sight of the checks a quarter to half an hour early. One stretch of thirty-five miles they rolled off in 71m., which is good considering that seventeen of it was within the city limits of Philadelphia.

"The net results of the test are that anyone can rely on a two-stroke machine for a real honest-to-goodness trip, something the people over here have been doubtful of since the introduction of the lightweight last October.

"The fuel consumption was: Indian, 71.36 m.p.g.; the Cleveland \*77.17 m.p.g., including the 12 to 1 mixture of oil. Our gallon is 46 cu. in. short of your Imperial gallon, so that the comparison is not bad, all things considered. Had there been need, penalisation for loose or broken parts would have been made, using the Scottish Six Days Trials ruling.

"My idea of the individual work of each machine is that the Cleveland, with a B. and B. carburetter, two-strokes more steadily, but is not as quick to answer the throttle or as good a hill-climber as the Amac equipped Indian, whose worst fault is to four-stroke at times."

[\*92.1 miles per Imperial gallon.—Ed.]

## Automatic Carburetters.

MR. J. M. SMITH, Bloemfontein, South Africa: "I have used and had to do with most makes of automatic and semi-automatic carburetters, and am of the opinion (gathered during the last eleven years) that the carburetter with two levers—air and gas—is, especially in this country (South Africa), by far the most economical and satisfactory.

"I do not consider that it is within the power of any human being to construct an automatic carburetter that is quite satisfactory at all speeds of the engine, and more especially at all temperatures. When the thermometer registers between 90° and 100° F. it is, to my mind, obvious that the petrol vaporises much more readily than where the temperature is about 30° to 50°, and in the former case, the air being much more rarefied, a larger bulk is required to dilute the mixture, and it follows that the adjustment for, say, 60° cannot, I should think, be equal to dealing with the higher temperature.

"I have had automatic and semi-automatic carburetters fitted to some of the machines I have possessed, but nowadays I have no time for anything but the two-lever variety. If I am wrong I am open to conviction. There is no doubt the automatic is handier, but! I also find the automatic consumes much more petrol, yet it seems to me that I faintly remember that 'Ixion' used to be a constant supporter of the automatic variety. He has had a great deal more experience than I, and yet I am really pleased to see that he seems to be coming round to my opinion.

"I may say that my experience is not confined to South Africa, as I have also owned and ridden motor cycles in Scotland."

## Mysterious Pulling-up.

MR. J. A. MACGILL, Bangkok, Siam: "With reference to 'H.L.C.M.'s' question on page 438 of your issue of May 4th, if his carburetter is a B. and B., old type, I would suggest a further close examination of it for the following reason. I once experienced the same trouble with a 3½ h.p. three-speeder, having a B. and B. carburetter, the needle of which had been made, or had become, shorter than standard. The lid of the float chamber had, fixed to its inner face, the usual block carrying the balance-weight mechanism, etc., and the top end of the needle passed through a hole in the block up into a dome, which was screwed into the lid from outside. The internal diameter of the dome being less than the diameter of the hole in the block, a distinct 'step' was formed. When the carburetter got tilted the petrol in the float chamber, obeying the natural law of levels, forced the float (and with it, of course, the needle, owing to some play at the collar) to maintain the vertical position. The result was that the stub end of the needle got jammed into the 'step,' thus preventing the needle from rising smartly off its seat to admit fresh spirit. When the 'step' was bevelled off, and the needle given a chance of *sliding* up into the dome, the trouble disappeared. I have noticed in your columns several complaints of 'drying-up,' to which the above diagnosis might be applied."

A COLONIAL'S  
SIDECAR-DRIVEN  
OUTFIT.



The owner, W. Wilson, of Port Elizabeth, S.A., has a double-seated (side-by-side) sidecar fitted to his New Hudson, and has adapted the controls so that he can drive from the sidecar.



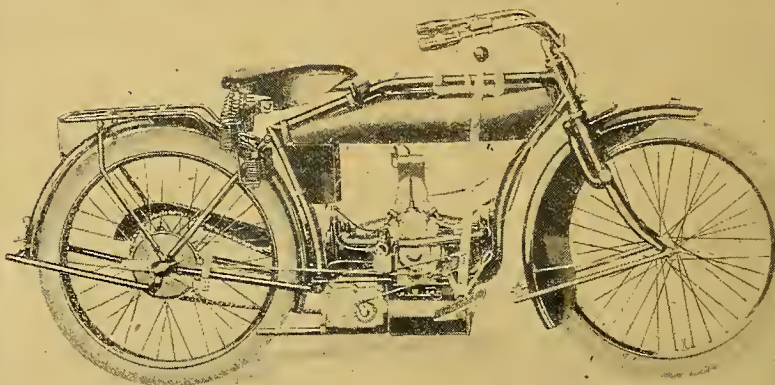
## A HORIZONTAL TWIN INDIAN.

An Entirely New 2½ h.p. 257 c.c. Opposed Twin Lightweight included in the Indian range for 1917.

5 h.p. and 7 h.p. Twins retained, all with Three-speed Gears.

REAL novelty in design is necessarily restricted in this country by reason of the war. Clever designs, such as the Scott Sociable exclusively described in *The Motor Cycle*, do not grow on hedges. One of the few entirely new productions to make their bow to the public since the fateful days of August, 1914, is the 2½ h.p. horizontally-opposed twin-cylinder engine which is announced as a leading line of next year's Indian range. Since the Indian branch was opened in this country in 1909, motor cycles bearing this name have, by reason of their essentially practical design and first-class materials, assumed growing importance. Year after year the Hendee Manufacturing Co. has introduced some new model, or embodied some strikingly attractive feature in its existing models, with the result that the Indian hold on the public is a strong one. Indian practice is frequently indicative of future American trend of design, and it is no bold forecast to state that the Indian lead is bound to be followed in America by other motor cycle manufacturers before many months pass. In England the horizontal twin has always constituted a warm favourite. The world-wide popularity of the Douglas machine ever since its inception is proof of the winning ways of this type of engine.

For 1917 three distinct types of machines will represent the Indian factory,



### THE NEW INDIAN PRODUCTION.

A horizontal twin-cylinder "lightweight." The cylinder dimensions are 50.8 × 63.5 mm. = 257 c.c.

viz., (1) the 2½ h.p. 257 c.c. "flat" twin, (2) the 5 h.p. V-type twin, and (3) the 7.9 h.p. V-type Powerplus. As will be seen from the undermentioned details, the horizontal twin is the real novelty. Its design does not follow accepted practice, but quite a number of important features are incorporated, some of which are immensely practical.

#### Details of the "Flat" Engine.

Probably the most striking feature of the latest production is the compact appearance of the power and transmission units, which are carried unusually low down in a cradle, or loop, frame. It will cause disappointment to many to learn that the capacity of the engine is but 257 c.c., giving a rating of 2½ h.p. The bore and stroke are 50.8 and 63.5 mm. The length of the stroke is noteworthy, as the flat engine has hitherto been arranged with approximately square dimensions, and it should be interesting to see how in practice the long stroke compares with the short. The cylinders are cast in one piece, and have the

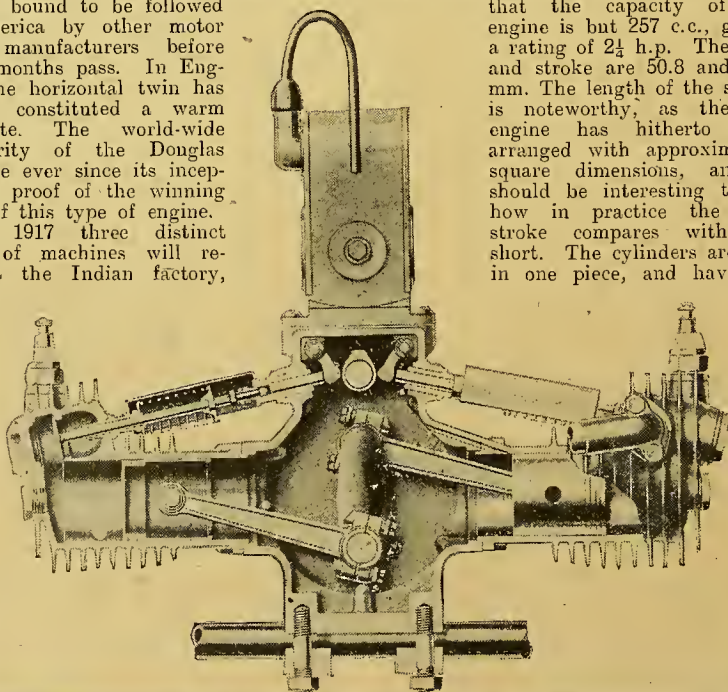
valves arranged side by side, and placed in an almost horizontal position on top of the engine, metal covers being fitted over the springs and tappets, so giving a neat appearance.

The timing gear is situated in a separate timing case cast alongside the main crank chamber. The cams, however, are in the main case, where they receive a liberal supply of oil splashed by a 180° solid crankshaft. The connecting rod big end bearings are split, and are, therefore, easily taken up when wear occurs. Contrary to usual Indian practice, a hand pump is solely relied upon for supplying lubricant to the engine. The lubrication of the front cylinder, however, which is a most important point on horizontal twins, has received special attention, as in addition to the ordinary splash caused by the connecting rods dipping in the oil in the sump, an ample supply of lubricant to this cylinder is ensured by means of a hole drilled longitudinally through the cylinder wall. This hole leads to the piston from a trough situated in such a position in the crank case that it is continually kept full of oil.

A small glass window is fitted in the sump, through which the height of the oil can be ascertained. The sparking plugs are arranged in the uppermost part of the cylinder head, just above the inlet valves, and should therefore keep as free as possible from oil. The magneto, which is a special type of fixed ignition Dixie, is mounted on the flat top of the case. A feature of the magneto is that it is driven at engine-shaft speed, having a special outside distributor arranged on the right-hand side to direct the high-tension current alternately to each cylinder. The higher speed at which the magneto is run should greatly facilitate starting. Running lengthways immediately beneath the engine a large cylindrical silencer is fitted, having a rear extension outlet pipe.

#### A Three-speed Gear.

Immediately behind the silencer and just beneath the rear cylinder is situated the gear box, which is of the three-speed



Sectional view of the new "flat" twin Indian engine.



# ALWAYS ON GUARD



The clever and practical design of the **CLINCHER DE LUXE** tough white tread guards you against side-slip perils and tyre troubles.

This change in guard from the rider to the tyre will be greatly appreciated by all Motor Cyclists, seeing that it relieves them of all nerve strain when meeting treacherous surfaces. Be on your guard against substitutes, and insist upon having

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# SUNBEAM

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The entire output of the above is at present required for War Purposes.

Prospective buyers are therefore advised to purchase any that are left in stock among the various Sunbeam Agents throughout the country, or apply to have their names put upon our Waiting List.

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## “Wait and See.”

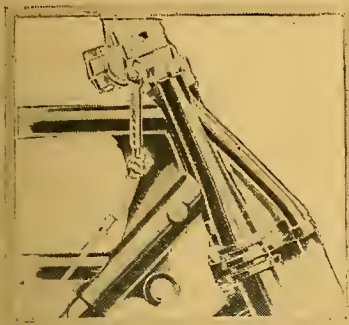
There are times and occasions when the classic phrase is worth following, and one of these is to “wait and see” the after-the-war

**—STURMEY ARCHER—**  
COUNTERSHAFT GEAR

instead of experimenting now (at your own expense) with unreliable, untried, unknown substitutes. The after-the-war SturmeY-Archer will be well worth waiting for.

STURMEY-ARCHER GEARS,  
LIMITED, NOTTINGHAM.



**A Horizontal Twin Indian.—**

New strengthened fork and head lug of the 1917 Powerplus.

pattern, and incorporates a Raybestos-lined plate clutch. The gear is operated by a quadrant lever on the side of the tank, while the clutch is actuated by a pedal on the left footboard. The usual Indian kick-starting device is also incorporated.  $\frac{7}{8}$  in.  $\times$   $\frac{1}{2}$  in. pitch chains transmit the power, both being protected by chain guards only.

The bicycle portions are very similar to previous Indian models, except that the front down tube is divided into two, thus forming very neat hangers for the horizontal engine. Front spring forks, exactly similar to those fitted to the two-stroke lightweight Indian and on the early model 5 h.p. V twin Indians, are used. The action of these forks is somewhat similar to the famous Triumph front fork. The springs are encased and situated beneath the steering head, while the fork blade is hinged about a quarter of the way down. Girders are not considered necessary, we are told, owing to the lightness of the machine. A most neat and compact appearance has been obtained by placing engine, silencer, and gear within the main frame, enabling the rear stays to be brought up close, so giving a delightfully short wheelbase, a somewhat unusual thing when the horizontal type of engine is fitted.

**The Controls.**

Curiously enough, the Indian twist grip system is not used, but undoubtedly the control is as simple as possible. The automatic one lever carburetter is controlled by an orthodox handle-bar control. No control is needed for the ignition, owing to its being of the fixed type, and no valve lifter mechanism is fitted, as starting the tiny engine by means of the kick starter is said to be so easy that such a fitting has not been considered necessary. A switch on the bars is the only other engine control fitted, but there is a hand-controlled rear brake, in addition to that operated by foot.

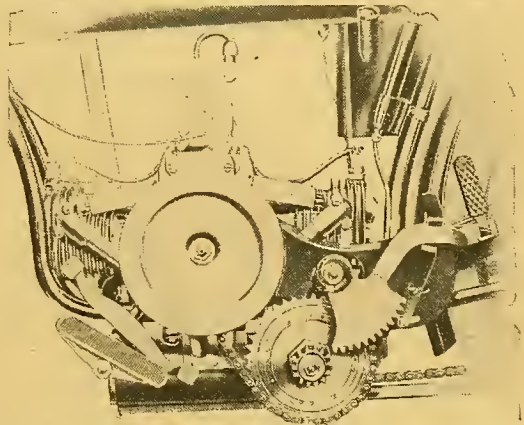
**Powerplus Improvements.**

The Powerplus model, which was introduced for the first time about twelve months ago, and which has proved itself such a splendid sidecar machine, has received a considerable number of detail alterations, the most noticeable of which are undoubtedly the strengthened steering head, front fork, and the new pattern tank. The front forks are now continued right up to the top of the steering head, where they are connected by means of a heavy drop forged plate, which also forms the lugs which hold the handle-bars. These can be swivelled up and down to obtain a variety of positions to suit each individual rider. The steering head, too, has been greatly strengthened by means of webbing, and incorporates a lug to retain the sidecar fitting. The appearance of the latest tank is considerably improved. It is of the pannier type, and is flush at the top, the top tube of the frame running through the centre; thus crevices, where otherwise the dirt could collect, are absent. The tank, being divided into two, necessitates two fillers and two petrol pipes, which arrangement will undoubtedly come in useful when petrol substitutes are used. The capacity of the twin tanks is larger than formerly.

An entirely new type of change-speed mechanism is another improvement, the operating lever being in a horizontal position, and working in a quadrant fitted nearly vertically at the side of the tank, the action being in an up and down direction, which is claimed to give a more natural movement. Only one rod is necessary to transmit this movement to the operating lever on the gear box, so that there is no lost motion due to wear, which commonly occurs where complicated bell cranks have to be used.

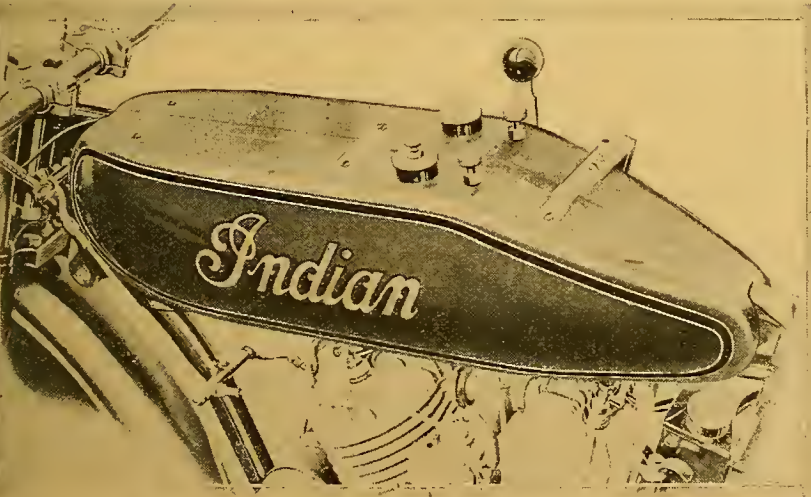
**Longer Pistons.**

A few small alterations have been made to the engine, the pistons and cylinders having been made a quarter of an inch longer, so giving increased bearing surface, while the gudgeon pin has been placed in a lower position in the piston, being now below the centre.

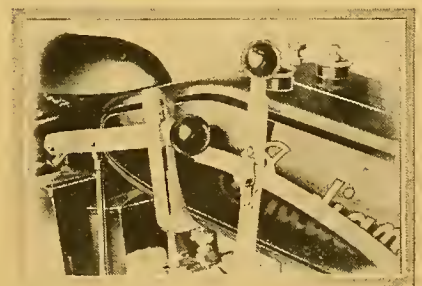


New horizontal twin-cylinder Indian power unit, showing kick-starter and divided front down tube. The three-speed gear box is directly beneath the back cylinder.

This, it is claimed, reduces the tendency to rock and cause piston rattle. The engine measurements are 79.375  $\times$  100.806 mm., which give a capacity of 997 c.c., and it will be noticed that a long stroke is also used in this model. A roller bearing is employed on the drive side of the crank case, as it has been found perfectly satisfactory in the previous model. Apart from these items the machine remains practically the same as



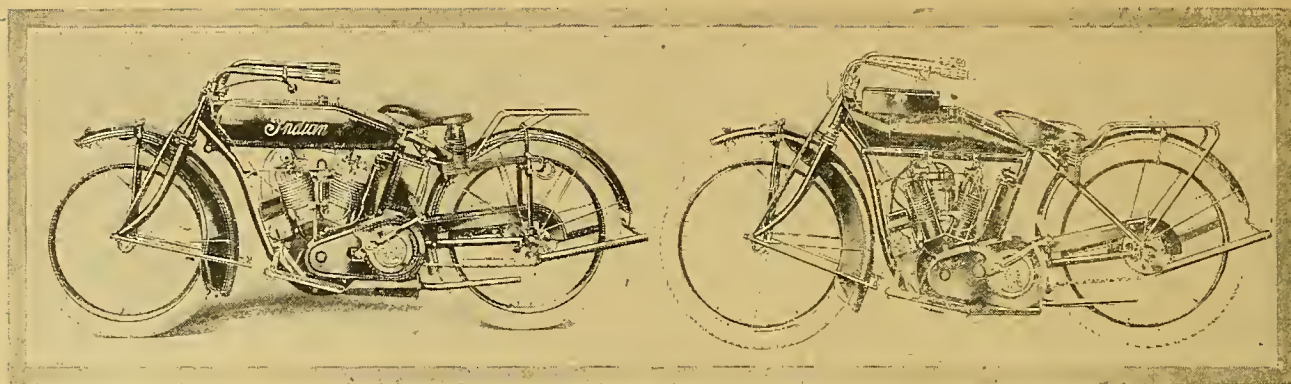
Indian divided flush top tank. There are two separate compartments, each with its own filler.



New vertical change-speed quadrant on the Powerplus Indian. The lever on the right is for the clutch.

the first model Powerplus, the appreciated rear sprung frame, mechanical lubrication, the cradle spring fork, and the 28 in.  $\times$  3 in. wheels remaining unaltered. The well-known Indian red enamel is still retained, with the addition of a broad black line on all flat surfaces.





Other 1917 Indian models, which show detail alterations only. (Left) The 7 h.p. Powerplus, which made its first appearance twelve months ago, and the 5 h.p. with rigid frame.

#### The 5 h.p. Model.

To those desiring a moderately light fast solo machine, the 5 h.p. V twin will undoubtedly appeal, it being ample for any solo work, and also being sufficiently powerful to take a light sidecar when required. This model has the old pattern

engine, viz., that fitted with detachable cylinder heads and overhead inlet valves. The frame is the ordinary rigid type, having only the Indian cradle spring fork in front. A three-speed gear and usual Raybestos-lined plate clutch is also incorporated as in previous models. All models have the frame strengthened by

means of liners, as has been usual in Indian practice for some years, while both the Powerplus and the 5 h.p. models still incorporate the Indian twist grip control for throttle, spark, and valve lifter. In other words, the small twin remains practically unaltered from last season.

## THE NEW ARMOURD CARS.

### FURTHER EXPLOITS OF THE "TANKS."

WE notice in the press fresh statements regarding the origin and construction of the new armoured cars, in spite of the Ministry of Munitions's exhortation of last week. We can state that most are imaginary.

#### The Armoured Cars Again.

A correspondent at British Headquarters in France tells of a British soldier on a stretcher, alongside a German soldier, on the way back from Gueudecourt, where "tanks" had figured. The German could speak English, and Tommy was saying to him, "Well, we've got your Gueudecourt."

"Yes," answered the Boche, "but you had to come in a taxi to take it."

#### Tommy's Taxi.

"There is not much that is mysterious in their construction, for they are just an improvement on the 'caterpillar' hauler or mechanical centipede that first made its *début* ten years ago before the military critics in Great Britain. During the present campaign 'caterpillars' have hauled the big guns of both sides to their positions. England has only further improved the speed and mobility of such machines, while rendering them bullet-proof. They are a further proof that England's craftsmen are still the 'handy jacks' of yore in this engineers' war of ruthless destruction."—*Daily Telegraph*.

#### "Pigs."

"In one club a few eager theorists fell to sketching their conceptions of the monsters. The drawings were ingeniously submitted to a taciturn and secretive fellow clubman who, by virtue of his connection with the Ministry of Munitions, is supposed to be 'in the know.' 'You can at least tell us which of us has got nearest to the real thing,' sug-

gested one of the theorists. The man in the know took up the sketches and examined them with interest. 'By Jove!' he said warmly, 'I haven't played this game since I was a kiddie.' 'What game?' asked one of the theorists. 'Drawing pigs with the eyes bandaged,' said the man in the know as he strolled away."—*Daily Mail*.

#### Official Despatch.

The despatch issued from British General Headquarters at 10.15 p.m. on Sunday last in connection with the severe fighting near Thiepval states: "In this action the new armoured cars have done valuable work in clearing enemy trenches behind the infantry advance."

#### German Terror.

*The Times* on Friday last again referred to the work of the heavy armoured cars in the following graphic description of one which had penetrated too far into the enemy's lines.

#### A Great Fight.

"When the village of Fliers was cleared the 'Tank' seems to have had a most extraordinary experience. Its skipper and its crew apparently grew bored with sitting still while other men were fighting; so Leviathan went on alone into the wilds beyond, to see what it could find. It found occupation enough. Some distance beyond the village, when it was surrounded by the enemy, something went wrong with its insides and it could not move. The enemy, discovering this, grew bold, and, creeping up to it, under cover of trenches and shell-holes, they fairly swarmed all over the poor thing, like the Lilliputians on Gulliver. They peppered it with bombs, shot through the crevices in its hide, and, so it is said, actually climbed on top of it.

"Meanwhile our infantry had cleared the village and they also wanted more to do. Then they discovered the plight that the 'Tank' was in, fighting like a buffalo ringed round with wolves. So they went to its rescue, and there seems to have been some fighting of the best, and when the enemy had been driven off he left between 250 and 300 dead on the ground around the 'Tank.' Behemoth himself was not seriously hurt, but was scarred like a bear that has been worried by terriers. The derangement of his interior has been repaired, and he is full of fight again.

#### Goliath.

"When the 'Tank' went off on this excursion on its own account the Germans from one of the nearer trenches, after Goliath had passed, came running back to the British lines to surrender in sheer terror, and an airman who was flying overhead gives an absurd description of the 'Tank' marching majestically across country, its progress marked by an effluence of white handkerchiefs and similar emblems of surrender waved from the trenches. Unfortunately, a 'Tank's' capacity for carrying prisoners is limited, and when the monster was seen to be in difficulties the enemy who had given themselves up changed their minds and fell upon it, with the results that have been told.

#### Lost Tank Regained.

"An incidental advantage of the taking of Gueudecourt is that the 'Tank' which was left crippled and deserted out ahead of our ultimate lines on the day when the new engines were first used and has lain there ever since, a landmark to both sides, has finally passed into our possession again. Rarely was a great success more cheaply won."



## A MOTOR CYCLIST V.C.

SEC.-LT. EDWARD FELIX BAXTER, late Liverpool R.

"Prior to a raid on the hostile line he was engaged during two nights in cutting wire close to the enemy's trenches. The enemy could be heard on the other side of the parapet. Sec.-Lt. Baxter, while assisting in the wire cutting, held a bomb in his hand with the pin withdrawn ready to throw." On one occasion the bomb slipped and fell to the ground, but he instantly picked it up, unscrewed the base plug, and took out the detonator, which he smothered in the ground, thereby preventing the alarm being given, and undoubtedly saving many casualties. Later, he led the left storming party with the greatest gallantry, and was the first man into the trench, shooting the sentry with his revolver. He then assisted to bomb dug-outs, and finally climbed out of the trench and assisted the last man over the parapet. After this he was not seen again, though search parties went out at once to look for him. There seems no doubt that he lost his life in his great devotion to duty."

The above is the official description of the gallant act for which a former well-



The late Sec.-Lt. E. F. Baxter, V.C., as a civilian in a pre-war competition, a despatch rider in the early days of the war, and as an officer in the Liverpool Regiment. In the left-hand view he is seen with his wife, who was as enthusiastic a motor cyclist almost as her husband.

known motor cyclist has been awarded the Victoria Cross.

### A Family of Motor Cyclists.

Many readers recognised in the list of V.C. awards published in the daily press last week the name of Sec.-Lt. E. F. Baxter as the Liverpool motor cyclist who in the far-away days before the war was an enthusiastic racing man and trials rider.

Edward Felix Baxter was the second son of Mr. C. Baxter, of Kidderminster, and was thirty years of age. He took up his residence in Liverpool about

twelve years ago, and at the outbreak of war occupied the position of chief commercial master at Skerry's College. To our readers, however, he was known as a very prominent North of England motor cyclist, and in many trials his wife and sister, both keen motor cyclists, also competed with him. His favourite machine was a Rex, and both in track racing and road trials he scored many successes.

When war broke out Baxter enlisted as a despatch rider, but had to be content with home defence work. This did not suit a man of his temperament, and in 1915 he obtained a commission in a Territorial battalion of the Liverpool Regt.

Last May we published the news that Sec.-Lt. Baxter was

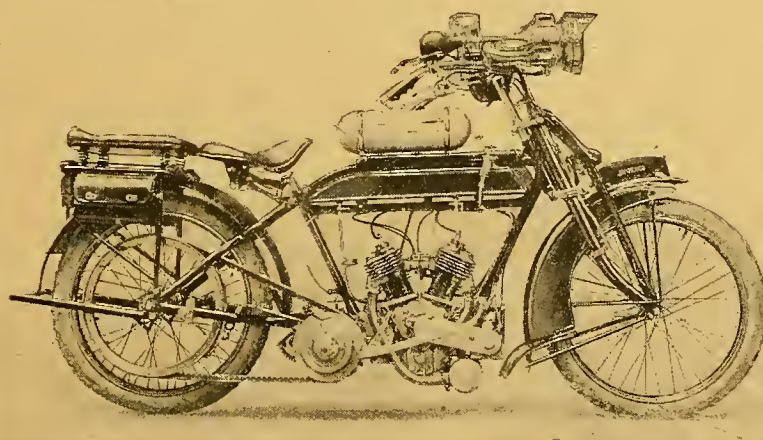
missing, and now we have confirmation of that gallant deed in which it is presumed he lost his life. Thus one more name is added to the growing Roll of Honour of motor cyclists who have died for King and country.

Our readers will join us in extending sincere sympathy to his wife and sister, who in spite of their sorrow must feel pride in their hero.

Baxter was a prominent member of both the Mersey M.C. and the Liverpool A.C., and it is proposed to set up some form of permanent memorial in his honour.

## AN ITALIAN HOME-BUILT MACHINE.

WE have received particulars of a motor cycle built by two keen Italian riders. The component parts are almost all of British manufacture, and the design generally closely follows British practice. The engine is a small twin-cylinder J.A.P., and it is fitted with a Splittdorf magneto and a Senspray carburetter. The specification also includes three-speed gear and kick starter, chain and belt transmission. Saxon forks, and X.L.All saddle. Extra wide mudguards have been adopted, with a good tyre clearance. The power unit and gear box appear to us to be built very low in the frame, giving very little ground clearance, but, generally speaking, the machine has a decidedly pleasing appearance. It is always interesting to hear of enthusiasm which leads to such practical results as we here describe and illustrate.

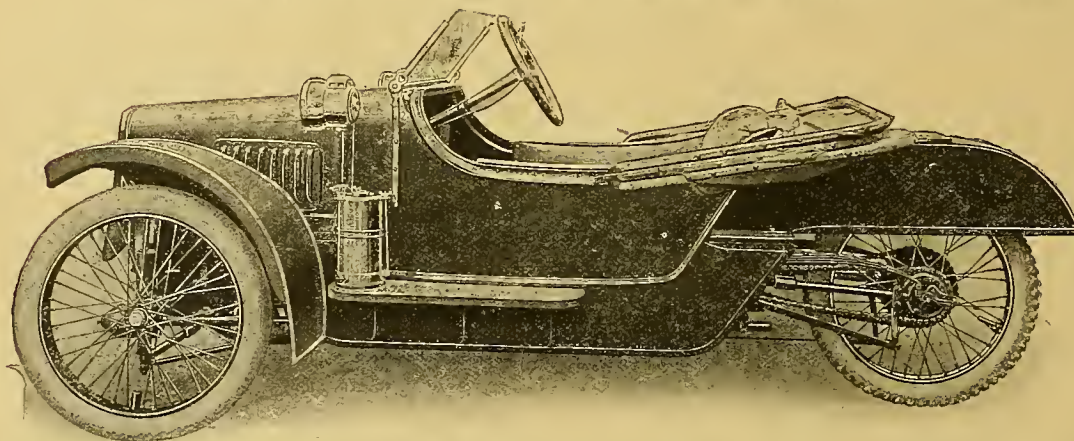


A motor cycle built entirely of British components by two Italian readers. At first glance it might easily be taken for an English manufacturer's product.



# THE GRAND PRIX MORGAN FOR 1917.

10 h.p. Air-cooled M.A.G. Engine and Lengthened Chassis.



The 1917 Morgan Grand Prix runabout, which has a 10 h.p. air-cooled engine of 1,093 c.c. capacity, a lengthened wheelbase, but is in other respects practically unaltered.

**T**HOUGH few motor manufacturers are able to devote attention to new productions, there are others in a more favourable position able to build up machines in a quiet way. The Morgan Motor Co., Ltd., Malvern, is one of these concerns, and the firm in question has recently finished its 1917 Grand Prix runabout. This machine is, to all intents and purposes, an amalgamation of last year's touring and Grand Prix types. The new model has a lengthened wheelbase—the result of racing experience—which is found to give more comfortable riding and the greatest stability on corners. Usually Grand Prix Morgans have had water-cooled engines, this type being favoured, as it enabled more sustained speed than the air-cooled engines used hitherto. It is therefore a departure for the firm to adopt as standard an air-cooled engine on the 1917 model.

The engine in question is a 10 h.p. M.A.G., the famous Swiss production which, in different sizes, is already largely used on motor cycles and appreciated by users. The 10 h.p. model fitted to the Morgan is of an unusual size, the dimensions being  $82 \times 103.5$  mm., and the capacity 1,093 c.c. Though of a new size, in general, the design follows M.A.G. practice, having enclosed inlet valves, with the operating mechanism lubricated from the crank case. The vehicle illustrated is shown with its equipment complete, including hood, screen, and acetylene lamp set. The appearance, save for its increased length, remains unchanged, and the chassis itself has undergone no important change for 1917.

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## Petrol Committee's Latest Announcement.

**A**FTER the leading article in this issue had gone to press, mentioning that an increased allowance of motor spirit for commercial and certain professional purposes had been decided upon, a further announcement was made that this new scheme would not come into force until November 1st, but notices from the Petrol Committee giving particulars as to forms of application under the new licences will be issued on October 7th.

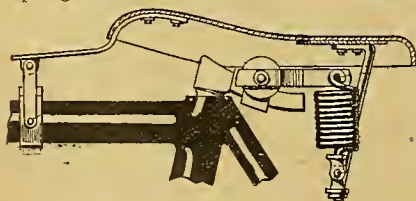
New licences for the purchase of motor spirit for use in private motor cycles will be issued this month to holders of licences which expire in that month. The licences will cover the period November to March inclusive. Application must be made on the form attached to the present licence, and sent to the Petrol Committee not before October 9th. Owners of motor cycles can obtain a licence for two or four gallons per month by remitting 5s. or 10s. with their application for ten or twenty gallons at 6d. per gallon.

Owners of motor cycles who on account of special services hold licences for more than four gallons per month should apply in the first month for the amount entered on their present licences, and should remit the duty payable at 6d. per gallon for a five months' supply.

The Triumph Cycle Co., Ltd., find that, owing to Government work, they are quite unable to undertake at present any repair work. Private owners desirous of having machines overhauled or repaired are therefore advised to approach local agents.

## TWO NEW SADDLES.

**T**HERE seems to be a tendency to mount the peak of a motor cycle saddle on the top tube, and we illustrate two new inventions designed on this principle. The first is the patent of J. Aller, of Hellerup, near Copenhagen, and is very simple in design, as will be seen from the illustration. The front is supported on a flat spring, pivoted above the top tube by means of vertical links, while the rear part is carried on helical springs in tension. This arrangement

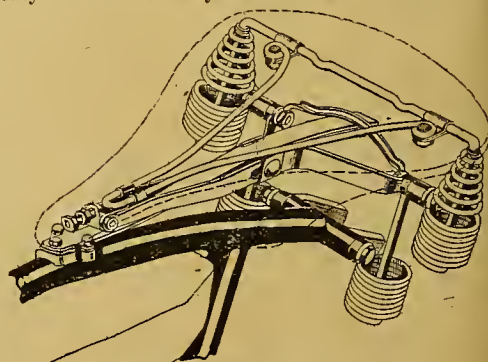


The Aller saddle—a Danish invention.

allows of a swinging backward and forward movement, as well as the usual rise and fall, which should make for easy riding.

The second invention, which is the new Indian saddle, is much more elaborate. A seat supporting frame is provided, on which the seat is pivoted at its front end and supported at the rear by compression and tension springs, which permit the saddle to yield to the weight of the rider. This frame is in turn spring supported at three points on the cycle frame: in the rear by two helical springs in tension, attached to a T piece extension of the top tube, and in the front by a leaf spring clamped to the top tube and attached by a clip, which allows of a small adjustment to the supporting frame already

mentioned, under the centre of the saddle. The saddle is thus doubly sprung, and should be very comfortable to ride.



The saddle suspension adopted on the 1917 Indian flat twin.



# THE MORGAN VAPORISER.

A Road Test of a New Device for Heating Petrol Substitutes.

IN the issue of *The Motor Cycle* for September 21st last, page 248, we described a device of Sec.-Lt. E. B. Morgan for facilitating the vaporisation of heavy fuels. This device, as fitted to a number of different makes of motor cycles, was demonstrated a few days ago. The machines to which it was fitted were an Enfield, an A.J.S., a Douglas, a Triumph, a B.S.A., and an Ariel.

The Morgan is certainly a very satisfactory method of vaporising heavy fuel. It consists of a special exhaust valve cap, comprising a small gunmetal chamber, which is supplied to fit all the best-known makes. An auxiliary tank on the top tube contains sufficient petrol for start-

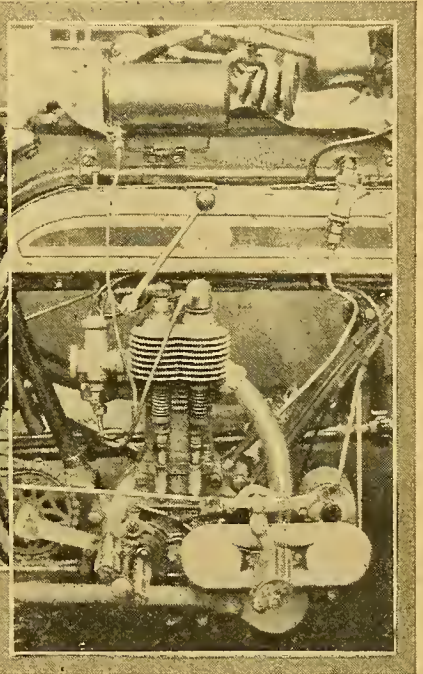
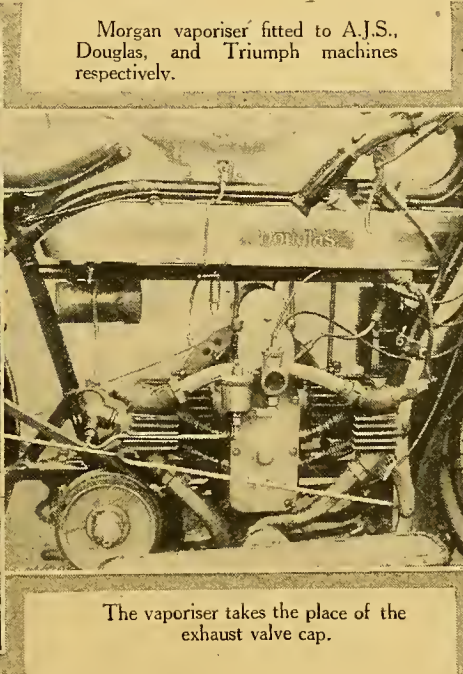
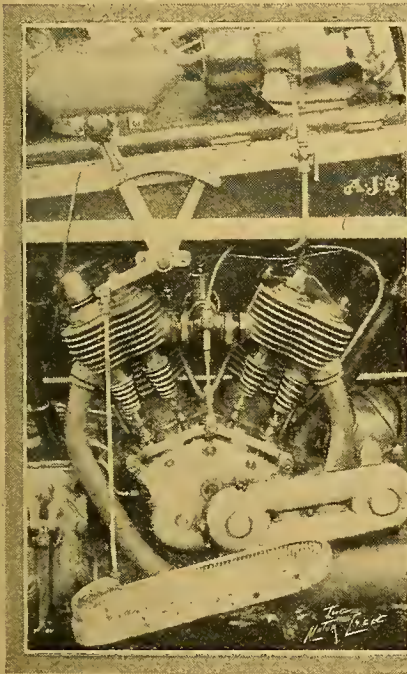
ing, and this is connected to the carburetter by means of a Y connection. Paraffin is taken from the main tank into the vaporiser, and then passes in a thoroughly heated condition into the float chamber. It is usual to retard the ignition slightly on the magneto-shaft.

The demonstration took place at 74, East Hill, Wandsworth Common, and was in charge of Mr. G. J. Rowley. The weather conditions were not very favourable for the test, but quite a number of people was present. The first machine we tried was a 1914 Triumph sidecar. This certainly ran satisfactorily on paraffin, but there was a considerable amount of knocking on hills and when

picking up speed after a check in traffic. This we have found to be prevalent on previous occasions and with other devices when paraffin is used. Our next run was on a 6 h.p. Enfield sidecar, in which no knock whatever was present. In the case of both machines the position of the spark lever had to be very frequently altered to prevent knocking.

The device is simple and should be effective, and certainly is an improvement not only when paraffin but when other heavy fuels are used. We had an interesting test on the 2½ h.p. Douglas with Petrofin passed through the vaporiser, and it gave very good results during a personal trial.

Morgan vaporiser fitted to A.J.S., Douglas, and Triumph machines respectively.



The vaporiser takes the place of the exhaust valve cap.

## Road Expert Joins the O.T.C.

MR. WALLACE E. RICKE, general secretary of the Roads Improvement Association, has joined the Artists' O.T.C., and the council has appointed Mr. James D. Haworth, of the firm of Major Tulloch and Haworth, consulting and civil engineers, of 28, Victoria Street, Westminster, S.W., as acting secretary during his absence. All Mr. Ricke's male assistants, both at headquarters and the various branches, have for some time been on Active Service. All communications to the R.I.A. should be addressed to Mr. Haworth at the headquarters of the Association, 15, Dartmouth Street, Westminster, S.W.

Lt. Arthur E. Wilson (Royal Warwicks) was wounded a few days ago. He is the son of Mr. Edward A. Wilson, managing director of the New Hudson Cycle Co., and was with that company before the war.

We are pleased to note that Vernon Busby, formerly technical expert to the Aston Motor Accessories Co., Ltd., and a despatch rider at the outset of hostilities, has lately been promoted to captain in the R.F.C.

## EXPERIENCES WITH DIFFERENT SUBSTITUTES.

IN spite of the expected increase in the allowance of petrol commencing November 1st, many motor cyclists will doubtless continue to use substitutes. During the past few months hardly an issue of *The Motor Cycle* has appeared that has not contained experiences with one or other of the many substitutes at present on the market, and for the benefit of readers we have classified the issues in which the experiences with the different fuels appeared. So that any reader thinking of running on, say, paraffin will be able to turn up without

any delay the experiences of other readers with the same fuel.

### PARAFFIN AND PARAFFIN-PETROL MIXTURES.

	page		page
Feb. 17th .. ..	153	June 15th .. ..	571
March 2nd .. ..	216	" 22nd .. ..	592
" 23rd .. ..	286	July 20th .. ..	65
" 30th .. ..	307	Aug. 10th .. ..	117
April 13th .. ..	359	" 17th .. ..	150
May 11th .. ..	456	" 31st .. ..	191
" 18th .. ..	480	Sept. 7th .. ..	214
" 25th .. ..	501	" 14th .. ..	225
June 8th .. ..	548	" 21st .. ..	248

### PETROLIOR.

Aug. 17th .. ..	132
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Sept. 28th .. ..	266
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### SPOTS.

May 25th .. ..	501	July 20th .. ..	661
June 1st .. ..	524	Aug. 31st .. ..	197

### BINKS.

April 27th .. ..	399	Aug. 31st .. ..	173
May 18th .. ..	465	Sept. 14th .. ..	218
June 8th .. ..	528		



## CURRENT CHAT

Time to  
Light Lamps

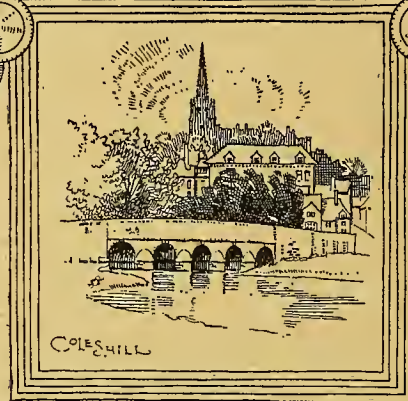
Oct. 5th	...	6.0 p.m.
" 7th	...	5.54 "
" 9th	...	5.49 "
" 11th	...	5.45 "

SPECIAL  
FEATURES

## OVERSEAS OPINIONS.

A RESTFUL HOME FOR WAR WORKERS.

NEW MODELS FOR 1917.



## New Models in This Issue.

Two entirely new models are described in this issue, viz., the 1917 type Morgan runabout and the Indian range for next year, which includes a horizontal twin lightweight.

## The National War Funds.

At the week-end the principal war funds stood as follow:

The Prince of Wales's Fund	£5,961,094	0	0
(£3,468,925 distributed)	4,421,673	0	0
British Red Cross Fund	170,712	8	1
Queen's Work for Women Fund	314,000	0	0
Kitchener Memorial Fund	114,896	0	0
Tobacco Fund			

## Shut Out Enemy Goods.

To prevent German magnetos—or indeed other goods of enemy origin—from reaching this country is perfectly simple. The Manufacturers' Union have but to meet and decide collectively not to use enemy goods on motor cycles, and they will have the whole-hearted support of the British riding public.

## Care in Selling a Machine.

A reader relates an unpleasant experience in selling a machine. According to our correspondent, a man, dark and short, and clean-shaven, calls upon the advertisers in the London district, and, if his cheque is not accepted, says he has no change and borrows a small sum to pay his fare home. No more is seen of him!

## B.S.A. Report.

The annual meeting of the Birmingham Small Arms Co., Ltd., is being held to-day. The report for the year ending July 31st, 1916, states that there are profits available for the payment of the usual half-yearly dividends to that date on the "A" and "B" preference shares and a further interim dividend to the ordinary shareholders of 15%, free of income tax, in addition to the interim dividend of 5% paid in April last.

## An Expert One-armed Sidecarist.

Seeing that the R.F.C. has enlisted several women as motor drivers, a one-armed reader of *The Motor Cycle*, who is an expert sidecarist riding continually on business bent, has written enquiring for a similar position. We have referred him to the R.F.C. headquarters, but should he be unsuccessful we should be glad to put any interested party into communication with our correspondent, who is anxious to release a man for active service. The writer in question has driven a sidecar machine over the Pennines in the snow, and has also climbed Stoneythwaite Rake and Walna Scar, and claims to be the only sidecarist who has ever climbed the last-named ascent.

## More Petrol.

The fact that more petrol will be released next month is indeed good news. It will certainly help to keep the home fires burning so far as motoring is concerned. Not that we think it desirable for people to motor extravagantly, but a reasonable amount of motoring for recreative purposes is of benefit to the nation as a whole on account of its wonderful health-giving properties.

## Racing in East Griqualand.

A couple of motor events figured in a sports meeting in aid of a Jutland Battle fund, held on August 7th at Tsolo, East Griqualand, S.A. These were a slow race and a serpentine race, and in both cars and cycles competed together. The first was won by a Ford driver, with J. W. Shoebottom (7 h.p. T.M.C. sidecar) second. The latter won the serpentine race, with F. W. Willows (3½ h.p. New Hudson) second.

## Another British Twin.

*Apropos* our recent articles on the subject of single v. twin, we hear that the B.S.A. Co. has under test a 6 h.p. twin-cylinder mount. It is unlikely to be marketed until after the war, the firm's energies being applied to munitions. In the meantime we may be sure that the new B.S.A. will receive an exhaustive test on the road. An acquaintance of ours has already tried its paces, and was greatly impressed.

## The Admiral Arbuthnot Trophy Fund.

The Auto Cycle Union, having heard that the Harley-Davidson Motor Co. were anxious to bring the Admiral Arbuthnot Trophy Fund to a round figure, decided to accept the kind contribution of this firm, which amounted to £5 15s. 6d., thus bringing the total of the Fund up to £220. We have also to mention the following contributions which have not been previously recorded: H. Taylor and Co., £1 1s.; and First-class Air Mechanic W. H. Morgan, R.F.C., 2s. 6d. This latter sum has been received from France, and in sending it the donor writes: "I would like to endorse Capt. Bennett's suggestion that the cup be for competition for members of both Services. I shall look for the result of this suggestion in *The Motor Cycle*, which, I am pleased to say, I receive and appreciate weekly."

## Thanks!

We have to acknowledge some flattering remarks in connection with our two years' work in recruiting and examining motor cyclists by *The Glasgow News*, *The Clarion*, *The Irish Cyclist*, and *The Motor News*, among other journals. These references have appeared since the magnificent exploits of the Heavy Section, M.G.C., with their armoured cars. All the men are motor cyclists or car drivers, and know how to drive their vehicle as well as man the guns.

## The Poor Sidecarist Again.

In munition centres during this last week-end hundreds of sidecar outfits were seen. There are still people so short-sighted as not to recognise that all motor cyclists taking out lady passengers in the sidecar are not "slacking." Neither can the accusation of extravagance be put forth, for we have frequently urged that it is economical to keep as "fit" as possible, and a respite from the continuous toil at high pressure from Monday morning till Saturday noon is absolutely essential. It is a national gain when the health of an individual munition worker is benefited.

## Discrimination in Petrol Allowances.

We sincerely hope that, with the issuing of the new petrol licences for the quarter commencing November 1st, the Petrol Control Committee may be able to discriminate, to a certain extent at any rate, between the claims of the pure joy riders and the man who uses his machine solely for business purposes. There can be no reasons of lack of time, etc., to go into special cases such as there were at the end of July and beginning of August, and if there is a repetition of the same amount being doled out for all motor cyclists the committee will be worse than unpopular.

## New Hudson Report.

The annual meeting of the New Hudson Cycle Co. was held last Thursday, (September 28th). The report recommended the payment of dividends at the rate of 6% and 7% per annum on the preference shares and a dividend at the rate of 10% for the year on the ordinary shares. Mr. E. A. Wilson, chairman, said the company had made great endeavours to keep its export trade together, but the firm had suffered severely in the home trade by its inability to cope with private business due to Government work. The directors, however, had no doubt the firm would ultimately be able to recover its ordinary trade.



**Warlike "Taxis."**

"Taxi" is the latest name for the now historical armoured car "tanks"—the men manning which were recruited through the pages of *The Motor Cycle*.

**A Removal.**

In the early hours of the 24th ult., when the Zeppelins visited the southern outskirts of London, a friend of ours had an H.E. bomb dropped in the garden, which exploded, and moved his garage completely for half an inch, straining the building considerably, but the Bat and sidecar therein suffered no damage whatsoever. No one in the house was injured.

**Water 2/9 per Gallon.**

A correspondent tells us that recently he was supplied with petrol containing about 25% of water. Some of this got into the tank and caused considerable trouble. The man at the garage asserted that it was taken from a freshly-opened sealed can. Our experience suggests that this is a most unusual occurrence.

**Flat Baby Twins.**

Some months ago we described and illustrated in these pages an experimental A.B.C. horizontal twin lightweight, which was intended as an "after the war" production. A strikingly similar mount described in this issue is the very latest product of the Indian factory.

**American Enterprise.**

As an instance of American keenness in extending their foreign trade, the sales manager for an American motor cycle firm recently returned from a journey of 60,000 miles, the object of which was to study first hand the requirements of such countries as China, Japan, Java, India, and the Colonies. Incidentally, centres were established where spare parts of the particular machine may be obtained.

**The Coming Trade War.**

In "Pearson's Magazine" for October is an article entitled "Even then —," which should cause every man and woman in Great Britain "furiously to think." It concerns the economic war which is soon to begin. The Germans openly boast that a nation of 75,000,000 cannot be crushed, and that even if the Allies beat her to the dust in the present conflict she will be successful in capturing her lost trade afterwards. British and German trade in 1913 showed a balance in manufactured goods in Germany's favour of £36,000,000. This price we paid as a tribute to the "god of cheapness." We are paying the price in blood now. The writer suggests protective duties and State assistance as an essential future safeguard. But a remedy would then have to be found to prevent German goods from coming into our country through neutrals as neutral manufactures. An official trade mark or brand is suggested for all *British* goods, the idea of which reads very convincingly, the one suggested by the writer being "The Lion Rampant." The article will appeal to all patriots, for the danger will after the war be real indeed. To have to face the competition of neutral countries which have not felt the shock of this conflict will be bad enough. It behoves us in consequence to use every device possible, and to concentrate all our efforts on winning the war after the war.

**A New Service Paper.**

We have received still another Service paper—this time under the title of *The Direct Hit*. It is the brightly written monthly of the 58th London Division. The articles are varied, and the magazine will evidently appeal to all sections, in khaki and out, of its readers. There is an abundance of humour and the sketches are good.

**In Tennyson's Country.**

Among the huge army of motor cyclists there are undoubtedly many admirers of Tennyson's poems. Those who wish to know something about the district in which he lived and from which some of his highest inspirations came should obtain a copy of yesterday's issue of *The Light Car*, in which is a descriptive illustrated ride in Tennyson's country by a writer who is not unknown to motor cyclists.

**Cruelty to Lightweights!**

A few moments before penning this paragraph the writer saw three up on a 2½ h.p. two-stroke motor cycle, in pillion fashion. Though that may be unusual, it is not rare to see these light machines very badly abused. Occasionally one sees a light sidecar tacked on these lightweights, and very frequently a heavy passenger on the carrier. It is not fair play, and one should remember that there are limitations.

**The New Indian Opposed Twin.**

Once more we find American designers following the lead of British manufacturers. In an article in this week's issue on the new Indian models is an illustrated description of a new horizontally-opposed twin Indian. Details of the machine need not be mentioned here, but every motor cyclist knows and will give credit to the original British designer, who was the first to see its possibilities, and to carry out his ideas on an issue, which has unquestionably been one of the greatest successes in the motor cycle industry.

**The Big Emergency.**

Most motorists can recall numerous little emergencies, each one proof that a big emergency may lie just round the corner. When it does come, will your brakes hold? Are you sure? Are you prepared for the autumn grease with non-skid tyres; but, above all, will your brakes hold? Try them, for a life may sometimes depend on the brake alone.

**Petrol Licences for the Next Quarter.**

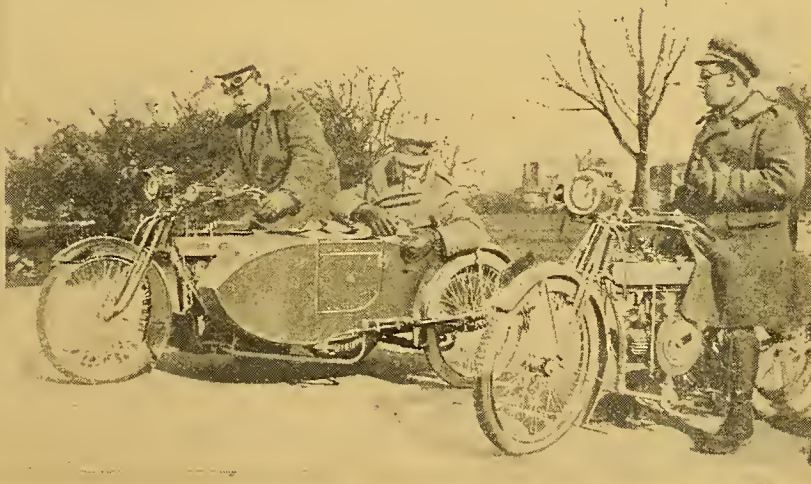
Readers are advised to fill in during the next few days the form of application for the supply of petrol for the three months commencing November 1st. Application forms will be found at the end of existing licences, and they should be sent to the secretary, Petrol Control Committee, 19, Berkeley Street, London, W. By so doing little risk should be run of being stranded at the beginning of November without a licence to purchase petrol, as was the case with hundreds of people last August.

**Motor Cycle Tyre Pressures.**

It is not usual for manufacturers of motor cycle tyres to tell their customers to what pressure the tyres should be pumped up. This, however, is not the case in the United States. In the case of 3in. tyres for powerful motor cycles, such as are sold on the other side of the Atlantic, a pressure of from 45 to 50 lb. should be maintained in the rear tyre and 20% less in the front tyre.

**Sewer Inspection by Motor Cycle.**

A sanitary engineer at Pasadena, California, had recently to inspect six and a half miles of sewer which had been completed in that city. This he accomplished by motor cycle. The machine was lowered into the tunnel through a shaft, and the engineer rode on the carrier, scrutinising the walls as he was driven along by his companion. Frequent stops were made for careful inspections, and no difficulties were experienced whatsoever throughout the trip.



Motor cyclists are performing valuable work in this great war in addition to despatch riding. The motor cycles shown are Douglasses.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### The Scott Sociable.

Sir,—I am a keen Egyptian reader of your most interesting paper *The Motor Cycle*, and I noticed in the issue for September 28th the drawing and the letter of Sgt. Way, about the Scott Sociable. I think myself that his idea is a splendid one, as putting the front wheel in the centre makes the little car look beautiful, and if it is put on the market for a moderate price I am sure there will be a great rush for it, and I shall be one of the first. M. BANNOUNAH.

#### Petrol Permits.

Sir,—I have been wondering if any other of your readers have had the same experience of the Petrol Committee as myself.

About a week before the closing day I posted an application form. No permit came. I wrote twice, and, getting no reply, sent a registered letter. Still no reply. I then asked the A.A. and Motor Union to intercede for me.

On the 16th ult. I received a permit from the committee. The next morning I received another permit through the A.A. and Motor Union. I sent the duty, and got my licence on the 19th ult. On the morning of the 25th ult. I received another permit from the committee. That is three permits in eight days. CR 2454.

#### Motor Machine Guns.

Sir,—Being now a member of the Heavy Section and originally recruited for the M.M.G.S., I regret to hear that in the future recruiting for both corps will be arranged by the various Commands. I sincerely trust that your esteemed paper will still take an interest in our doings.

*The Motor Cycle* has always been eagerly bought and greatly appreciated amongst the officers and men of both corps, and it would indeed be greatly regretted by all of us, should your paper lose all interest in our work, more so, as in the near future we hope to do great deeds.

GUNNER L.P.

[We thank "Gunner L.P." for his expressions. It is certainly not our intention to lose interest in the men of the Machine Gun Corps (Motors)—on the contrary, we admire them more in consequence of their great achievements. References to their doings have appeared in three successive issues.—ED.]

#### Lightweight Sidecars.

Sir,—I should be glad if you will spare me space in your much valued journal to combat some of "Ixion's" sweeping assertions regarding the unsuitability of the two-stroke lightweight motor cycle for sidecar work. I may say I have had no experience of the Douglas with sidecar, so will confine my remarks to the two-stroke.

First of all, I think he should state what he calls a "Baby" two-stroke, for most engines of this type are necessarily small unless water-cooled.

For the last eighteen months I have been riding a lightweight Monarch, engine 2½ h.p. Peco, Albion two-speed, 2½ in. tyres, and sidecar (Empire lightweight model). Last summer this outfit took myself and passenger from here to Weston-super-Mare comfortably in the day without any stop except for refilling and meals. While there, with the same load, I climbed Cheddar Gorge, also without exertion. I did a fortnight's riding round Weston, and returned to Manchester in nine hours. The outfit has been in constant use since then, and this year took a similar load with the addition of two tins of that precious fluid (petrol) to Barmouth and back without a hitch, and while there climbed

some hills possessing alleged roads covered with loose flints, in places very little better than mountain tracks. After this severe test when ridden solo, there is no suspicion of the bicycle frame having been strained in any way, and the outfit is still perfect.

I trust this experience will allay some of the trembles "Ixion's" remarks are likely to cause. To all interested in a similar type of outfit I would say, choose a good machine, and line up the sidecar properly, and you are all right. Usual disclaimer. NIL DESPERANDUM.

Didsbury, Manchester.

#### The Cause of Overheating.

Sir,—I should like to add more data to the "silent discharge" question. Like Mr. Cox, I attribute this occurrence to the plug. I have tried a test with three plugs on a well-known Derbyshire inclined stretch, with the following results:

(1.) British plug with thin electrodes. After a stretch of full throttle the pre-ignition knock was produced.

(2.) British plug with substantial electrodes. Very much better results, but with a gradual falling off of power until the engine gave out, without the slightest trace of a knock. Evidently the "silent discharge."

(3.) An old Bosch produced the best result of all, but I abandoned the driving to a finish, as the cylinder was too warm for the comfort of my calves.

The facts convince me that—

(a.) One engine may be subject to both phenomena.

(b.) This is only a question of plug efficiency.

(c.) The necessity for British plug manufacturers to awake to the fact that their goods leave room for improvement.

The temperature query is very confusing, as the pre-ignition knock took place, naturally, with the plug points incandescent, but only a moderate internal engine temperature; whereas, when I examined the second plug, I found the points showed less sign of heating, but the engine temperature was very much higher.

Can any of your correspondents deduce anything further from my experience? H. S. MARR.

#### Oh, for the Open Road!

Sir,—I am a very keen motor cyclist, and, as an interested reader of your excellent paper for some years, I often intended to write to you, yet, lo! this is my first effusion.

I can tell you one does miss "the old 'bus" out here, and the arrival of *The Motor Cycle*, which I get sent out weekly, is very welcome.

"The old 'bus" indicated above is a travel-worn 3½ h.p. three-speed Singer placed at the tender mercies of my cousin for the time being. My friends say that the name was ill-chosen, as it obviously should have been called the "Whistler," on account of the cheerful warble the crank case release makes as the engine is stopping! The engine had a bit of a turn for speed when I left, but though my prayers are with the machine often, I expect that its miles per hour will have tumbled down considerably ere the Hun is pushed across his "all fired" Rhine!

There is a long straight piece of pretty good *paré* running past our camp and the D.R.'s fairly scorch past within 30ft. of my hut, thereby unwittingly stirring up a vast amount of envy, hatred, malice, etc. As far as I can gather, the Triumph is very popular out here, as it appears to stand up to the road shocks well.

The old 3½ h.p. single is still my favourite, although I have ridden many other types, from a Sun-Villiers to a



6 h.p. A.J.S. For some time I have been very keen on Sunbeams. At home (Ireland) the way in which the  $3\frac{1}{2}$  h.p.'s of this make whirl good solid sidecars round a hilly country with apparently the greatest of ease is an eye-opener. Again, in our training centre in England I had the use of a W.O.  $3\frac{1}{2}$  h.p. Sunbeam for a couple of weeks. Although it had had over a year of hard work and lots of abuse it was the sweetest running engine imaginable—fast, quiet, and seemed absolutely to revel in work. Judging by these experiences, I imagine that a new  $3\frac{1}{2}$  h.p. T.T. Sunbeam model carefully run in and kept in good condition should be very "hot stuff" apart from its other qualifications.

B.E.F., France.

J. H. HANCOCK, Sec.-Lt. R.E.

### Electric Lighting for Motor Cycles.

Sir,—I note that in an article in *The Motor Cycle* of September 28th, entitled as above, the writer states that he still holds to the celluloid type of accumulator. My experiences in the way of electric lighting may be of use to others who, like myself, dislike intensely the "messiness" of carbide. Two years ago I started electric lighting by fitting a Dynalite. This was a very satisfactory article, its only disadvantage being that the light stopped when I stopped. Therefore, I fitted a celluloid accumulator of good make in the way suggested by your contributor under the seat pillar. This, I found, rattled to bits in 500 miles, and was constantly under repair. I then fitted a Hellesen dry battery, and found that perfectly satisfactory.

On my present machine I have fitted a Lucas dynamo lighting set, with an Alkum steel accumulator fixed to the two back forks, upper and lower, of the right-hand side. Contrary to the expectations of both Rudge's and Lucas's London representatives, the balance of the machine was not upset.

Referring to another article in the same issue, where your contributor condemns the single cylinder type, I have found this type perfectly satisfactory. My present bicycle is a Rudge-Multi I.O.M. Tourist Trophy model. My speed ranges from 6 to 65 m.p.h., even with the extra load of the lighting set.

E. R. D. NAGEL (Sec. Lt.), R.F.A. ATTACHED R.F.C.

[We have found a celluloid accumulator mounted on the left footboard stand up perfectly well; this has been in constant use for two winters.—ED.]

### Overhead Valves.

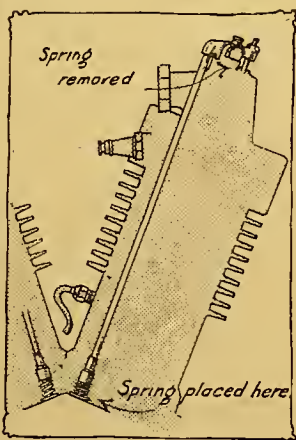
Sir,—I am enclosing sketch of an alteration which can easily be made to the Indian motor cycle of the overhead inlet valve type. Overhead inlet valves always make considerable noise unless enclosed, especially on this make of machine. If the small springs fitted between the overhead rocker arms and inlet domes are removed and put between the bottom of the operating rods and valve gear case, the noise will be greatly reduced. One end of the spring will need to be slightly opened out to bear on the dust covers at the bottom of the rods.

I noticed C. Mather's letter in the issue of June 8th. This idea can easily be applied to the Binks carburetter. A good size copper pipe is led from the top of the cylinder to the bottom of the main air intake orifice. The end of the pipe must be brought as close as possible to the throttle barrel without causing it to stick, so that the engine sucks hot air through the pipe when the pilot jet comes into action. I have tried the idea with my own Binks carburetter, and find a great improvement after a few hundred yards running.

I have read with interest all suggestions for home-made improvements which appear in your instructive paper from time to time.

RHODESIAN.

Gatooma, S. Rhodesia, South Africa.



### Will the Single-cylinder Survive?

Sir,—I have read with interest "Road Rider's" article on "The Future of the 500 c.c. Single" in your last issue. Does he not rather contradict himself? In his opening paragraph he says, "I believe that the 500 c.c. single-cylinder is doomed." But towards the end of his article he says that the "future of the 500 c.c. single is limited to the light T.T. patterns." Now this last mentioned type of machine is certainly one of the most popular on the road. Hence, if the single is to be limited to this class surely we shall still see many about. It is more economical, more powerful, and certainly simpler to take down. I myself own a  $3\frac{1}{2}$  h.p. T.T. single of well-known make, and I can get 100 m.p.g. At the same time, the engine will tick over at 6 m.p.h. and accelerate up to 65 m.p.h.

"Road Rider" also speaks of vibration in singles. I have ridden a  $2\frac{3}{4}$  h.p. twin in which there was more vibration than in my mount.

Amongst public school fellows the T.T. single is certainly the favourite of all machines, and we will always support this class, and there are plenty of us who own motor bicycles, too. I am at one with the editorial comment that it will be a very long time, if at all, before that most popular mount, the  $3\frac{1}{2}$  T.T. single, disappears from our roads.

J. S. SIMPSON.

Sir,—It does not seem to be generally recognised that an entirely new class of motor cyclist has come along, a class which, instead of graduating from the cyclists' ranks, has, through forced circumstances of the war, descended from being a car owner to a motor cyclist, thus reversing the usual process. This man, who has been used to a four-cylinder engine with automatic lubrication, finds a single-cylinder engine, with its crude lubrication, crude carburetter, and its horrible vibration, something so bad that he would rather forfeit motoring altogether than put up with it.

It is not a case where "Ignorance is bliss," as he knows what can be got from a properly designed motor unit. Being indeed one of these men myself, I cannot help but marvel and admire the pluck and enthusiasm of the motor cyclist under these conditions. When I can buy a four-cylinder-engined motor cycle with an automatic carburetter, automatic lubrication, and spring frame, then, and not till then, will I become a motor cyclist again.

ENGINEER.

Nottingham.

### American Motor Cycles.

Sir,—No one denies that American machines have many good points, but the plain truth is that they are neither so reliable, nor do they last so long as the British-made article.

American engineering does not produce machinery to last. In 1900 several British railways bought American goods engines of the 2-6-0 or Mogul type. To the best of my knowledge every one of them is now scrapped. Yet the same companies are all still using daily English engines built in the seventies and early eighties. It pays to rebuild the British engine, but not the American.

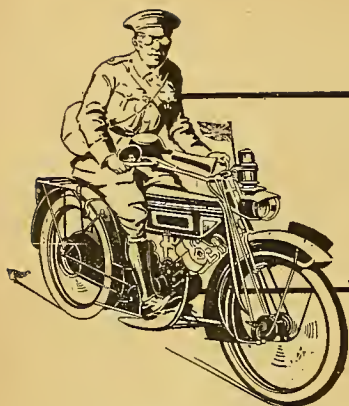
At the Front the American aeroplane engine has been tried and found wanting. All our aeroplanes are of British or French manufacture.

The same thing applies to motor cycles. I have ridden a 5 h.p. Yankee, and my present mount is a 5-6 h.p. Ariel. I am one of those restless motor cyclists who are always buying and selling machines, and I have had experience of a good number. For sweet and easy riding I have found nothing to beat the F.N. As a solo mount, I have strong preference for the  $2\frac{3}{4}$  h.p. Douglas and the  $3\frac{1}{2}$  h.p. T.T. Triumph, but for a fast and reliable no trouble sidecar machine the Ariel is hard to beat. My next machine will be a big twin, and I do not greatly mind whether it is an 8 h.p. Zenith, Matchless, Bat, or Sunbeam, but it will not be an American. Patriotic motives bar that; but, wholly apart from them, I am convinced that the British article is the better thing. My Ariel was two years old when I bought it. It had been badly neglected and hardly used, yet after a simple overhaul and renewals that cost but a few shillings, it has run a whole season without giving the least trouble. Where is the American machine that would do that? Time is the test, and the prices of British and American second-hand machines tell the tale.

East Dulwich.

PROSPERO.





## NAVAL AND MILITARY NOTES.

Airmen Motor Cyclists. The Substitution Scheme.

### ANOTHER AIRMAN MOTOR CYCLIST MISSING.

WE regret to hear that Sec.-Lt. O. C. Godfrey, R.F.C., on Saturday, the 23rd ult., was forced through engine trouble to descend in the German lines, and is reported to have been taken prisoner. Details, however, are lacking, but it is to be hoped that Godfrey is safe.

### THE LATE FLIGHT-LT. GRAHAM.

THE body of Flight-Lt. C. W. Graham, D.S.O., R.N., has been recovered from the sea, and the funeral took place with full naval honours on Saturday last at Barnes Common Cemetery. The late Flight-Lt. Graham was accidentally killed off the coast of Belgium, and his portrait appeared in *The Motor Cycle* of a fortnight ago.

### BIRMINGHAM AIRMAN MOTOR CYCLIST MISSING.



THE name of R. H. Edwards will be familiar to thousands of our readers, as he was a well-known Triumph rider, and competed with considerable success in the various motor cycle events organised by Midland clubs. Some months ago he was granted a commission as a pilot in the Royal Flying Corps, and is now, we regret to learn, officially reported by the War Office as missing since the 22nd ult.

### WELL-KNOWN DESIGNER IN THE R.F.C.

CAPTAIN G. W. A. BROWN, recently gazetted as an equipment officer of the R.F.C., is the designer of the Premier twin-cylinder two-stroke motor cycle, and was formerly works manager of the Premier Cycle Co., Ltd., of Coventry. He is known in the car world mainly by reason of the fact that he designed the 25 h.p. Talbot that was the first car to cover over 100 miles in the hour.

### THE NEW SUBSTITUTION SCHEME.

SOME months ago, in consequence of applications received from men ineligible for service for positions in motor cycle works, we inaugurated a list of ineligible and discharged men, and offered it on several occasions through our columns for the benefit of manufacturers who desired to fill positions or release fit men anxious to enlist. As a result of this scheme quite a number of manufacturers applied to us from time to time for the list, and a number of ineligible men found positions in this way.

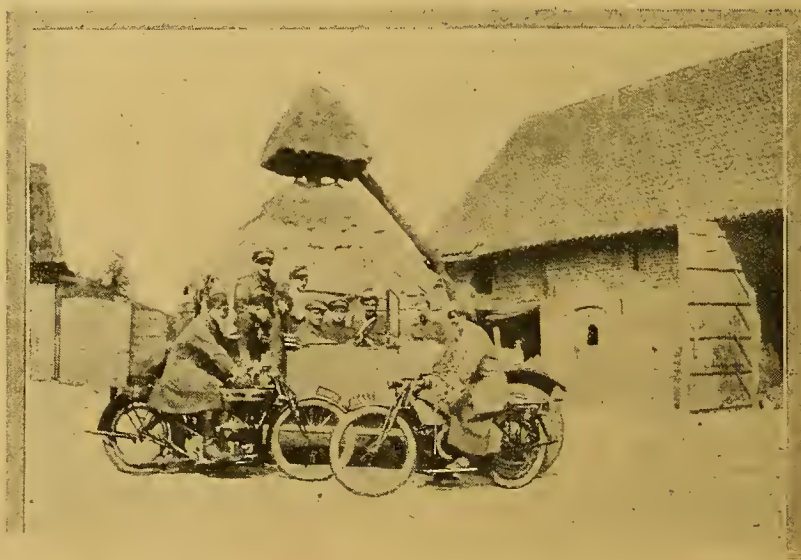
The War Office has now officially adopted such a substitution scheme, the object and scope of which is that men fit for general service are to be released from munition work and other employment and made available for the Army. The definite statement is made that no fewer than a million men must be found for the Army during the next twelve months. A substitution bureau is being opened at each recruiting office, and lists of substitutes will be kept, the men's occupations and previous employers being recorded. Employers are being invited to inform recruiting officers of the number of fit men for whom they are able to take substitutes. Negotiations will then be carried out between employers and the recruiting office in order that men fit for the less arduous duties at home may be substituted for men passed Class A—

General Service. An invitation is also extended to men rejected for service of all kinds who might be able to perform useful work in munition factories and so release general service men.

### LADY MOTOR CYCLISTS IN BELGIUM.

SOME little time ago we reproduced in these pages a photograph taken in England of two lady motor cyclists attached to the Belgian Red Cross. The accompanying picture shows these two ladies, Miss Chisholm and the Baroness de T'Serclaes, on their Douglas motor bicycles in a village behind the Belgian lines. They are attached to an Army divisional dressing station quite close to the front trenches. Miss Chisholm rides a 4 h.p. Douglas, while her companion, who is the English wife of a Belgian nobleman, rides a 2½ h.p. open frame machine of the same make. Miss Chisholm tells us that she very much prefers the heavier machine, as it rides more steadily over the appalling roads.

They are situated rather to the east of the Belgian lines at the point where the Yser narrows, and there is only a gap of thirty yards between the German and Belgian trenches. Motor cycles are invaluable on account of their handiness, and Miss Chisholm and the Baroness are the only lady motor cyclists in the region.



Miss Chisholm and the Baroness de T'Serclaes on their Douglas motor cycles at a picturesque village just behind the Belgian lines. They are attached to the Belgian Red Cross Society.



# READ what <sup>THE</sup> MOTOR CYCLE

says on pages 266 & 267,  
in last week's issue,  
Sept. 28th, 1916, about

PER GALLON

## 2/6

In 42-Gal. Casks.

# Wital

PER GALLON

## 2/6

In 42-Gal. Casks.

## THE PERFECT MOTOR FUEL

Which starts from **DEAD COLD**.

After exhaustive chemical experiments and tests **WE HAVE EVOLVED THE MOST PERFECT PETROL SUBSTITUTE** on the market. Our old recipe was very good so far as ordinary running was concerned, but we recognised that the saving in £:s.:d. was not extra great on account of having to mix with 50% of petrol, and as motor cyclists now are only allowed by the Government small quantities of petrol we found that this state of affairs could not go on, hence we set to, and, after exhaustive tests, are now able to supply a fuel which will, without exception, **start from dead cold**. This fuel is much more volatile, quick to respond to acceleration, decarbonises, no knocking on hill-climbing, and it decidedly increases miles to the gallon.

### UNBIASED OPINION.

Extract from "The Motor Cycle," pages 266 and 267, September 28th, 1916.

With the Wital fuel mixture we found it particularly necessary to keep up the "revs," and by doing this it was possible to make very fast ascents.

There was no sign of overheating on hills, most of the long ascent being accomplished on the 35 m.p.h. mark, and by what may almost be regarded as a coincidence, the second round was accomplished within five seconds of the time taken on the first round. We append a table giving at a glance the comparative results:

Fuel	m.p.g.	m.p.h.	Distance.
$\frac{1}{3}$ petrol, $\frac{2}{3}$ Wital ..	82	28 $\frac{1}{2}$	29.7 miles.
All Wital .. ..	83	28 $\frac{1}{2}$	29.7 miles.

Summing up, the Wital fuel would appear to be an excellent petrol substitute, and no motor cyclist need hesitate in sampling it.

What a user says : Original can be seen at our office.

August 22nd, 1916.

Dear Sirs,

I have pleasure herewith in giving my experience in running on WITAL MOTOR FUEL, and also the improved spirit which you were kind enough to let me have a tin of.

The conclusion I have come to as to the former is that it is a good stop-gap in place of petrol.

I am of the opinion, however, that there is a great improvement in the new spirit. At a test on the latter this evening, my air-cooled 8 h.p. Morgan Car started up from cold by simply flooding the carburettor (and no other adjustment was made beyond this). I then proceeded to test the acceleration, which was all that could be desired, both on the level and up-hill. With reference to the latter, my car, carrying two people, climbed on top gear the well-known Luddington Hill, leading from Colebrook to Tarporley. There was an entire absence of overheating or knocking, and the general performance, saying the least, was quite equal to petrol. During this test both starting and running, there was no more than 10% of petrol mixed with the spirit, and I am of the opinion that equal results could be obtained by running entirely on the improved spirit.

A colleague of mine has also ordered this spirit, after having tried same, and proving satisfactory.

I should be pleased to give any further information that you may desire.

Yours faithfully, HIGHWAY SURVEYOR.

P.S.—I have ordered two more barrels, and am now awaiting same.

**WITAL MOTOR FUEL** is a genuine Petrol Substitute. It is cleaner and has no offensive smell or smoke. It will not harm the Engine in any shape or form. You can store any quantity you like, as there are no Government restrictions and, you do not require a licence to keep it.

**WITAL MOTOR FUEL** is of a slightly heavier gravity than Petrol, but there is a great gain in miles to the gallon; and we can let you have immediate delivery in 42 gallon casks.

All orders received will be placed on the rail within 24 hours of receipt of same, and you can pay your money through the Deposit System of "The Motor Cycle."

Cash with order. Barrels 9/- each and credited on return. Carriage paid to nearest Railway Station.

Cheques sent direct to be crossed Lloyds' Bank, Ltd.

## THE WITAL MOTOR FUEL CO.

Head Office: 37, MOORFIELDS, LIVERPOOL.

Works: Hodgson St., Liverpool.

Manchester: 6, St. Mary's Gate.

Telegrams—  
"Benzole, Liverpool."

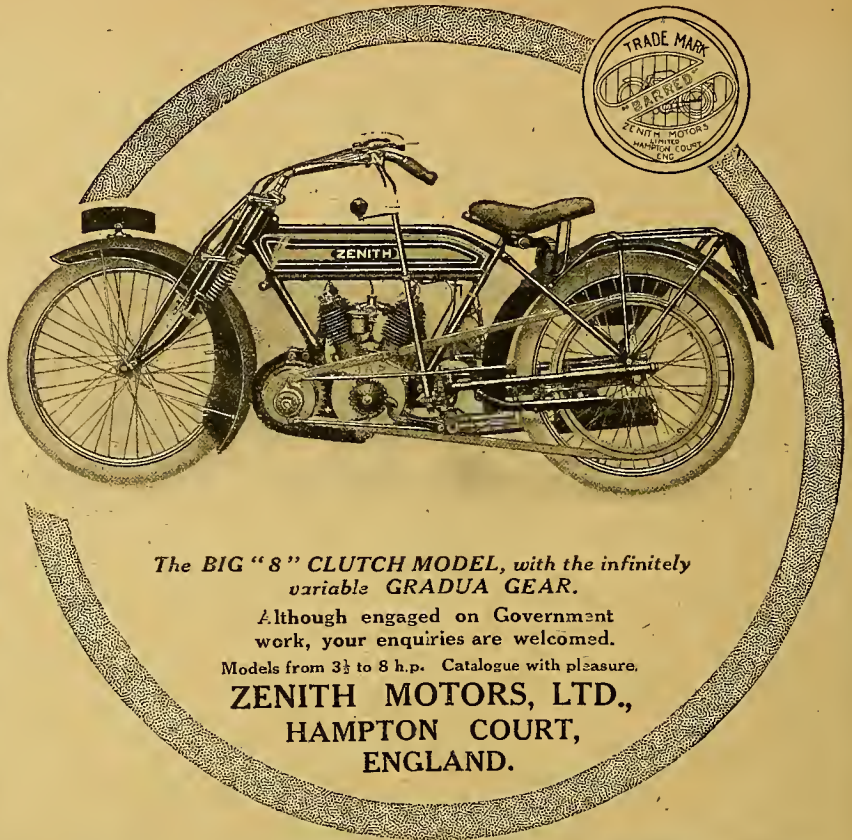
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 is right for *every* gradient  
 and *every* condition of  
 road and weather : that  
 has an up-to-date kick  
 starter, a clutch that will  
 not slip when you want it  
 to grip, and a transmission  
 that is light on tyres and  
 engine and yet puts the  
 power into the driving  
 wheel—you will choose  
 the **CLUTCH MODEL**

**ZENITH**



The **BIG "8" CLUTCH MODEL**, with the infinitely  
 variable **GRADUA GEAR**.

Although engaged on Government  
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Models from 3½ to 8 h.p. Catalogue with pleasure.

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 results; you may need a little Petrol ("Spots" treated) to start, but  
 directly she is warmed up—**ECONOMY—POWER—SAVING, EVERY-**  
**THING you want. DON'T WAIT AND SEE—TRY IT!!**  
 Be a "trier" not a "never wasser."

**JUST DROP ONE IN THE CAN!**  
**1d. saves petrol value 1/-.**

<b>SPOTS</b> Increase mileage per gallon.	<b>SPOTS</b> Increase power.
<b>SPOTS</b> Increase speed (if required).	<b>SPOTS</b> Make starting in cold
<b>SPOTS</b> Enable you to use extra air.	<b>SPOTS</b> weather easy.
<b>SPOTS</b> Prevent formation of carbon.	<b>SPOTS</b> DECARBONISE.

"Pills" for your Engine—Money in your pocket.  
 25 Tablets, 2/6 50 Tablets, 4/- 500 Tablets, 35/-  
 (Postage 3d. extra). (Postage 4d. extra). (Carriage paid).

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**THE COAL BY-PRODUCTS COMPANY,**  
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 (Five doors from Southampton Row).



# QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## What Constitutes a Noisy Machine?

?

(1.) What constitutes an efficient silencer to be used on a motor cycle? (2.) What is meant by a "cut-out"? (3.) In what respect is it illegal to use one?—D.L.S.

(1.) The Silencer Regulation says it is compulsory to have a silencer fitted to motor cycles "suitable and sufficient for reducing as far as may reasonably be practicable the noise which would otherwise be caused by the escape of the exhaust gases into the atmosphere." (2.) A cut-out is a device which allows the exhaust gases to enter into the atmosphere without first passing through an expansion chamber. (3.) The Local Government Board Regulation says: "He shall not use any cut-out, fitting, or other apparatus or device, which will allow the exhaust gases from the engine of the motor car to go straight into the atmosphere without first passing through a silencer, expansion chamber, or other contrivance."

## Poor Acceleration.

Q

I have a two-stroke which is very bad at accelerating from dead slow or turning moderately slowly on a hill, and I have to rush a hill of any size. I have an Amac carburettor with 25 jet. I can give full air and get over 120 miles to the gallon, so you will see that there is not much wrong. I have tried bigger jets, but found no difference. The compression is excellent, but the rings have a very slight up and down play in the slots. I fitted a set of oversize rings from the makers, and fitted them with  $\frac{1}{4}$  in. gap. Then I got no compression at all, and it would not go, so I had to put the old rings back. Can you tell me what is the matter, and also why the new rings, although bigger, gave no compression? Would a two-speed gear be an advantage?—C.G.

It is difficult to say definitely what is wrong with your machine from the description you give. The reason the new rings gave no compression was because they did not fit the cylinder accurately; they probably needed lapping in with emery. New rings nearly always give poor running until they are run in. Your lack of power may be due to one of the following: Too small a jet, choked exhaust outlet, ignition insufficiently advanced, or too high a gear (if single-gear it should be about 5 or 6 to 1). You would probably find a two-speed gear a great advantage.

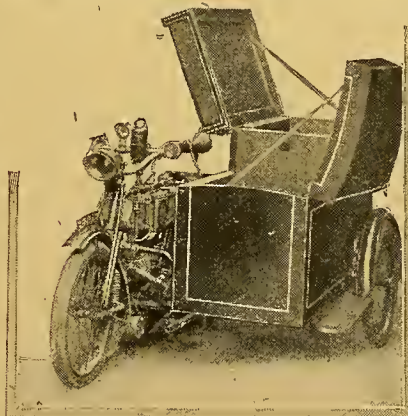
## Failure to Respond to Throttle Opening.

?

I should be glad if you could give me some advice as to what is wrong with my motor cycle. Up to a week ago I could get a speed of 38 m.p.h. out of it.

Owing to the control wires jamming, I had new ones fitted. Since then I have not been able to get more than 20 m.p.h. out of it. I start on low gear with the air shut and throttle about a quarter way open, and then draw the air up to the throttle. When both controls are half-way open, that is the most I can accelerate, and it makes no difference if I open up full gas or air: there is no increase in speed. There is a good spark, excellent compression, and no leaks anywhere; the cylinder is clean, and the valves have been recently ground in; the tappet clearance is the thickness of a visiting card. I used to be able to get up a good big hill on top gear easily, but lately have only been able to get up on low gear. As I do a great deal of riding, I should be glad if you would let me have your advice on the matter.—T.B.

All we can think is that the control wires are still jammed, and probably the throttle is not opening properly, or possibly you have reassembled the carburettor wrongly. We should recommend you, therefore, to take down the carburettor and examine it very carefully, making sure that the throttle opens fully.



A sidecar made by Mr. W. R. Gaudie, confectioner, of Jarrow, the owner of the Bat motor cycle to which it is attached. The back part holds eight trays for cakes, and the front four boxes, which in this case are used for crockery. The design is well thought out and it makes an admirable delivery van.

## Pitted Exhaust Valves.

?

In my 1912 Zenith-Gradua with J.A.P. engine the valves pit very quickly. I bought it second-hand, and after 300 miles have ground the valves in again. The timing is set as follows:

Exhaust valve opens 70 mm. from top  
= 130° = 15 mm. from bottom.

Exhaust valve closes 3 mm. from top  
= 20.5°.

Inlet valve opens 1.5 mm. from top  
= 14.5°.

Inlet valve closes 82 mm. from top  
= 130° = 3 mm. from bottom.

Do you approve of the overlap of the opening of the inlet valve and the closing of the exhaust valve for touring machines? Could this overlap have anything to do with the excessive pitting? It seems that the repeated grinding in of the exhaust valve has brought it down nearer the tappet, and thus increased both the extent and duration of the lift, being 7 mm. and 289.5° respectively now, though the distance from the tappet (0.5 mm.) seems right. I feel tempted to file off 1 mm. from the exhaust valve stem, but await your advice, not knowing what was the original lift when the machine was new. Or am I entirely on the wrong track, and should the stem of the inlet valve be lengthened so as to bring it also within 0.5 mm. of the tappet? The valve stems run true in the guides without friction.—W.D.

We fancy the cause of your valves pitting is not altogether due to the timing, but is far more likely to be due to overheating, caused by poor carburation, giving too strong a mixture, choked exhaust outlet, or inefficient lubrication. If all these points are correct, then faulty material seems to be the most likely cause. Nickel steel is usually found the best metal for valves, the larger the percentage of nickel the better. The timing we favour for touring is as follows: Exhaust valve to close with piston on dead top of stroke, inlet to open immediately the exhaust has closed. We think if you see these two settings are right you can leave the closing of the inlet and opening of the exhaust to the cam design; but, roughly, the inlet should close slightly over bottom dead centre, only a few degrees, and the exhaust should open, roughly, one-seventh of the stroke from the bottom. The lift of the valves should be as great as possible. We should advise you to allow the valves to lift the full height of the cam consistent with having about .4 mm. tappet clearance.



### Gear Ratio.

**Q.** (1.) What should the top gear ratio be of a  $3\frac{1}{2}$  h.p. single-cylinder motor bicycle fitted with a sidecar? The rider and passenger weigh 23 stone in all. (2.)

Why should the outfit stop about every two miles and then start again without difficulty? The carburetter has a 34 jet, and it and the engine are perfectly clean. The engine seems to race when descending a hill.—J.C.

(1.) The top gear should be about  $5\frac{1}{2}$  to 1. (2.) The trouble can quite well be due to the plug, the points of which become incandescent and cause pre-ignition. Use a good single-point plug, and we think the trouble will cease. Also make sure that the petrol supply is not partially choked.

### Popping in the Carburetter.

**Q.** I shall be very much obliged if you can tell me what is wrong with my 6 h.p. twin Jap-Zenith, 1912 model, with Zenith Gradua gear, which I run with a Gloria sidecar. The engine gets very hot indeed. Thinking it required a clean out I took the engine down, cleaned all carbon deposit off the pistons, also had the rings off and cleaned at back and under the rings. I cleaned all deposit from the inside of the cylinders and valve ports. I have fitted one new piston ring at the top of each piston, ground in the valves, and fitted two new exhaust springs. Since refitting the engine up I am still troubled with overheating. The crank case gets too hot to bear my hand on; the cylinders get so hot that they burn holes in my overalls. Blowing back occurs through the carburetter, and fire is blown through the air intake. Then the engine falters, and I have to drop into low gear and almost close the air lever until it picks up again. The engine will not take full air at any speed. I use a 32 jet in the 1912 B. and B. carburetter. A friend of mine tells me I have got my timing set for speed work and most unsuitable for ordinary touring with sidecar. It is set as follows: Valve timing. The exhaust opens  $\frac{1}{8}$  in. before the piston reaches the bottom of the stroke, and closes  $\frac{1}{8}$  in. over top dead centre. The inlet valve opens on dead centre and closes when the piston is  $\frac{1}{8}$  in. up the compression stroke. Magneto timing. With the ignition lever set two-thirds retarded. The points are just about to break with the back piston on dead centre. What is the cause of oil being thrown out between the crank case and the pulley?—F.W.C.

The popping in the carburetter is undoubtedly due to rather too weak a mixture; try a slightly larger jet. It is almost impossible to tell whether an engine is overheating by placing your hand against the cylinder, as an air-cooled engine always runs at such a temperature that it is impossible to hold one's hand on it even when it is running cool. Sometimes a badly fitting piston ring will cause the crank case to get rather hotter than usual. Provided the engine runs satisfactorily it does not matter how hot it gets. We fancy you will find the following timing correct for

ordinary touring: Exhaust valve should close on the top dead centre, the inlet to open immediately after. If you see to these two settings the opening of the exhaust and the closing of the inlet will come automatically correct. Your spark seems to be about right. You should adjust the carburetter so that up to half throttle opening you should be able to give more air than throttle, but after half-way rather more throttle than air to obtain the best running. If you have the carburetter so adjusted your jet is about right. You should have to shut the air fully for starting. The cause of oil leaking from pulley bearings is due either to a worn bearing or to a faulty crank case compression release valve. A felt washer fitted between the pulley and crank case might improve matters.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.

### Motor Cycles by Rail.

**Q.** What is the cost per mile for conveying a motor cycle and sidecar by rail?—V.J.

The railway rates regulating the conveyance of motor bicycles and sidecars by passenger train are exceedingly complicated. Up to but not exceeding twelve miles the cost, at owner's risk, is 2s. accompanied by passenger, 3s. if unaccompanied by passenger, and 3s. 9d. at company's risk. A motor tricycle with more seats than one (which we imagine means a sidecar) is charged for at one-third over this scale for each additional seat. Full particulars are given on page 240 of the "Auto Cycle Union Touring Guide," which is free to members.

### Heavy Petrol Consumption.

**Q.** I have a  $2\frac{1}{4}$  h.p. motor cycle. Would you tell me what to do to lower the petrol consumption? At present it is only doing 40 to 50 m.p.g., which is abnormal. It has a No. 26 jet (which is the smallest size jet it will fire on) and a Bosch plug. I have had the engine to pieces, and thoroughly cleaned and overhauled it, with no better results. Would lowering the petrol level or raising it have any effect? The magneto appears to be in good order.—V.J.

The consumption, of course, is very bad. Without actually examining the machine, it is difficult to say what is the cause of this. If a 26 jet is the smallest the engine will take, it does not seem as if you can do very much in this respect, but it might be possible to make the engine take a smaller jet by carefully overhauling the carburetter and eliminating all air leaks. Also see that there are no leaks at the petrol pipe unions or at the filler cap.

### Paraffin Vaporisation.

**Q.** Having been invalided home from France, I am now using my motor cycles. The 4 h.p. Douglas runs very well on paraffin, but I cannot get any power with it on the B.S.A. If I run the paraffin through the valve cap, as an A.J.S. rider recently advised, would not the paraffin get too hot? If it were to boil would it not be dangerous? What arrangements could I make with the standard B.S.A. carburetter to take paraffin?—W.B.

In order to obtain the best results on paraffin, perfect vaporisation is essential. The idea of running paraffin through a special valve cap is quite good. We do not fancy there would be much danger if the paraffin were to boil, except air locks in the supply pipe. Much the same result would be arrived at by passing the feed pipe around the cylinder. All air drawn into the carburetter should be taken from some position close to the hot engine. Keep the induction pipe as warm as possible.

### EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"C.B.C." (Sunderland).—1913  $3\frac{3}{4}$  h.p. Scott sidecar running on a petrol-paraffin mixture.

### RECOMMENDED ROUTES.

BIRMINGHAM TO LONDON (HARRINGAY).—H.S.

Birmingham, Coventry, Dunchurch, Daventry, Towcester, Fenny Stratford, Stony Stratford, Dunstable, St. Albans, Barnet, Hornsey, Haringay.

PETERBOROUGH TO MANCHESTER.—R.S.

Peterborough, Wansford, Stamford, Oakham, Nottingham, Kimberley, Ripley, Matlock Bath, Bakewell, Buxton, Whaley Bridge, Stockport, Manchester.

HARRINGAY TO TRING.—H.S.

Haringay, Hornsey, Fortis Green, Church End, Hendon, Bushey, Watford, Berkhamsted, Tring.

BIRMINGHAM TO LEEDS.—H.W.P.

Birmingham, Sutton Coldfield, Tamworth, Ashby-de-la-Zouch, Derby, Ripley, Alfreton, Clay Cross, Sheffield, Barnsley, Wakefield, Leeds. Approximately 107 miles.

BIRMINGHAM TO BURY ST. EDMUND'S.—H.W.P.

Birmingham, Coventry, Rugby, Market Harborough, Kettering, Thrapston, Huntingdon, Godmanchester, Cambridge, Newmarket, Bury St. Edmund's. Approximately 125 miles.

SHEFFIELD TO PLYMOUTH.—R.S.

Sheffield, Chesterfield, Clay Cross, Alfreton, Ripley, Derby, Melbourne, Whitwick, Hugglescote, Ibstock, Hinckley, Coventry, Warwick, Stratford-on-Avon, Mickleton, Broadway, Winchcomb, Cheltenham, Gloucester, Stroud, Nailsworth, Bath, Radstock, Wells, Glastonbury, Durston, Taunton, Wellington, Cullompton, Exeter, Chudleigh, Ashburton, Ivybridge, Plymouth.





## Which Book will Interest You Most?

The volumes we issue dealing with Royal Enfield Motor Cycles form a perfect library of motor cycling literature. Which book will interest you most?

We publish (1) a very complete and copiously illustrated Motor Cycle Catalogue; (2) a book for ladies interested in motor cycling; (3) an illustrated handbook for each model we manufacture; (4) a volume, which will be issued shortly, dealing with the motor cycle and sidecar from the owner's point of view, and other lists, smaller but none the less interesting.

Any of these books will be promptly sent on request. Mention "The Motor Cycle" and the particular volume you would like.

**THE ENFIELD CYCLE Co., Ltd., REDDITCH,  
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B29





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## IGNITION. TIME MEANS MONEY.

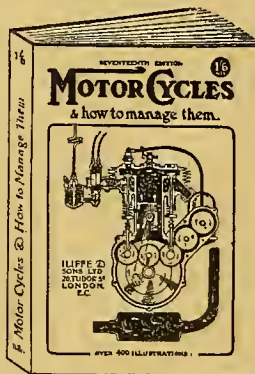
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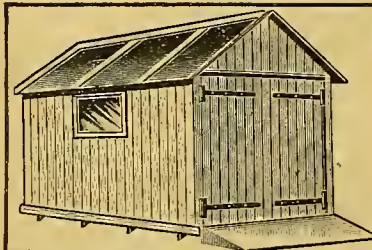
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55/-	115/-	165/-	255/-	£27 10s.
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F. W. BARKER : : PROPRIETOR.

## MOTOR CAR HOUSE

Constructed of strong framework covered with Planed, Tongued, Grooved, and V Jointed Matchboards. Roof covered with good roofing felt and double doors as illustration. The whole to be made in sections to bolt together and sent Carr. Pd. to any station for cash with order only.

NO MATTER WHAT  
YOUR REQUIREMENTS IN THE WAY  
OF

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For  
Motor Cycles  
and  
Sidecars.

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## A Useful Little Pocket Companion.

Every motor cyclist should make use of this book. It is brimful of sound advice respecting the care, management, and repair of motor cycles. Every hint and tip is numbered, and reference is made very simple by a very exhaustive alphabetical index.

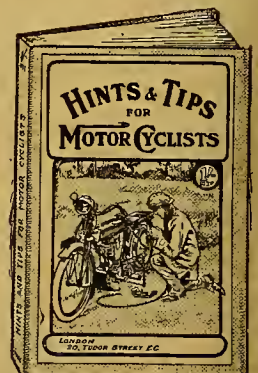
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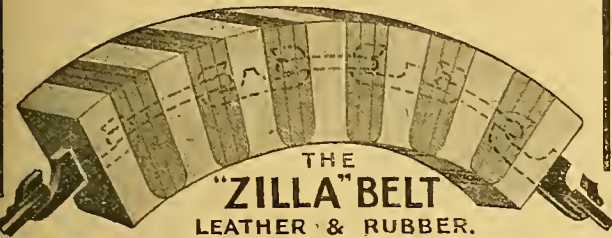
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The **ONLY BELT** for Gradual Gears.



THE  
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LEATHER & RUBBER.

**UNBREAKABLE:** Because the whole pulling strain is taken by a steel chain core, manufactured to withstand from 3 to 4 times the pulling strain of any motor cycle yet built.

**NON-SLIPPING:** Because the leather and rubber washers on the chain have 50% greater driving surfaces than leather or rubber belts, and the combination of leather and rubber will grip the driving pulley in any weather.

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**JUST THE THING FOR SIDECAR WORK,** especially in changeable weather or in exposed positions.

THE BELT THAT SAVES 10% OF PETROL.

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$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	USUAL PRICE for 8ft.
28/-	30/-	34/-	36/-	
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The "ZILLA" is the **ONLY PERFECT** Belt.  
Get a "ZILLA" and end all your Belt troubles.

The **ZILLA PATENT BELT COMPANY, Ltd.,**  
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AT

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## Motor Cycles in Stock FOR IMMEDIATE DELIVERY.

3 h.p. Royal Enfield..	55 Gns.
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Handsome appearance.

Exceptionally comfortable seat.

Large luggage capacity in rear compartment to which there is easy access.

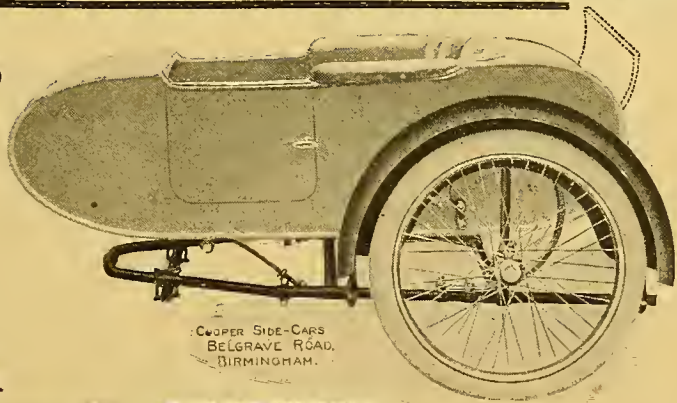
Tool box under seat.

Amply sprung.

Wide mudguards, which can be detached by unscrewing three nuts.

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COOPER SIDE-CARS  
BELGRAVE ROAD,  
BIRMINGHAM.

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## MOTOR CYCLES.

HOME AND COLONIAL MODELS.

RELIABLE. SPEEDY. POWERFUL.

$3\frac{1}{2}$  h.p. S.-cyl., 3-speed C'shaft. Prompt delivery.

6 h.p. T.-cyl., 3-speed C'shaft. Deliveries arranged.

Write for Art List free.

OVERSEAS MOTOR Co., Ltd., Johnstone St., Birmingham.

Don't STOP Riding—  
Use Paraffin—but by  
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PRICES:

Standard Outfit - - - £0 15 6

De Luxe " - - - £1 1 0

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— LONDON, E.C.—



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## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding 10 in value, a deposit fee of 2s. 6d. is charged, when under 10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C., 1915, T.T., 4 speeds, spring frame, fast, mechanical horn, front and rear lamps, splendid condition; £60; seen Tunbridge Wells.—Apply, Box 814, c/o The Motor Cycle. [X8495]

### Abingdon.

ABINGDON-KERRY 1913 3½ h.p. Combination, 2 speeds, excellent condition, just overhauled; 25 gns.—227, Hanover Buildings, Tooley St., Tower Bridge [X2592]

1914 Abingdon King Dink 5-h.p. Twin C.B. Combination, 1914s, 3-speed, clutch, etc., h.c., Bosch latest water and oil-tight mag., tools, spares, apron, etc., tyres unpunctured, appearance as new, little used owing to war, and owner being in Government department; accept £45.—For appointment address, House-keeper, 4, Central Buildings, Westminster. [X2901]

### A.J.S.

A.J.S., 2-speed, k.s. clutch; £30; approval.—49, Chestnut St., Southampton. [X8708]

1916 2½ h.p. A.J.S., done 300 miles, like new; £51.—Cross, Agent, Rotherham. [X8630]

A.J.S., 2½ h.p., 3-speed, 1916, new, also 4 h.p. combination, in stock.—Pickering, Mardol, Shrewsbury. [X8240]

A.J.S. Combination, late 1915, little used; exceptional bargain, £65.—Parker, Woodcot, Solihull, Letchworth. [X2734]

## Halifax Motor Exchange

68, HORTON ST., HALIFAX.

Phone—766.

Telegrams—"Perfection."

### NEW MODELS.

1917 2½ h.p. 2-speed NEW IMPERIAL .... £38 0  
WILLIAMSON Cy-clca, W.C. Douglas eng. £126 0  
RITZ 4-cylinder Light Car..... £145 0  
OVERLAND, 4-seater, 12 h.p. (tax £4 4s.) £225 0  
ROYAL RUBY, 2½ h.p., 2-speed, 2-stroke .. £36 10  
ROYAL RUBY-J.A.F., 2½ h.p., 2-speed .... £39 10  
U.S.A. EXCELSIOR, 3-speed countershaft .. £75 0

## 1916 (U.S.A.) EXCELSIOR.

7 h.p., 3-speed model, 64×89 countershaft gear, chain drive, mechanical and hand lubrication, high-tension magneto, multiple-disc clutch with dual control, kick starter, 2 gallons petrol capacity; £75. Or with electrical equipment; £85.

One only 1915 new 7 h.p. 3-speed twin Excelsior, with electrical equipment, at pre-tax price; £71 10s.

Exchanges quoted. Easy Payments 2½ per cent extra.

Sole Yorkshire Distributors.

Trade Supplied.

## PERFECTION SIDECARS

to suit B.S.A., SUNBEAM, and other machines. Dunlop tyre, body finished black and gold; £12.

### SOLO MACHINES.

1914 2½ h.p. 2-speed DOUGLAS..... £37 10  
1914 2½ h.p. single-speed DOUGLAS..... £26 10  
1913 2½ h.p. 2-speed DOUGLAS..... £34 10  
1912 4 h.p. 2-speed INDIAN..... £27 10  
1912 3½ h.p. ZENITH-GRADUA..... £26 10  
1912 3½ h.p. 2-sp. BRADBURY, chain drive £26 10  
1912 3½ h.p. 2-speed ALLDAYS MATCHLESS £25 10  
1912 3½ h.p. 2-speed HUMBER..... £25 10  
1911 3½ h.p. 3-speed TRIUMPH..... £26 10  
N.S.U., 3½ h.p., 2-speed, free engine..... £18 10  
F.N., 2-speed, magneto, lightweight..... £17 10  
TRIUMPH, magneto, new tyres..... £16 10  
S.P.K., 3½ h.p., 3-speed countershaft..... £24 10  
REX, 3½ h.p., magneto, spring forks..... £11 15  
DOUGLAS, 2½ h.p. Twin Lightweight..... £15 10  
TRIUMPH, 1909, 3½ h.p. 2-speed, free engine £24 10  
TRIUMPH, 1909, tourist..... £19 19  
TRIUMPH, 3½ h.p., clutch model..... £21 10  
DOUGLAS, 2½ h.p., 2-speed, wants attention £17 10

### SIDECAR COMBINATIONS.

1916 5-6 h.p. 3-speed COVENTRY EAGLE, with high coach Sidecar and accessories £72 10  
1914 6 h.p. 3-speed BAT and Sidecar..... £46 0  
1914 7-9 h.p. 2-speed (red) INDIAN Combn. £53 10  
1913 3-speed TRIUMPH and Gloria..... £39 10  
1913 7 h.p. ARIEL, chain drive, and Sidecar £42 10  
1912 3½ h.p. 2-speed PREMIER and Sidecar £33 10  
1911 3½ h.p. 3-speed TRIUMPH and Sidecar £28 10  
1909 3½ h.p. 2-speed TRIUMPH and Sidecar £26 10

### MISCELLANEOUS.

RITZ 4-cyl. 2-seater Light Car, shop-soiled £130 0  
MORGAN, 1913, lamps, horn, screen, etc., .. £57 10  
MORGAN Sporting, hood, screen, lamps..... £69 10  
RENO 15 h.p. 4-cylinder Touring Car..... £65 0  
PREMIER, 7-9 h.p. 2-seater Light Car..... £57 10  
HUMBER 4-cyl. Light Van..... £48 0  
1913 FORD 5-seater Touring Car..... £65 0  
New Mechanical Horns..... 17/6  
Ar Mudscreen, cost 2/-, take..... 10/6  
P. & H. Separate Generator Lamp..... 17/6  
Miller's late Type Lamp Set..... £1 4  
Lucas Kings Own Lamp Set..... £1 5  
Large size Lucas Horn..... 14/6  
Brooks Belt and Tube Case..... 5/11  
New Acetylene Tail Lamp, post free..... 1/6  
New Case Sidecar Bodies; usual price, £4 17s. 6d..... £1 17 6  
New Sidecar Aprons with fasteners..... 5/11  
Rex Frame, with wheels, tank, and forks..... £3 0  
Rex Sidecar Chassis, new, latest model..... £7 15 0

### Cash Offers Solicited.

**WANTED.**—Second-hand MORGAN RUNABOUT, and 1916 8 h.p. SUNBEAM Combination.

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1916, 4 h.p., perfect condition, only 1,000 miles; £65, no offers.—Leak, 1, Cotton Lane, Bury St. Edmunds. [X2661]

A.J.S., late 1915, 2½ h.p., 3-speed, new condition, complete with lamp, horn, etc.; £43.—Hopkins, New St., Ledbury. [X8677]

A.J.S., 1916, 3-speed, Binks carburettor, for Endowment Insurance Policy, or sell £46.—Particulars to Box 323, c/o The Motor Cycle. [X8624]

A.J.S., 1914 model, 6 h.p., 3-speed, fitted with 2 complete sidecars (1 business and 1 pleasure), excellent condition; £55.—Hopkins, New St., Ledbury. [X8678]

A.J.S., 2½ h.p., 2-speed, kick-start, £33, complete; A.J.S., 4 h.p., solo, and 4 h.p. combination; in stock.—Marston, 26 and 31, Bridge St., Chester. [X8701]

A.J.S., 6 h.p., 1914, and coachbuilt sidecar, with wind screen, insurance policy, lamps, indicator, and accessories; bargain, £65.—Reeves, Garage, Parley. Phone 384. [X2675]

A.J.S., 2½ h.p., 3-speed, April, 1916, lamps, accessories, complete, new condition; owner leaving country; £50.—Cheshire, 99, Shrewsbury Rd., Birkenhead. [X8094]

2½ h.p. A.J.S., 2-speed gear model, clutch and kick-start, chain drive, 1915 machine, nice condition; £40; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X2701]

1916 A.J.S. Latest 4 h.p. Combination, brand new, with spare wheel, tyre, and wind screen; in stock for immediate delivery.—Prices and particulars, Robinson's Garage, Green St., Cambridge. [X2801]

### Alldays.

ALLON, 2½ h.p., 2-stroke, 2-speed, 1916; in stock.—Pickering, Mardol, Shrewsbury. [X8241]

ALLONS in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [X2640]

1916 Allon, nearly new; £28, offers: exchange; appointment.—18, Gowllett Rd., Peckham. [X2770]

ALLDAYS Matchless, 2-stroke, all accessories; £22/10.—Warren's, 386, Enston Rd. Museum 3081. [X2833]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [X7096]

ALLDAYS, 2-stroke, 1915 model, 3-speed and clutch, absolutely new condition; £23.—Hopkins, New St., Ledbury. [X8680]

ALLDAYS Matchless, 2-speed, enamelling and plating splendid condition; £35.—Parker and Son, St. Ives, Huuts. [X2670]

ALLDAYS Allon, 1916 models in stock; cash or gradual payments 2½ only.—Referee Cycle Co., 332, High Holborn. [X7063]

1916 Allon, 2-stroke, little used, equal to new, £22; also 2½ h.p. Rex, £12, in order.—Thompson, 79a, Parkhurst Rd., N. [X2606]

1916 Alldays Allon, 2-speed models, in stock; £42, easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [X2641]

ALLONS, new 1916 2-stroke 2-speed models, £42; exchange or easy terms arranged.—Wauchope's, 9, Shoe Lane, London. [X2706]

ALLDAYS Matchless, 1914½, 2½ h.p., 2-stroke, first-class condition; bargain, £20.—Tomkins, Overhurs, Downend, Glos. [X8649]



## MOTOR CYCLES FOR SALE.

## Alldays.

**1915 Alldays**, 2-stroke, 2 lamps, all accessories, little used, new condition throughout; £20, bargain.—436, Whitehorse Rd., Thornton Heath. [2728]

**ALLON**, 1915½, 2½h.p., 2-stroke, 2-speed, not done 2,500 miles, splendid condition, all accessories; £30.—Webb, 5, Glebe Rd., Dagenham, Essex. [2570]

**ALLDAYS Allon**, 1915, 2-speed, 2-stroke, in very good order; £25/10; diamond ring part exchange.—Lindsay, 12, Duke's Mews, Manchester Sq., W. [2672]

**ALLON 2-stroke**, 1916, with speedometer, and numerous accessories, only done 50 miles; £38, or nearest.—4, Crofton Av., Hillsborough, Sheffield. [X8493]

**ALLDAYS Allons**, all models, delivered from stock; and 1915 speed with original tyres on. £27/10; and late 1915, 2-speed, hand clutch, £36/10, original tyres; deferred payments entertained; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2794]

## A.L.P.

**A.L.P.**, 2h.p., fast and reliable, like new, all accessories; £16/16.—Knight, Charter Ley, Basingstoke. [2681]

## Ariel.

**ARIEL**, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [2642]

**ARIEL** 3½h.p., new mag., drop frame, spring forks, in first-class order and condition; £10/10.—455, York Rd., Wandsworth. [2777]

**COLMORE Depot**, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

**ARIEL** 3½h.p., semi-T.T. model, with variable pulley gear, a fast and flexible mount, in desirable condition; £23, or reasonable offer; approval.—Laytons' Garage, Bicester, Oxon. [X8748]

## Auto-Wheels.

**UTO-WHEEL**, excellent condition; nearest offer to £10.—Perry-Evans, Hillbutts, Wimbourn. [X8638]

**BEST Auto-Wheel** and new bicycle; £15; ready to start.—Woodford, 36, Ashvale Rd., Tooting. [2590]

**TWO Genuine Wall Auto-Wheels**, 1914-15 models, little used, nearly new; £8/10 and £10.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X8732]

## Bat.

**5-h.p. Jap-Bat Twin**, spring frame, U.H. mag., h.b.c., with sidecar.—4, Gowan Av., Fulham. [2625]

**1916 Bat Combination**, petrol; cost £103, £73.—Letters, 18, Pinfold Rd., Streatham. [2892]

**BAT-J.A.P. Combination**, 1914, 3-speed, perfect; £70.—Warren's, 386, Euston Rd. Museum 3081. [2838]

**BAT-J.A.P.**, 1910, 3½h.p., Bosch, new tyres, fast; £11.—Humphreys, Greycoat, Connaught Rd., Reading. [2665]

**BAT-J.A.P.**, 8h.p., and sidecar, P. and M. 2-speed, good condition; £28, if sold this week; powerful; after 6.—15, Smallwood Rd., Tooting. [2621]

**1912 8h.p. Bat-Jap Combination**, requires overhauling, engine, tyres, belt in splendid condition; bargain for immediate sale, £16.—Duckley, Postman, Brackley, Northamptonshire. [2757]

**4-h.p. New 1916 Bat**, 2-speed and free engine model, for delivery from stock, £35/5; also a second-hand 1915 model, same specifications as above, £47/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [2705]

## Bradbury.

**PETROL Free with 1913 Bradbury**, 1915; Sturmeys gears; 25 gns.—Troward, 78, High St., Hampstead. [2745]

**BRADBURY**, 4h.p., free engine, in first-class order and condition; £15.—455, York Rd., Wandsworth. [2778]

**1913 Bradbury**, 4h.p., 2-speed, just overhauled; £22; on approval; near offer.—Clark, Section, Tyne-mouth. [X8496]

**BRADBURY**, 1914, 4h.p. (officer's property), 3-speed countershaft, kick start, all chain drive, condition excellent; 30 gns.—356, Lordship Lane, E. Dulwich. [2627]

**4h.p. Bradbury**, 1912, 2-speed countershaft, hand 4 and foot control, chain-belt, Miller lamp, good Dunlops, spares and accessories, canoe-shaped cane sidecar, with door, locker, etc.; £29/10; photo.—Pitcher, College Court, Gloucester. [2567]

## Brough.

**BROUGH**, 5-h.p., and sidecar, 3-speed, 1915½; what offers.—Brickets Laundry, 23, Martell Rd., Dulwich. [2884]

## Brown.

**3h.p. Brown**, 2 speeds, and sidecar; £18, or offer.—336a, Stretford Rd., Manchester. [X8139]

## B.S.A.

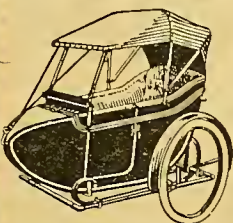
**B.S.A.**, new 1916 models H and K actually in stock.—Moss, Wem. [X8640]

**COLMORE Depot**, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

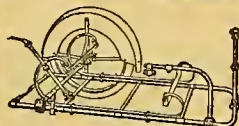
**B.S.A.'s**—Very latest models just arrived; £62.—Briggs, High St., Wellingborough. [X8632]

## CORONET SIDECARS.

We are building special models for Harley-Davidsons, Excelsiors, and Indians, enamelled either grey or red to match machines, and fitted with 28x3in. tyre and four point attachment.



Coronet Underslung Chassis.



TORPEDO SIDECARS, £9 15s.

Wanted, 10 1915 Harley-Davidsons in exchange for 1916 Harley-Davidsons. Good allowances.

## CASH OFFERS WANTED.

6 h.p. Twin REX 1914, 3-speed, chain drive with Rex coach Sidecar.....	£45 0
2½ h.p. Stationary Petrol Engine, new £22 10s. model, magneto, 2 flywheels.....	£16 10
4 h.p. ZENITH, 1911, Gradua variable gear.....	£19 15
2½ h.p. IMPERIAL-J.A.P., 1915, 2-speed, lamp, horn, etc. ....	£29 15
7-hp. p. PREMIER, 1914, 2-speed counter-shaft, with £13 10s. new coach Sidecar.....	£49 15
6 h.p. REX, 2-speed, magneto.....	£13 15
3½ h.p. HUMBER 1912, free engine.....	£17 10
3½ h.p. MINERVA, magneto, variable gear.....	£8 15
5 h.p. INDIAN, 1915, 3-speed, £18 coach Sidecar, little used.....	£62 10
1916 7½ h.p. HARLEY-DAVIDSON.....	£80 15
1916 ditto, electrical model.....	£89 0
1914 Ford Touring Car, detachable wheels.....	£85 0
2½ h.p. EXCELSIOR, 1916, 2-stroke.....	£24 15
20 h.p. FORD Van, new, 1916 model.....	£130 0
20 h.p. FORD Van, 1915 model.....	£90 0
2½ h.p. TYLER, 1915, 2-speed model.....	£24 15
3½ h.p. TRIUMPH, 1910, 2-speed, with Millford Sidecar.....	£20 0
3½ h.p. JAMES, 1912, 2-speed, chain drive, and coach Sidecar.....	£26 15
3½ h.p. HUMBER, 1913, 2-speed, Sidecar.....	£29 15
3½ h.p. PREMIER, 1913, 2-speed counter-shaft gear, belt and chain.....	£26 15
3 h.p. LINCOLN-ELK, 1911, magneto.....	£12 15
3½ h.p. TRIUMPH, 1911, 2-speed model, with Sidecar, lamps, and horn.....	£25 15
1915 P. & M. and Sidecar.....	£62 10
1912 FLANDERS van.....	£47 10
7-9 h.p. HARLEY-DAVIDSON, electrically equipped, complete with Sidecar.....	£69 15
3½ h.p. HUMBER, 1911, 2 speed.....	£17 15
2½ h.p. MATCHLESS-J.A.P., 1910.....	£10 15
1915 TRUMBULL Light Car, hood, screed, detachable wheels, speedometer, electric horn and lamps.....	£89 0

## MISCELLANEOUS BARGAINS.

New £5 weatherproof Magneto, £3 10s.; Rex £18 Sidecar, £9 15s.; Long Lengths Steel Tubing, 1½x12½, 14½, 16½; B. & B. Carburettor, 12/6; Amac Carburettor, 12/6; New 20/- Brass Electric Sidecar Lamps 5/6; Ditto Tail Lamps, 5/6; approval; Coach-built Sidecar, £4 5s.; Sidecar Safety Couplings, 8/9 (for any machine, including P. & M.'s); Lightweight Coach Sidecar, new, £7 15s.; New Coach Sidecar Body, £3 5s.; New Sidecar Chassis, complete with all fittings, 65/-; 1916 Binks Carburettors (your old carburettor taken in exchange).

WANTED, B.S.A. or P. & M. for cash. Also GARDEN motorcar.

## BOOTH'S MOTORIES, PORTLAND PLACE, SKIRCOAT ROAD, HALIFAX.

'Phone: 1062.

Close at 6 p.m.

## MOTOR CYCLES FOR SALE.

## B.S.A.

**B.S.A.** Model H, all enclosed chain drive; £64.—Robinson, Motor Cycles, Northampton. [2844]

**1914 B.S.A.**, 4h.p., 3-speed countershaft, free engine; £34.—Briggs, High St., Wellingborough. [X8636]

**B.S.A.**, all models in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [2643]

**B.S.A.**—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. 'Phone: Hornsey 2562. [2657]

**B.S.A. K Model**, new July, 1916, only done 100 miles; £60, or offers.—Bartholomew, Hainton, Lincoln. [X8613]

**B.S.A. 1914 4½h.p.** Combination, kick-starter, new coach sidecar; £42.—29, St. Leonards St., Bow. [2695]

**1913 3½h.p. B.S.A.**, clutch model, lamps, accessories, splendid condition; £25.—Thorpe, Whitehorse Rd., Thornton Heath. [2727]

**1917 B.S.A.**, model K, in stock, delivery free; being on the spot I can give best service.—A. L. Pitts, B.S.A. Depot, Redditch. [X8662]

**LATE 1913 3½h.p. B.S.A.**, 2-speed, clutch, special machine, nice condition; £32.—Bayeno, Farnborough Rd., Farnborough, Hants. [2563]

**B.S.A.**, late 1915, 4½h.p., 3-speed, belt-cum-chain drive, complete with lamp, horn, etc., perfect condition; £43.—Hopkins, New St., Ladbury. [X8679]

**1913 2-speed B.S.A.**, chain drive, all accessories, guaranteed perfect; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [2655]

**1912 3½h.p. Free Engine B.S.A.**, all accessories, perfect condition; £20, no offers; officer going abroad.—R. Adcock, Derby Hills House, Derby. [X8639]

**1913 2-speed B.S.A.**, belt drive, all accessories, in splendid condition; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [2656]

**LATE 1914 B.S.A.**, 4½h.p., 3-speed countershaft, all chain drive, with B.S.A. coachbuilt sidecar, all in new condition; £47/10.—35, Palmerston Rd., Forest Gate, E. [X8660]

**B.S.A. 1915 Combination**, chain-cum-belt, 3 speeds, F.E. kick-starter, overhauled, new mudguards and tyres, spare belt, and accessories; £50, or near offer.—Walsh, 542, Blackburn Rd., Bolton. [X8648]

**1914½ 4h.p. B.S.A.** Combination, 3-speed countershaft gear, chain drive, 3 new Dunlop tyres, everything perfect; no rubbish; lamps, horn, speedometer; £55.—Houghton, 106, Poolstock, Wigan. [X8554]

**B.S.A.**, 1914, 2-speed, kick-starter, Phoenix sidecar, £42; also Oct., 1912, B.S.A., 2-speed, pedal start, cane sidecar, Kempshall non-skids, £34/10; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow. [2792]

**B.S.A.**, 4½h.p., late 1915, chain drive, 3-speed, Lucas dynamo lighting set and horn, Cowey speedometer, Godiva coachbuilt sidecar, upholstered Bedford cord, practically unscratched; bargain, £68.—Brewer, 1, Inman Rd., Earlsfield, S.W. [2575]

**4h.p. B.S.A.**, with special Canoelet sidecar, late 1915 model, speedometer, Lucas horn, 3 P. and H. lamps; this machine is in perfect condition, and is very smart, mileage driven is under 2,000; bargain at £75.—Apply, Beadle, Motors, Dartford. [2512]

**B.S.A.**, 1914, 4½h.p., chain drive, and roomy Projectile sidecar, electric head and tail lamp, horn, mirror, and speedometer, engine as 1916 standard, new heavy tyres, tools, and abundant spares, all in perfect order; £60.—J. Lindsay, Thurso, N.B. [X8494]

**B.S.A.'s**—Three model K belt-cum-chain, £62 each; one model H, all chain, £64, actually in stock; also Canoelet sidecars, 13 gns., to suit, hoods and screens extra; liberal exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2791]

**B.S.A.**, 1915, 4½h.p., chain drive, 3-speed gear, kick starter, Watford speedometer, Lucas lamps, coachbuilt sidecar, with extra seat for child, extra strong underslung chassis, in good running condition, tools, spare tyres, overalls; £59; also large shed on offer.—Traveller, 7, Harrington St., Moss Side, Manchester. [2666]

**B.S.A.**, 1915, model K, 3-speed countershaft, with B.S.A. sidecar, and usual accessories, quite the best one year old combination we have seen, price £56; B.S.A., 1914, model H, 3-speed, chain drive, with light coachbuilt sidecar, complete, a very fine and well-cared for combination; price £46; approval.—Laytons' Garage, Bicester, Oxon. [X8749]

**4h.p. New 1916 B.S.A.** Models, chain drive £64, chain-cum-belt £62; these famous motor cycles are fitted with the countershaft 3-speed gear box; the all-chain drive is recommended for sidecar work, and the chain-cum-belt for solo; canoelet sidecars to fit, £15/5 cash, exchange, or easy terms.—Wauchope's, 9, Shoe Lane, Fleet St., London. [2707]

## Calcott.

**1912 Calcott**, 2½h.p., fine machine; £15.—40, High St., Wellingborough. [X8635]

## Calthorpe.

**1914 Calthorpe Junior**, 2-speed, splendid condition; £16.—9, Northbrook Rd., Ilford. [X8657]

**CALTHORPE**, 2½h.p., mag., good order; £15.—Jalton, 3, Brewer St., Piccadilly, W. [2680]



## MOTOR CYCLES FOR SALE.

## Calthorpe.

**C**ALTHORPE, 2-speed, ready to drive away; £20.—Warren's, 386, Euston Rd. Museum 3081. [2829]  
**B**RAND New Calthorpe Junior Coupe, in stock; £285; dynamo lighting.—Cross, Agent, Rotherham. [X8631]  
**19**15 Calthorpe-Jap, 2½ h.p., Enfield 2-speed; bargain, 22 gns.—40, College St., Wellingborough. [X8634]

**C**ALTHORPE, 2-speed, 2-stroke, 1915, used 8 months only; £25/10.—Robinson, Motor Cycles, Northampton. [2844]

**19**15 2½ h.p. Calthorpe-Jap, Enfield 2-speed, under 1,000 miles, as new; £26.—410, Rotherhithe St., Rotherhithe, S.E. [2860]

**19**15 Calthorpe, 2-stroke, 2-speed, just overhauled; £23, or treat exchange 1916 Ixion.—Box 805, c/o The Motor Cycle. [X8553]

**C**ALTHORPE-J.A.P., Enfield gears, had only 3 months' use, grand order; £27; good push bikes wanted.—Bunting, Harrow. [2685]

**C**OLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**C**ALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

**C**ALTHORPE-J.A.P., 2½ h.p., 2-speed models actually in stock, £37/16; also a 1916 Calthorpe-Jap, with 2-speed gear, Lucas accessories, horn, registration, special fittings, £34/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2787]

**N**EW 1916 4-5 h.p. Calthorpe-Jap, two-cyl., 2-speed Enfield gear and free engine, fitted with a light coachbuilt sidecar, the combination complete, £70/7; also 2½ h.p. 2-speed Calthorpe-Japs, £37/16; also some second-hand 1915 models at bargain prices; cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [2705]

## Campion.

**C**AMPION-J.A.P., 2½ h.p., 1915 model, speedometer, etc.; £25.—Marston, 26 and 31, Bridge St., Chester. [X8700]

**C**AMPION-J.A.P., 4 h.p., 1915, 3-speed hub, complete; would exchange for lightweight.—S.S.M., 3, Staple Gardens, Winchester. [2612]

## Chater-Lea.

**£**14.—3½ h.p. Chater and sidecar, light runabout, lot good condition; after 6 p.m.—15, Smallwood Rd., Tooting. [2622]

**C**HATER-LEA 1913, 8 h.p. twin, a.e., for No. 7 machine, little used, new condition, also clutch, gear box, operating mechanism, chain sprockets, mag. fitted, also cover and back wheel; cost £50, nearest reasonable consideration.—Leighton's, opposite Wood Green Station. [2735]

## Chater-Lea-Jap.

**C**HATER-LEA No. 7 Combination, 8 h.p. J.A.P. twin, magnificent condition; £65.—12, Gray's Inn Residence, 180, Clerkenwell Rd., London. [2487]

**J**.A.P. 5 h.p. Twin, Chater-Lea, free engine, and sidecar, in real good order and condition throughout, Bosch mag., enclosed, B. and B. carburetter, good tyres. £18.—6, Warren St., London. [2809]

## Chater-Lea-Peugeot.

**£**15.—Lea-Peugeot, 5 h.p. twin, Amac, h.b.c., Druid forks, Bosch mag., Whittle, Millennium gear, 26 x 2½ Dunlops, lamp, horn, hand and foot brakes, Brooks saddle, low positions, running order, sidecar (coach), side entrance, registration transferable; first £15, 80, Bisham Rd., Southport. [X8644]

## Chater-Sarolea.

**C**HATER-SAROLEA 5 h.p. Twin, F.E., Chater sidecar, fine condition; after 8.30; £19/10.—12, Shalstone Rd., Morthlake, S.W. [2623]

## Clyno.

**C**LYNO, 1912, 6 h.p., 2-speed, coachbuilt sidecar, hood and screen; £32.—Revell, Ewell. [X8564]

**P**ETROL Free with 1912 Clyno combination; 29 gns.—Troward, 78, High St., Hampstead. [2744]

**19**14 6 h.p. Clyno, with eagar shaped sidecar, not been used for 10 months; owner gone to the Front; £60.—G. Grau, Tring. [2880]

**19**14½ Clyno Lightweight, 2-speed, speedometer, lamps, free engine, tank fault only; 20 gns.—Osborne, Harpur St., Bedford. [2604]

**C**LYNO, War Office model, in stock, complete with sidecar, detachable wheel, just arrived; 100 gns.—Briggs, High St., Wellingborough. [X8633]

## Connaught.

**C**ONNAUGHT, 1914, 2-speed gear box, perfect; £26. W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [2596]

**C**ONNAUGHT, 1915, 2-stroke, speedometer, lamps, in good order; £20.—Lindsay, 12, Duke's Mews, Manchester Sq., W. [2673]

**C**ONNAUGHT, 1914, 2-speed, fitted with auxiliary paraffin tank, first-class running order; £23.—Johnson, Athelstan Rd., Exeter. [2782]

**P**. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models; prices from £28/17/6.—87-91, John Bright St., Birmingham. [X8687]



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**Ex Actual Stock, 1916 Models of**  
**ROYAL RUBY, ENFIELD (all Models), B.S.A., LEVIS,**  
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**COVENTRY EAGLE, &c.**

LIST OF SECOND HANDS.  
SIDECAR OUTFITS.

**JAMES** 1914 4½ h.p. 3-speed Combination, all access. £53  
**REX**, 1914, 6 h.p., 2-speed, modele de luxe, handle starting, coach-built Sidecar, just been overhauled £40  
**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidecar... £32  
**INDIAN**, 1914, 7 h.p., 2-speed, electric lighting, spring frame, Gloria 30 guinea Sidecar... £62  
**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar... £60  
**REX**, 1913, 6 h.p., 2-speed, cane Sidecar... £28  
**RUDGE**, 1913, 5-6 h.p. Multi, with Rudge Sidecar... £50  
**INDIAN** 1916 5 h.p. Combination. 3-speed... £65  
**MATCHLESS** 1914 8 h.p. 3-speed Combination... £60  
**ZENITH**, 1914, 6 h.p., clutch, and Sidecar, all access. £68  
**ZENITH**, 1915, 3½ h.p. twin, countershaft and clutch, coachbuilt Sidecar... £52  
**ENFIELD**, 1912, 6 h.p., 2-speed twin. Enfield Sidecar... £30  
**INDIAN** 1915 (late) 5 h.p. 3-speed Combination... £63  
**RUDGE** 1913 3½ h.p. Multi, coach-built Sidecar... £33

## SOLO MODELS.

**NEW IMPERIAL-J.A.P.**, 1915, 2½ h.p., 2-speed... £26  
**DOUGLAS**, 1912, 2½ h.p., 2-speed, spring forks... £20  
**CALTHORPE**, 1914, 2 h.p., 2-speed... £19  
**RUDGE** 1913 3½ h.p. Multi, T.T. bars... £33  
**TRIUMPH**, 1913, 2½ h.p., single-speed... £18  
**NEW HUDSON**, 1913, 3½ h.p., 3-speed J.A.P. engine... £28  
**TRIUMPH**, 1912, 3½ h.p., clutch model... £30  
**TRIUMPH**, 1912, 3½ h.p., clutch, Phillips pulley... £24  
**REX**, 1913, 3½ h.p., 2-speed, and clutch... £28  
**HARLEY**, 1915, 7 h.p., 3-speed... £56  
**RUDGE**, 1915, 7 h.p., Phillips pulley, 1915 improvements... £18  
**SUN-VILLIERS**, 1915, 2½ h.p., 1915, 2-stroke... £42  
**ENFIELD**, 1915, 2½ h.p., 2-speed, 2-stroke... £32  
**BROWN**, 3½ h.p. model, Bosch magneto... £14  
**INDIAN**, 1915, 3½ h.p., 3-speed twin... £43  
**INDIAN**, 1915, 5 h.p., 3-speed twin... £53  
**HARLEY-DAVIDSON**, 1914, 9 h.p., 2-speed twin... £37  
**ENFIELD**, 1911, 2½ h.p., 2-speed twin, as new... £21  
**TRIUMPH**, 1913, 3½ h.p., 3-speed, excellent order... £33  
**ROVER**, 1912, 3½ h.p., T.T. clutch model... £20  
**ZENITH**, 1912, 3½ h.p., Gradua gear, J.A.P. engine... £20  
**DOUGLAS**, 1912, 2½ h.p., single-speed... £16  
**LEVIS**, 2½ h.p., countershaft, 2-stroke... £18  
**ALLDAYS ALLEN**, 1915, 2-speed, 2-stroke... £32  
**DOUGLAS**, 1915, 2½ h.p., colonial, 3-speed... £53  
**NEW HUDSON**, 1915, 2-stroke, as new... £24  
**TRIUMPH**, 1913, 3½ h.p., 3-speed... £32  
**TRIUMPH**, 1914, 2 h.p., 2-speed, 2-stroke... £35

## CARS AND LIGHT CARS.

**N.A.G.**, 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set... £300  
**SUNBEAM**, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled... £295  
**KNIGHT JUNIOR**, 1914, 12 h.p., 2-seater, sporting body... £155  
**MINERVA**, 26 h.p., 5-seater, make an excellent 25 cwt. van. Perfect mechanical order... £80  
**G.W.K.**, 1914, 9 h.p., just re-painted and new hood fitted... £100  
**G.W.K.**, 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn... £160  
**DEEMSTER**, 1914, 9.5 h.p., 2-seater, all accessories; a bargain at... £100

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## MOTOR CYCLES FOR SALE.

## Coventry Eagle.

**C**OVENTRY Eagle, not done 100 miles; £30.—Warren's, 386, Euston Rd. Museum 3081. [2832]

## Dalm.

**D**ALM, 2-stroke, 1915, 3 speeds, clutch, etc., nearly new; £23.—11, Luna Rd., Thornton Heath, S.E. [2867]

## Dayton.

**D**AYTON, 1½ h.p., 2-stroke; £16/10, bargain; what offers?—62, Knighton Park, Sydenham. [2588]

## Dene.

**D**ENE-PRECISION Combination, 8 h.p., 3 speeds, lamps, mirror, speedometer, watch, spares, all tyres new; £60; exchange Ford, cash adjustment, or take less power part payment.—Galley, New Washington, Co. Durham. [2574]

## Douglas.

**19**15 Douglas, 3-speed; £45.—Warren's, 386, Euston Rd. Museum 3081. [2836]

**19**13 Douglas, fully equipped; £32.—Warren's, 386, Euston Rd. Museum 3081. [2834]

**19**14 Douglas, T.T. lamps, etc.; £35.—Warren's, 386, Euston Rd. Museum 3081. [2835]

**P**ETROL Free with 1911-12 T.T. Douglas; 16 gns.—Troward, 78, High St., Hampstead. [2745]

**D**OUGLAS, 1913½, 2½ h.p., 2-speed, kick-starter, new condition; £32.—29, St. Leonards St., Bow. [2694]

**19**14 2½ h.p. Douglas, 2-speed; a bargain; must sell; £27/10.—11, Sussex Rd., South Croydon. [2601]

**D**OUGLAS, 1911-12, 2-speed, clutch, just overhauled; £22, or offer.—12, Ivy Lane, Brockley, S.E. [2662]

**D**OUGLAS, 1911, good tyres, in first-class order and condition; £12.—455, York Rd., Wandsworth. [2781]

**19**14 Douglas, 2½ h.p., clutch, starter, 2 speeds, new back tyre; £35.—L2,265, c/o The Motor Cycle. [2900]

**D**OUGLAS, 2½ h.p., first to view will purchase; £15, no offers.—14, Dodbrooke Rd., West Norwood. [1541]

**D**OUGLAS, 1915, 2-speed, new condition, with accessories; £45.—Pickering, Mardol, Shrewsbury. [X8239]

**L**ATE 1913 Douglas, 2½ h.p., 2-speed, clutch, lamps, and spares; £50.—Bavono, Farnborough Rd., Farnborough, Hants. [2564]

**D**OUGLAS, 1914, 2½ h.p., 2-speed, and clutch, lamps and speedometer, all like new; £37/10.—455, York Rd., Wandsworth. [2779]

**19**15 Douglas, 2½ h.p., 2-speed, T.T. model, fully equipped; £44; exchanges.—Newham, 223, Hammersmith Rd., W. [2821]

**2** h.p. Douglas, 1911 model, single speed, very powerful and fast; £17/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [2708]

**19**13 T.T. 2-speed Douglas and accessories, in perfect condition; £30; seen any time.—Bounds, Garage, 223, High Rd., Kilburn. [2628]

**19**15 T.T. 3-speed Douglas, in perfect condition, and accessories; £42/10; seen any time.—Bounds, Garage, 223, High Rd., Kilburn. [2628a]

**D**OUGLAS, 2-speed, kick-starter, clutch, hardly used, condition perfect throughout, all accessories; trial; £36.—16, Camden Rd., Wanstead. [2766]

**D**OUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

**D**OUGLAS 1913 2½ h.p., 2-speed, T.T., just overhauled, new pistons, tank re-camelled, new lamps; £35.—Railway Garage, Staines. [2890]

**19**13 Douglas, 2½ h.p., 2-speed, complete with lamp, horn, speedometer, etc., just overhauled; £30.—G. Blanchard, 3, Blenheim Mount, Bradford. [X8578]

**2** h.p. Douglas, late 1913, clutch model, accessories, good condition, recently overhauled, tyres new; £34.—89, Richmond Rd., Kingston-on-Thames. [2774]

**D**OUGLAS Douglas, Douglas, all models in stock, 2½ h.p. and 4 h.p., 1911, 1912, 1913, 1914, 1915, and 1916; £15 to £55.—6, Warren St., London. [2808]

**D**OUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

**D**OUGLAS, 1914, 2½ h.p., model W, clutch, kick, lamps, accessories, excellent condition; no examination; £38.—12, Osbaldeston Rd., Stoke Newington. [2891]

**2** h.p. Douglas, kick-start model and 2-speed gear and free engine, complete with accessories; £37/10; guaranteed.—Wauchope's, 9, Shoe Lane, London. [2704]

**D**OUGLAS, 1914, 2½ h.p., 2-speed, kick-start, clutch, just overhauled, tyres and belt practically new; 40 gns., or nearest offer.—Heys, Redwood, Kenley, Surrey. [2864]

**M**OTOR Cycle For Sale, Douglas 2½ h.p., 2-speed, new September, 1914; owner ordered France; excellent condition; £35.—Housekeeper, 56, Victoria St., Westminster. [2307]

**C**OLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## The British Magneto. A Three Years' Campaign by "The Motor Cycle."

IT was in 1913 that *The Autocar* had the boldness to point out that the British motor industry was, to all intents and purposes, solely reliant upon German-made magnetos, and that a complete dislocation of its trade might ensue were a strike or riot to occur at Stuttgart. The matter was also ventilated in *The Motor Cycle*. At that time it was little thought that the warning was destined to prove prophetic. As a result of such a bold exposure it is hardly necessary to mention that we came in for a considerable amount of abuse from German agents and other interested parties, but having exposed the position we felt that our object was temporarily achieved. We thus proved once again our genuine concern for the welfare of British trade and the desirability that our home motor industry should be entirely self-supporting.

Then, in 1914, when this country was driven into a great war—which England least of all wanted—we lost no time in urging the desirability of manufacturers at home seizing the opportunity and building up a magneto industry in this country. From time to time we have outlined the manufacturing position in our endeavours to foster the British magneto, and have laid our pages open for a recital of the facts by the different firms who were quick to act upon our suggestions. Observant readers of this journal will recall that, whereas at the commencement of war there were but two or three firms in this country producing magnetos in a small way, the number has grown until there are now a dozen or so firms actually producing or about to produce magnetos in quantities. We have never ceased to keep in mind and to urge the desirability of producing entirely in this country all our requirements in respect of magnetos, and during our campaign spread over the

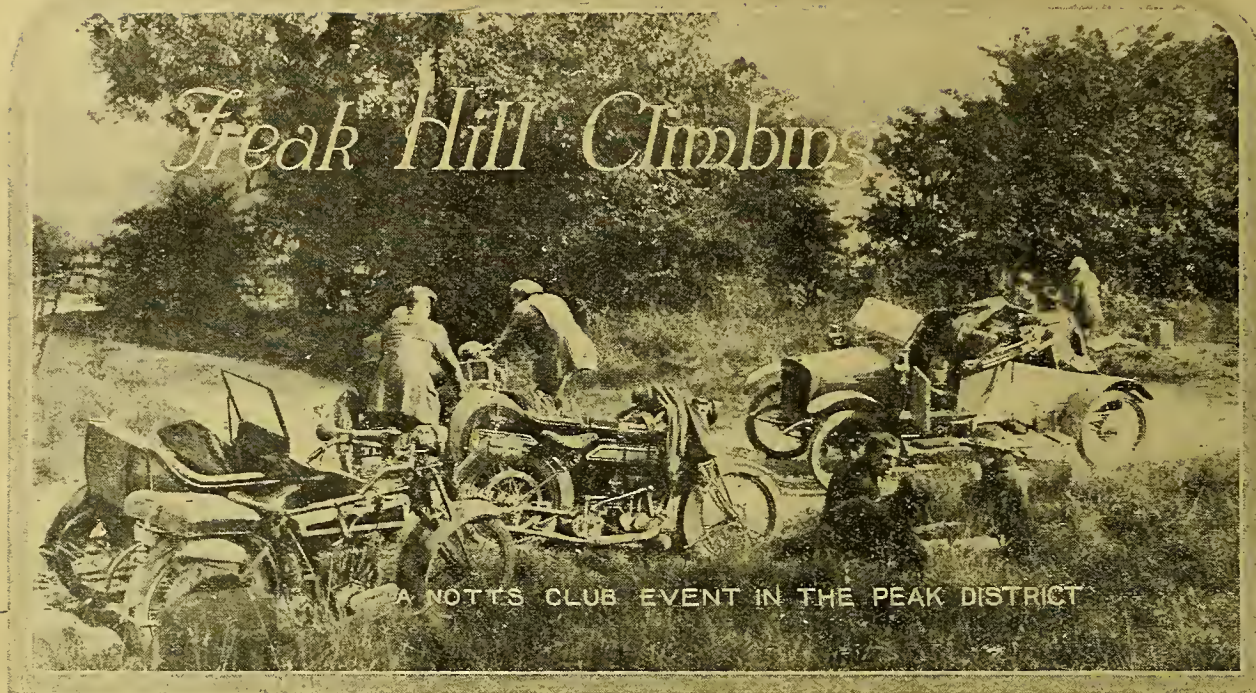
last *three* years—that is, from a time before the war commenced—we have published criticisms and results of experience, with the sole object of encouraging the home-produced article. We have had to expose the unaccountable lukewarmness of certain British motor manufacturers who, up till a few months ago at any rate, were by no means determined to stamp out the enemy-made article and to support home industries. Such strange lack of patriotic interest is, fortunately, isolated, but nevertheless we are sorry to say that it does, or did, exist.

So far as *The Motor Cycle* is concerned, we have given a lead and openly stated our position, which is, "that in accord with the recommendations agreed upon at the Paris Economic Conference, we will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war."

### Time for Manufacturers to Act.

Looking back over our efforts and the amount of space devoted to the fostering of the British magneto industry, we must say we feel that, had a little more enthusiasm been exhibited in manufacturing circles, and particularly by the Motor Cycle Manufacturers' Union, the result would have been a good deal more advanced than is actually the case. For instance, neither individually nor as a body have the British motor cycle manufacturers expressed their determination not to use foreign magnetos after the war. For all the public know they intend to "wait and see." Still, Rome was not built in a day, and we feel confident, from the amount of preparatory work which has already been done, that ere long British industry and British capital will be well able to satisfy all the needs of the trade, and that the motor cycle makers will recognise this. In addition to what we have openly published, we keep in mind all the time this particular object, among others, and behind the scenes are working towards its accomplishment.





THE Nottingham and District M.C.C. last week arranged another hill-climbing expedition in the Peak District. Members were apprised of the event by the hon. secretary, Mr. W. W. Weldon, who suggested to members that they should bring with them their passengers and luncheon baskets. A start was made from the Market Place, Nottingham, and the party met at Matlock, first visiting the scene of the last exploit, a stony, winding track of about 1 in 4 to the left of the road entering Matlock Bath. On the present occasion members were to be introduced to two comparatively unknown hills in the Darley Dale district. The pilot should have been Mr. I. Cohen, the designer of the Sturmev-Archer gear, who spends his week-ends in search of "impossible" climbs testing the invention for which he is responsible.

Unfortunately, the previous day he broke the special piston of his 4 h.p. Norton, and spent the morning of the event fitting another which had to be jury-rigged. Consequently, when he joined the party later his sidecar machine did not show up so conspicuously as it usually does.

First a hill was tackled to the left of the Matlock-Bakewell main road leading from Birchover. The surface is simply a mass of loose boulders, and there is quite a long stretch of single figure gradient approximating 1 in 5 or 6 in places.

A 4 h.p. Champion-Jap sidecar, piloted by W. W. Weldon, made a very creditable show, going up

comparatively easily after shedding the passenger half-way up—no mean performance. Cohen's Norton sidecar, though buffeted about on the boulders, stuck to its guns, but the other members of the party, with the exception of a rider of a W.D. model Triumph, had too much respect for their machines—and wisely refrained. From the summit of this hill a corresponding rise on the opposite side of the valley was observed. Closer investigation, however, proved it to be a mere footpath leading from a disused lead mine, only fit for motor bicycles. The Triumph rider, reconnoitring for the party, made a clean ascent at the first time of asking, despite two stone ridges six inches high and a thirty yards pitch roughly measured at 1 in 3.

After lunch a move was made to Darley Dale, and

a right-hand turn taken, leading to the inevitable lane of ruts covered with loose stones, winding hither and thither, which, after a culminating pitch of atrocious surface, crosses two fields, when it joins the summit of Rowsley Toll Bar Hill. All the bunch, including Standard and G.W.K. light cars, started in single file. First an aged Bradbury knocked out after a plucky attempt; the 4 h.p. Champion-Jap plugged away until obliged to shed its passenger, when the remainder was accomplished in good style; J. Richards, on a 6 h.p. Abingdon King Dick, shattered his driving pulley on a steep stretch; Cohen's engine stopped with the piston almost seizing; and Dr. Mackay, on the



I. Cohen, the designer of the Sturmev-Archer three-speed gear, on his Norton sidecar.

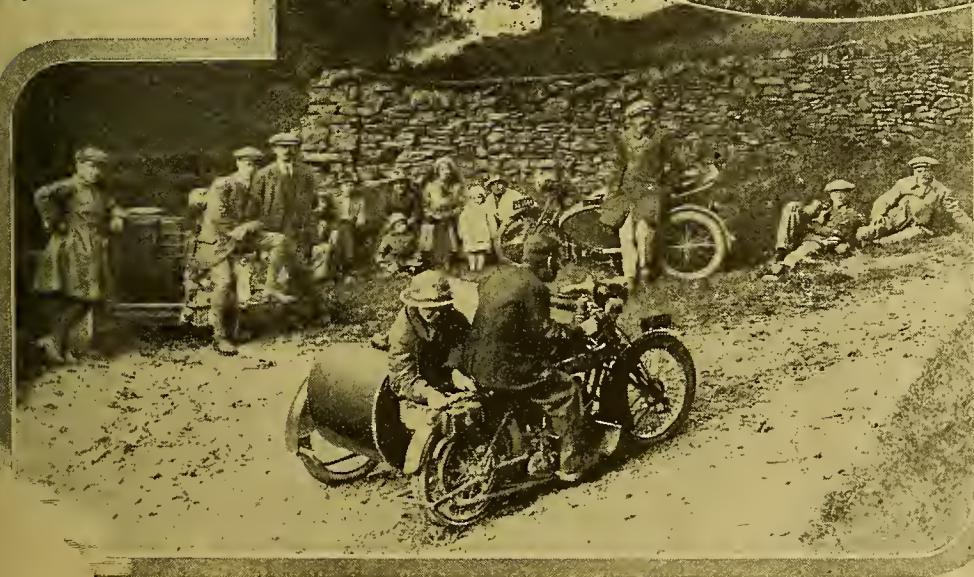




(1) W. W. Weldon on his 4 h.p. twin Campion sidecar. Observe the rough surface.

(2) A W.D. model Triumph on a stretch of 1-4 gradient near Birchover.

(3) Interested spectators of a single-cylinder sidecar which made a good climb.



G.W.K., came to a standstill—not because of lack of engine power, but because grease got on to the friction discs. The Triumph solo mount went up with plenty of power in hand, but a Harley-Davidson sidecar was evidently overgeared or out of tune, for it was reported stopped quite early.

All these hills were more than sufficient to keep the participants busy, but none would be fit for a reliability trial when those happy days return. Getting down two of the hills was a far worse ordeal than climbing them.

The lessons of the day were that gradient alone cannot stop the modern three-speed motor bicycle. Where it is possible for the tyre to obtain a grip at all, and also, incidentally, for the

rider to retain his seat in the saddle, the present-day motor cycle may be relied upon to succeed every time. Another point demonstrated was the uselessness of a foot-operated clutch on rough surfaces. Boulders constantly threw machines out of their path, and only by the rider steadying himself with his foot and easing the hand-controlled clutch could the ascent be continued successfully.





### Magneto Details.

British magnetos are certainly making good, and on the whole I have had a very good time with those that come my way. As one might expect, the smallest details are those which cause trouble. The condensers have been an occasional source of worry, from all one hears; the rocker arms are still apt to stick up, and we have yet to manufacture unbreakable high-tension brushes. In all points our baby industry seems to have caught up the long start which we foolishly allowed Herr Bosch to snatch; and I have good hopes that, when the war is over, we shall see a British magneto with a rocker arm which *cannot* stick up—an innovation which will save practised riders much annoyance, and protect tyros from straining their hearts and bursting the ganglion which controls the swear nerve.

### Paraffin the Culprit?

There are not many motor cyclists left in England nowadays, and I was the more astonished to find several smashed engines decorating the repair bench of quite a small provincial garage last week. The manager and their several owners all ascribed the smashes to heavy fuels, and I was rather surprised to hear that a large proportion of the broken pistons, etc., had been sustained in starting up. In some cases starting had been eased by heavy priming with petrol, in others by filling the carburetter. The explanation appears to be that imperfectly burnt fuel leaves residues which wash away the oil from between the piston and cylinder in particular, exerting a similar but weaker effect on bearing surfaces lower down in the engine. Heavy priming emphasises the trouble, and when an explosion occurs things begin to happen. The special danger at starting is due to the fact that the congealed oil in the crank case is not flung up on the cylinder walls, as the flywheel is moving slowly; and the oil is too cold to spray up into a mist. It is certain that many owners are eking out their petrol ration with heavy fuel, without supplying the extra heat and special mechanical vaporisers essential to adequate combustion of these sluggish oils, and without increasing their lubrication. Complete advice on the subject has appeared in these columns.

### Overheated Plugs.

Messrs. J. A. Prestwich remind me, anent the above topic, of some sparking plug tests which they carried out in 1915 (see *The Motor Cycle* for March 18th in that year). Seven plugs were tested on an 8 h.p. J.A.P. engine, running on the bench, coupled to a Froude dynamometer. Six of them evinced loss of power almost as soon as the engine reached the test speed of 2,000 r.p.m. (a speed often exceeded by modern engines), and the firing became bad enough to cause absolute stoppage in periods varying from twenty seconds to 5½ minutes. The most peculiar running was obtained with a "pepper-box" type of

plug, the sparking points being enclosed in a perforated cap; this missed an explosion or two, cooled down a trifle in the process, and then restarted firing. A plug with an externally adjustable gap produced no increase of efficiency. Finally, a plug with soundly designed cooling showed itself equal to ten minutes of heavy load at 2,000 r.p.m. Messrs. Prestwich support my contention that inferior plugs often cause knocking, overheating, and seizure on air-cooled engines, and they consider that a short-reach plug with substantial electrodes and good conductivity is essential.

### Twin-cylinder Inlet Pipes.

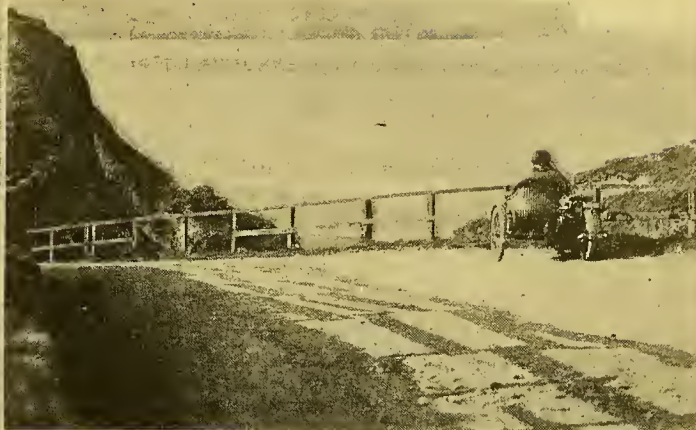
It is questionable whether the inlet pipe of the average twin-cylinder is yet as perfect as it should be. When the pipe is dismantled for decarbonisation purposes, it is often necessary to swathe the joints in insulating tape to eliminate air leaks, and fastidious riders dislike this untidy practice. In car practice, flat flange joints are bolted up against a lead washer, but on motor cycles this method is not common, partly because a carburetter so mounted is apt to project across the off side foot support, partly because the bolts can hardly be big enough to accept heavy spanner work. Nevertheless, it is clear that the average circular flange with an enveloping nut is not easy to register, and very apt to leak. Has anybody got a special word of praise for any maker's dodges in this respect?

### Maltreating an A.B.C.

Mr. Granville Bradshaw, the designer of the A.B.C., when he delivered my machine, defied me to make it konk by any means except under-lubrication. Last week I found myself in a district where narrow, steep lanes abounded, and the conditions seemed ideal for trying for that elusive konk. I had to pay about eight visits, entailing a total run of sixteen miles over routes including plenty of single figure gradients, and as I had only to stop a minute at each house the test seemed promising. I traversed the entire distance on the second gear of 9½ to 1; I took it as fast as possible, the speedometer frequently recording just over 40 m.p.h. uphill; and I kept the engine running downhill as well as up. At the finish of the test I had not elicited a single konk, and though I could not hold my hand on the cylinders, I could put it there without withdrawing it too hurriedly. Immediately after the run I took the machine out on a deserted stretch of road, and it promptly ran up to its maximum pace of 65 m.p.h. for a mile, after which it negotiated a cornersome hill on third gear (5½ to 1) without konking. This looks as if there was something in steel cylinders and overhead exhaust valves, eh? At any rate, I have never owned a machine which would not grumble under such maltreatment. It would be interesting to know if Capt. Lindsay's T.T. Norton would perform such a test.



# Along the Yorkshire Coast



THE FOLLOWING NOTES OF A RUN ALONG THE YORKSHIRE COAST, UNDERTAKEN PRIOR TO THE OUTBREAK OF THE WAR, WILL BE READ WITH INTEREST BY MANY, PARTICULARLY MOTOR CYCLISTS, BY REASON OF THE FACT THAT SOME OF THE PLACES REFERRED TO ARE FOR MILITARY REASONS AT PRESENT INACCESSIBLE TO THE ORDINARY TOURIST.

FOR quite a long time it had been my ambition to cover the whole of the Yorkshire coast line, from Selby as a starting point, and to include the lower reaches of the River Ouse and Humber.

An opportunity presented itself last autumn, so early one bright crisp morning I picked up my passenger "Billy," and we set off in good spirits, soon covering the short distance necessary before reaching Selby, where I filled the tanks while B. had a look round the fine old abbey.

We left Selby by the York Road, and crossed over the Ouse by means of a disgraceful old wooden structure called the Toll Bridge. Fancy, in this enlightened age, having to pay a toll of  $3\frac{1}{2}$ d. for a motor cycle and sidecar to cross a bridge on the main London-York road. This is undoubtedly one of the objects to which the proper authorities might attend.

Once safely over the bridge, there is a good example of how this little town is developing, for on our right we noticed a number of large new manufacturing works producing soap and tar. We soon left these behind, and entered the village of Barlby, where we turned right for Hull. With an exception mentioned later no one can very well go wrong, as the signposts are good and numerous.

At Hemingborough we pulled up and spent a little time visiting the curious old church, the spire of which can be seen for miles around. About a couple of miles further on we noticed the ruins of Wressle Castle away

on our left, and then we had to pay another  $3\frac{1}{2}$ d. to cross the River Derwent by means of a dilapidated wooden structure named "The Loftsholme Bridge." By the way, motor cycles ridden solo have to pay 3d. toll both here and at Selby.

## Some Quaint Inscriptions.

At this bridge we deviated from the main route and we took the first turn to the left to visit Wressle Castle, which was of importance during the Civil Wars. The ancient building, however, is woefully unpicturesque and of sombre aspect. Disappointed, we retraced our tracks to our proper route at the place where we left it. A short spin brought us into Howden, where we spent a very enjoyable half-hour rambling round the Parish Church and ruins of the old St. Cuthbert's

Church, which possess some fine architectural features. There are numerous buildings of note at Howden, but these we left for another visit, and leaving the nasty cobbly streets, took a turn to the right half a mile out of the town, making for North Cave, which, like most villages in this district, owns an ancient church of more or less interest. This particular edifice is of Old English origin, and on the floor can be seen the following inscription:

"My Father, a North Briton;  
My mother, Rutlandshire;  
From Dublin I, their son,  
Hugh Montgomery, Esq.,  
When my race is run  
Shall rest me in this choir  
In hope, as he begun,  
God will raise me higher."



The A.J.S. sidecar by the old mounting stone outside Hemingborough Church.



### Along the Yorkshire Coast.—

At the top end of the village we turned right, ignored the first left turn, where a signpost points to Hull—which is the direct road, but not a very good one—and went straight forward to South Cave, a pretty place where the ancestors of the famous George Washington once resided. The village of Elloughton was next visited, and just after leaving this place a fine house called Thorpe Hall can be seen to the left. Welton is soon reached, and proves to be a very pleasing spot, especially considering that up to South Cave the roads are extremely flat and the scenery uninteresting. In the churchyard a baby was once found, and was christened Jeremiah Found. In the course of his life he was married no fewer than eight times before being laid to rest. On his tombstone is the following epitaph:

"Here lies Jeremiah Found, who has eight times married been;  
But now old age has caught him in its cage,  
And he lies under the grass so green."

From Welton we went to Melton, where William de Melton, Archbishop of York, 1317-1340, was born, and then through North Ferriby to Hessle, a suburb of Hull, and by following the tramlines, which begin shortly after leaving Hessle, we arrived in the centre of Hull, near the Wilberforce monument.

I believe it was Edward I. who first really commenced the development of Hull. When on a visit to this district he noticed that the two villages Wike and Myton, which stood where the River Hull joins the Humber, would form a fortified port. He christened these villages Kings-Town-on-Hull. Improvements were started, which eventually converted the place into a large city noted as a port, rather than for its ancient history, for which it might well claim a title to fame.

We had a look round some of the docks, and after lunch restarted on our journey, following a tramcar marked Route M, which brought us to the Hedon Road. This road is practically dead straight for five

miles. We had not gone far before a heavy rain-storm commenced, and after sheltering under a bridge for nearly an hour, we returned to Hull, where we put up for the night. Next morning turned out fine, but



The farmyard through which runs the old toll road from Withernsea to Roos.

dull, so off we set along the Hedon Road again, the surface of which was in an awful condition. We passed through the more or less interesting villages between Hedon and Skeffling, this latter village being the native place of the brothers Wright, who, together with Guy Fawkes, were executed for participation in the Gunpowder Plot. At Easington we had a look at the church and the old tithe barn, which latter is said to be the finest in England.

### Shipwrecks and Disappearing Churches.

From Easington a bad road took us to Kilnsea, where the church disappeared beneath the sea a hundred years ago. It is really the first village on the coast proper, and from this desolate spot it is only a short distance to Spurn Point. We did not take the machine to the Head, as we had no wish to get stuck in the mud and sand, so returned to Easington.

On we went through Out Newton, a little place noted for its shipwrecks, and the highest cliffs between Spurn and Flamborough, shortly arriving at Withernsea, a quiet little seaside resort. Here we had a run on the short promenade, after which we made for the village of Roos by the most direct road, which for a short stretch was in a truly fearful condition. This road continues through a farmyard, until it nearly topples over into the sea—shortly I expect to hear that, like Withernsea's old church, it has disappeared. At the present time it furnishes a good example of coast erosion, which is going on at a rapid rate in this part of Yorkshire. The toll which used to be exacted is now abolished. I understand that a new road will shortly be constructed.

Arriving at Roos, we simply followed the telegraph poles into Hornsea, passing on our way through the village of Aldbrough, where there is a rebuilt Saxon



The writer's sidecar at Loftsholme Bridge.



**Along the Yorkshire Coast.—**

church containing some fine monuments, one in particular being to Sir John de Meaux. High up above the arch of the transept is the Stone of Ulfus.

Going forward and passing through Mappleton, we soon reached Hornsea, where we caught a glimpse of the "Mere," a fine expanse of natural water, said to be the only remaining one of a number which formerly graced this district.

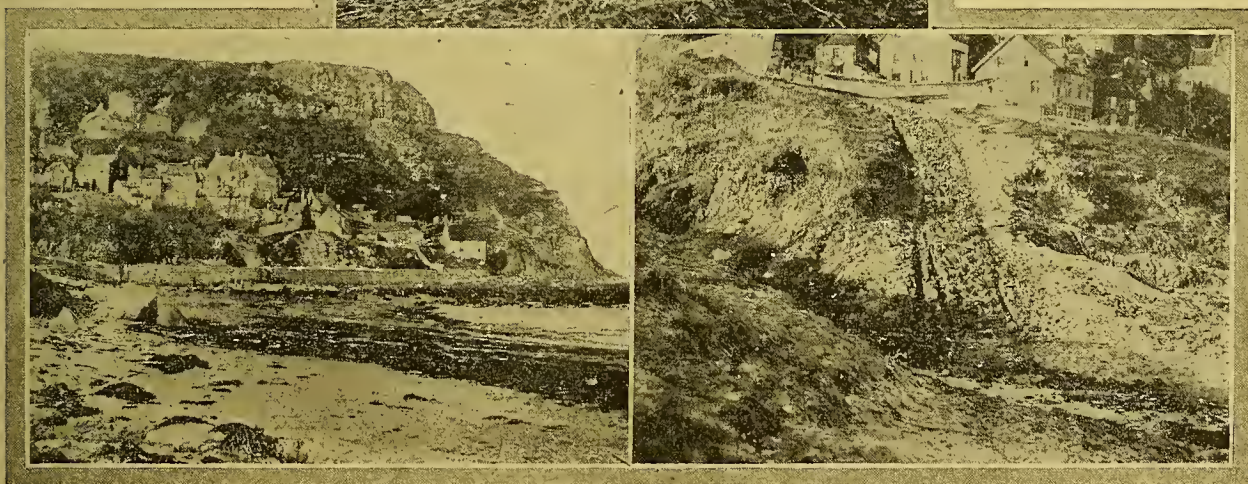
We took lunch at Hornsea and then endeavoured to ride on the sands for a little way, but were soon stuck deep and fast. Our united efforts were necessary to push the machine back to land; we then decided to make for Bridlington, passing through Atwick and Skipsea. On leaving this place a large grass mound can be seen, where Droge de Bruce, the first Lord of Holderness, had his castle. Two and a half miles onwards, we came to a signpost which read "To Bridlington Quay," and, by turning right and passing over the railway bridge, we soon arrived at the harbour.



yards from the road. We made all possible speed and simply flew past this objectionable sight, but obtained a bigger waft of its ozone than was altogether pleasant.

On we went through the village of Reighton, and at the same time caught a grand view of Filey Bay. Entering Filey, we crossed over the railway and straight forward until we noticed a stony hill leading to the sea. Here we turned right, then first left, along the crescent and down a very tricky and dangerous hill to the promenade. From here can be seen the Brigg, a rocky promontory jutting about half a mile into the sea, which forms the north point of the bay, and away in the distance to the south Flamborough Head is visible.

Passing the promenade, we arrived at the boat slipway, and not relishing the odd half-mile ride on the sands in order to reach the foot of the Brigg, we turned up a lovely wooded ravine, at the top of which we turned to the right and made for Scarborough. We were humming away up a long incline when we



(1) A view of the old toll road from Withernsea to Roos. The illustration gives a good idea of how the sea is encroaching on this part of the coast.

(2) General view of Runswick Bay.

(3) The only road out of Runswick Bay.

I suppose Bridlington is so well-known that it is not necessary for me to dwell on its beauties, but one must not forget that it has an old history and contains a very fine priory church and ancient gatehouse known as the Bayle Gate, both of which should be visited. Flamborough Head is near by with its beautiful cliffs and caves, its lighthouse, and fishing. The cliffs all about this point are, at certain parts of the year, the Mecca for bird egg collectors, and it is an interesting sight to see the climbers descending the cliffs in search of eggs, some of which command a very fair price. It is, perhaps, advisable to return to Bridlington and take the direct road to Filey, and this we did, and were very much disgusted to find that a refuse destructor had been recently constructed within a few

glanced down to our right and saw a splendid panorama opening out to view, so we called a halt, and from some hundreds of feet above looked down into the beautiful little Cayton Bay. Leaving this pleasing spot, we continued to the top of the hill, where we saw Scarborough in front of us, and by going straight on we soon arrived at the valley toll bridge. At this point it is advisable—unless one wishes to stop the night at Scarborough, as we did—to bear to the right and drop down to the foreshore *via* the Aquarium, then continue to the harbour and the old town and run round the Marine Drive (toll 2d.).

Scarborough I will make no attempt to describe, its natural beauty and cleanliness are too well-known.



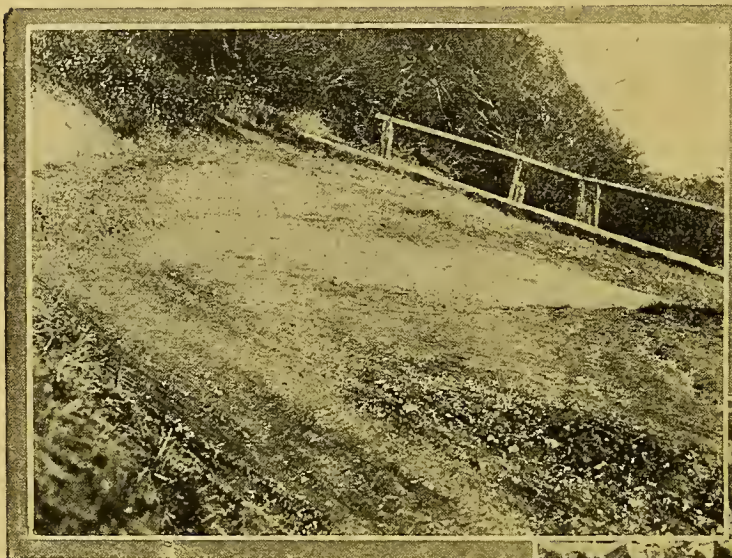
### Along the Yorkshire Coast.—

Sufficient to say that I heartily endorse all claims put forward for the town by the advertisements. On the morrow we were up early and soon away through the village of Cloughton, where two routes offer themselves to Whitby. One of them runs to Robin Hood's Bay, near Ravenscar, but as this necessitates going down an awfully precipitous hill called Stoupe Brow and a couple of miles ride on the sands, we decided to take the alternative route *via* the moor road, which was in excellent condition.

Later in the day we took the road marked by the second signpost, and went down into Robin Hood's

half a mile out of Ellerby we took the turn to the right and made for Runswick Bay, which, in my humble opinion, is without doubt the prettiest and most picturesque village on the Yorkshire coast, and one which, seeing that it lies only a very short distance from the main road, should on no account be missed, but before dropping down into the bay it is advisable to read the notice on a signpost, "No road for motor cars." The wise will leave their machines at the hotel which stands near by and walk down the hill which leads to the sea. The gradient of the hill is not excessively severe, but the surface is bad, in two places excruciatingly so; a bad left-hand bend has also to be negotiated.

Back we went to the main road once more, and found a nasty stiff hill to drop down, which was somewhat greasy. Nearly at the bottom we had to take a very sharp right turn, pass over a narrow bridge and climb up the other side of the valley before we arrived at Easington. After leaving Loftus, for a few miles the whole aspect of the country seemed to change. Huge chimneys belched forth smoke and flame, but after climbing one or two stiff hills we left this ironstone region behind, and, bearing to the right at the end of Brotton, we dropped down to the sea once more.

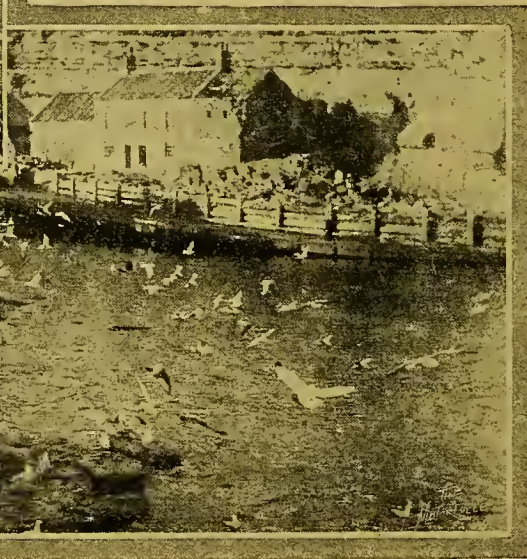


The bad hairpin corner on the hill out of Runswick Bay.

Bay, which old-fashioned picturesque fishing village is well worth a visit. In order to get out of the higher reaches of the village on to the sea shore it is necessary to go down a very bad hill, and tourists with low-powered machines will be well advised to survey this hill before attempting it. We climbed out of this pretty spot, and soon joined the main road to Whitby. We entered the town by a narrow street, crossed the harbour by means of the little bridge, and ran by the side of the harbour. On the cliffs to our right a splendid view of the abbey, built in 857, is obtained, and the old church which stands close by. Both can be examined more closely by taking a walk and climbing no fewer than 199 steps. Whitby contains much of historical interest, and the town is a good centre for a number of pretty and very interesting short runs.

Afterwards we took the tortuous road to Sandsend, and had to pay a 2d. toll for doing so. Sandsend itself seems a quiet little spot, and is chiefly noted to local motorists for being the venue of Lythe Bank, a stiff and long incline which we had to negotiate in order to reach Lythe village, near which is Musgrave Castle, one of the most picturesque spots.

By following the telegraph poles no one can go wrong if he wishes to make straight for Saltburn; but



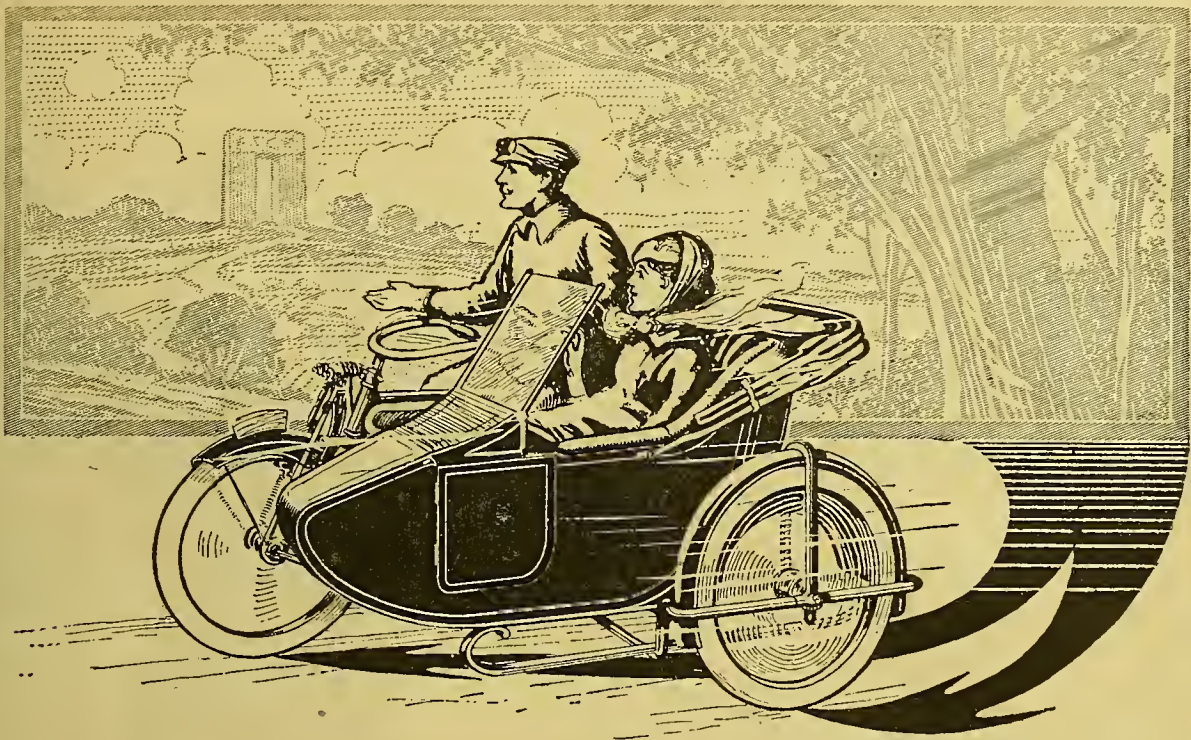
The seagulls at Staithes.

By climbing a very stiff little hill we arrived in Saltburn, where on the beach motor races used to be held between there and Redcar. The dusk was gathering quickly when we left the front to put up for the night. The run from Selby to Bridlington was somewhat uninteresting, except for its historical associations, but we were delighted with the remainder of the trip, and fully determined at a future date to take again the run from Bridlington to Redcar.

The total distance of the trip is not excessive, being only about 180 miles, but time flies quickly, and a full week-end is necessary if one wishes to visit all the places I have mentioned, which by no means exhaust the interesting spots *en route*.

H.W.F.





**Q** The one economical factor left in motor-  
ing to-day—the one cheerful feature  
of the motor cyclist's landscape—is Avon  
Endurance. In war, as in peace, Avons  
fight the battle of the road with the  
single aim to “get you there” at least  
trouble and lowest cost.

**Q** Same prices as before the War—same  
fine range of weights to select from.

# AVON

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Full illustrated Catalogue free from—

**Avon India Rubber Co., Ltd., 19, Newman Street, Oxford Street, London, W.**

Depots—Manchester. Birmingham. Glasgow. Bristol. Newcastle. Nottingham. Aberdeen. Swansea. Paris.  
1,000 Agents hold stocks. Ample supplies available.

*In answering this advertisement it is desirable to mention “The Motor Cycle.”*



The Dunlop Rubber Co., Ltd.,  
Birmingham,  
England.

Nairobi House,  
Sixth Avenue,  
Nairobi, B.E.A.

Dear Sirs,

*In the interests of motor cyclists generally, I think the following remarkable instance of the durability of your belts should be made known.*

*On my 4½ "B.S.A." Sidecar combination a 1-in. Dunlop belt has done 2,000 miles in six months over rotten roads in mountain country without needing to be tightened, and its ends are perfect, and the fastener is as if it were inserted to-day.*

*The astonishing thing to me is that the tension of the belt is precisely the same as it was when the belt was fitted, and I am not able to insert a shorter link in the fastener.*

*The performance is the more remarkable when you remember the disintegrating effect the equatorial sunlight has on ordinary rubber.*

*With compliments,*

*I am, dear Sirs,*

*Yours faithfully,*

(Signed) A. H. Spencer-Palmer.

**DUNLOP:** Well, the belt must have given very exceptional service to cause a man in Mr. Palmer's position to take the trouble to write us all the way from Nairobi about it.

**DUNLOP RUBBER CO., LD.,**

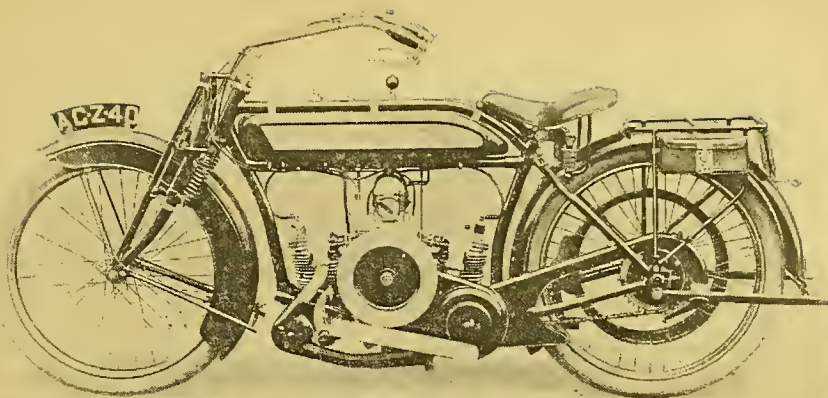
Founders of the Pneumatic Tyre Industry,  
PARA MILLS, ASTON CROSS, BIRMINGHAM.  
OF ALL CYCLE AND MOTOR CYCLE AGENTS.





## ANOTHER HORIZONTAL TWIN.

The Humber Co.'s entirely new 3½ h.p. air-cooled "flat" twin of 497 c.c., with three-speed countershaft gear and chain transmission.



Flywheel side of the new Humber flat twin-cylinder model.

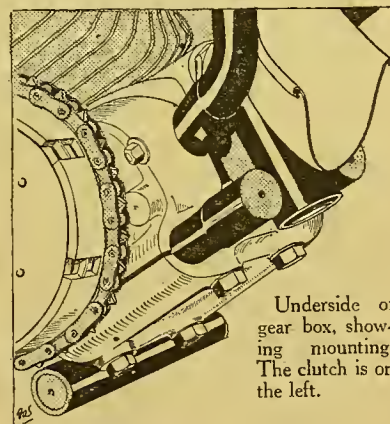
It is a significant fact that since our articles of three weeks ago suggesting that all indications of motor cycle design pointed to the future pre-eminence of the twin-cylinder motor bicycle, we have been able to describe a new horizontal twin-cylinder opposed motor bicycle, viz., the Indian (see our last issue, pages 290-292), whilst this week we are privileged to bring before our readers still another machine with an engine of the same increasingly popular type. This latter mount is the 3½ h.p. twin-cylinder Humber, which some of our readers may have seen on the road at different times during the last eighteen months or so, during which period it has been subjected to a most thorough and searching test. Last week we examined this machine in detail, being introduced to its many attractive features by our old friend, J. F. Crundall, whose name was better known

in motor cycle circles twelve years ago than it is to-day. Crundall, as well as Sam Wright, both racing motor cyclists of old, have been largely responsible for the road testing of the machine, and were enthusiastic in their praises of this new mount.

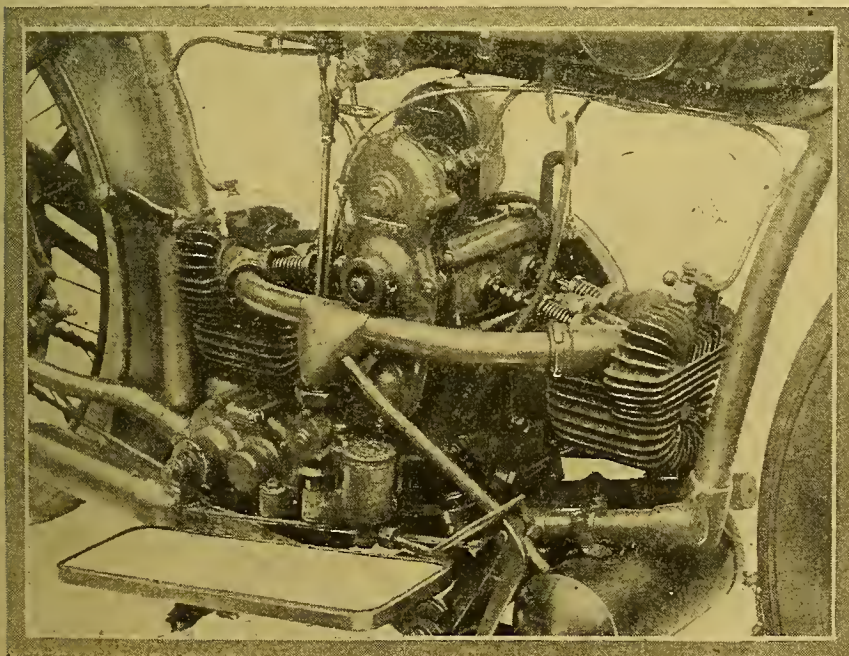
### Mechanical Details.

From a short initial experience enjoyed subsequently, we are decidedly of the opinion that it is the finest mount the Humber Co. has yet produced. The flat twin is by no means new to this company, for goodly numbers of its 6 h.p. water-cooled model are to be seen on the road, and from all accounts are giving every satisfaction to their owners. The latest production is practically a reduced facsimile of the "six," and incorporates many of the original features embodied in the latter's design. The crankshaft is a very sturdy piece

of work of nickel steel, having bearings of exceptional size, which spell long wear, and is of the two-throw type set at 180°. In order to obtain a direct thrust on the connecting rod, thus obviating bending stress, the cylinders are staggered, as will be gathered from one of the accompanying illustrations. The bore and stroke of each cylinder are 68×68.75 mm., giving 497 c.c. A case-hardened steel camshaft formed in one with the cams is placed directly over the crank, and driven by a train of gears. Adjustable tappets with nuts of commendable dimensions are used—



Underside of gear box, showing mounting. The clutch is on the left.

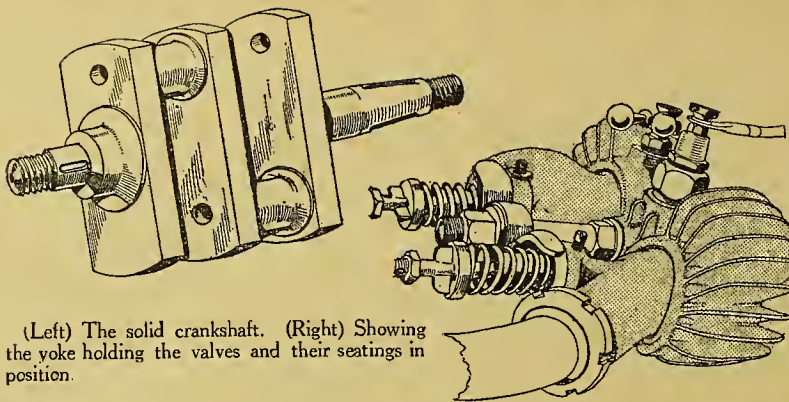


Points to be noted in this view are the staggered cylinders, the pipe conveying hot air from the silencer to a jacket surrounding part of the induction pipe, the place for the starting handle above the induction pipe, and the clutch pedal at the forward end of footboard.

indeed, a feature of the new Humber is the substantial nature of the working parts. The valves are set, slightly inclined, above the cylinders, an arrangement which is essentially practical, inasmuch as it ensures perfect accessibility to these important parts.

A point which will commend itself to those of experience is the absence of valve caps, which are apt to harbour heat in a region where heat is detrimental. The cylinder, which, by the way, has numerous finely cast fins arranged horizontally, is in one piece, and the valves are removed by the Humber patented device, which allows the respective ports complete with their valves to be removed from the cylinder after a yoke securing each pair of valves has been detached. It will be gathered that the condition of the valve seating can thus be examined





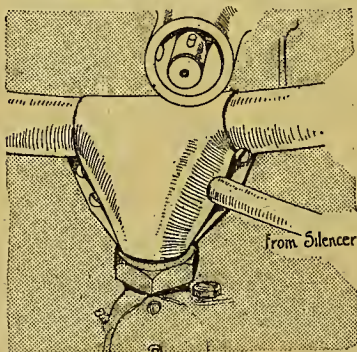
(Left) The solid crankshaft. (Right) Showing the yoke holding the valves and their seatings in position.

with the greatest ease. The connecting rod is of car pattern, with an adjustable big end bearing lined with white metal, the small end having a plain phosphor-bronze bush. The pistons are of the orthodox type, with two rings situated at the top, which is flat.

The C.A.V. magneto is neatly mounted on the crank case and driven from the valve timing gear. Handle-starting is preferred, the dogs of the starting handle engaging with the camshaft, thus enabling two turns to be given to the engine by one turn of the handle. Duplicate tubes connecting the front down tube and seat tube form an excellent cradle for mounting the engine. This same cradle also acts as the support for the three-speed gear box, which is placed directly under the rear cylinder.

#### The Cylinders Quickly Detachable.

It is always a difficult matter to dispose a horizontal engine of large pattern neatly in its frame; but the Humber designers have found an excellent solution of their task, and have, moreover, overcome the objection to many flat twins, viz., the impossibility of removing the cylinders in order to decarbonise without disturbing the crank case.



Hot air jacket for induction pipe immediately above carburettor. Above is the jaw clutch for the starting handle.

Noticing the close proximity of the frame tubes to the cylinder heads, we raised this point, and at once two mechanics were requisitioned to remove the cylinder of any machine we selected while we held the watch. We preferred the rear cylinder of a machine standing in the shops, and whilst one man removed the exhaust nut and a pair of holding-down nuts on his side, the other

mechanic unscrewed the inlet flange and his pair of nuts, and, despite a minute wasted in the attempt to remove the cylinder with the piston close to the crank case, the whole operation occupied only three minutes. It was found that the cylinder would not come away until the piston had been moved to its outward position, so enabling it to be tilted. This is a tip worth remembering.

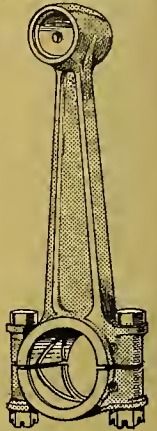
The carburettor used is a Longuemare-Hardy automatic, operated by a single lever from the right handle-bar. We proved later by road test that this carburettor provided the utmost controllability, and the by-pass arrangement permitted the engine to tick over so slowly that the explosions could almost be counted when the throttle lever was closed. The induction pipe is heated by means of a pipe from the silencer communicating with a jacket formed around the "T" piece. The silencing arrangements are particularly good, an expansion chamber of large size being placed under the front cylinder and a

pipe terminating in a further expansion chamber passing towards the rear of the machine.

#### Gear Box of Proved Merit.

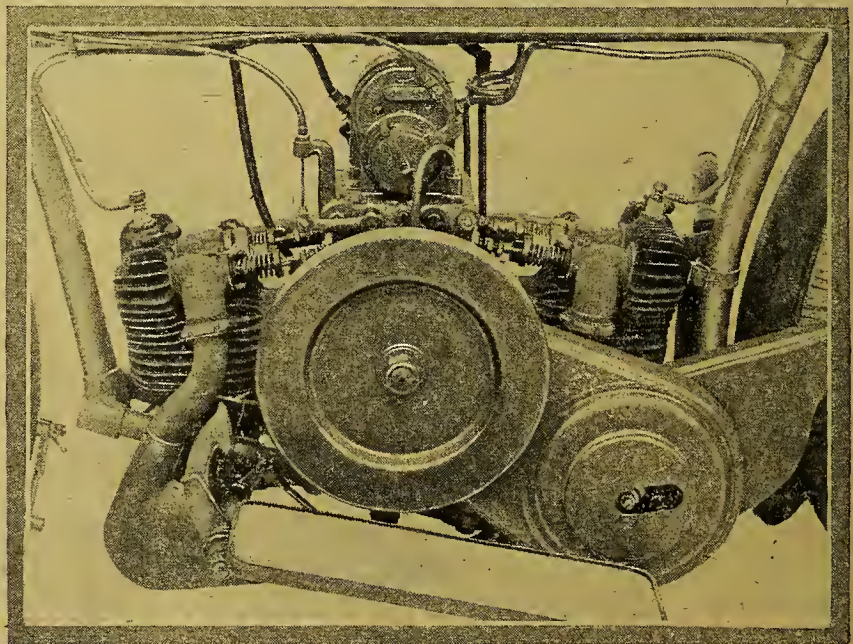
The change speed gear, as we have already mentioned, gives three changes of speed, the actual ratios being 4.75, 7.88, and 13.15 to 1. The design of the box is precisely the same as on the 6 h.p. model, a single sliding

wheel (on both sides of which dog clutches are formed) effecting the various changes. The shafts are mounted on ball bearings. Six gripping surfaces are provided in the clutch, there being three plates of Ferodo, and interposed between them are two loose steel plates and two fixed end plates. The gate change speed control mechanism is attached to a lug integral with the tank tube, and a free engine position is provided between each speed. The clutch is operated by a pedal at the forward end of the right footboard (by the way, we would very much like to see the control of the clutch duplicated), and it is actuated by a plunger running through the main shaft. Ready adjustment of this plunger is provided, an opening in the chain casing having been left for the purpose of giving a slotted screw a turn as necessary. Further, the clutch itself may be adjusted quite simply and readily by giving a turn to the four nuts arranged equidistantly around the



A connecting rod of the Humber flat twin, showing adjustable big end bearing.

control of the clutch duplicated), and it is actuated by a plunger running through the main shaft. Ready adjustment of this plunger is provided, an opening in the chain casing having been left for the purpose of giving a slotted screw a turn as necessary. Further, the clutch itself may be adjusted quite simply and readily by giving a turn to the four nuts arranged equidistantly around the



Flywheel side of the new 3 1/2 h.p. horizontal twin Humber engine, which has its valves arranged above the cylinders. The hole in the transmission casing is for the plunger rod and clutch adjustment. The pedal operates the rear brake.

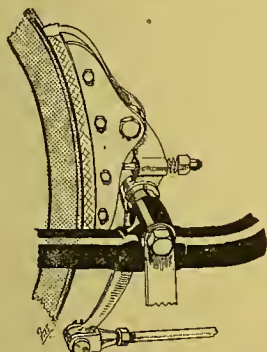


## Another Horizontal Twin.—

central screw. In order further to absorb any transmission jerkiness a shock absorber of efficient design is incorporated in the back wheel. The drive is against the pressure of a series of four steel springs, rubber pads further assisting to damp out the shocks. We tested the amount of "give" in this device on a wheel selected at random from a batch going through the workshops, and found that over  $\frac{1}{2}$  in. movement was possible.

## The Bicycle Fittings.

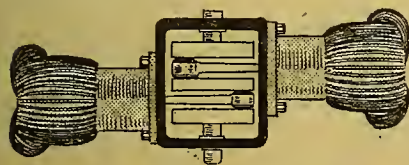
A dummy belt rim is fitted to the back wheel, and inside the V groove a fibre pad  $\frac{1}{16}$  in. in length provides ample retarding effect, and there is a rim brake operating on the front wheel. An excellent feature of the back brake is its equalising action. It is operated by a pedal at the forward end of the left foot-board.



The Humber back brake mechanism has an equalising action.

As regards the bicycle portions of the machine, there is no real departure to chronicle, but the machine nevertheless represents the soundest practice. For instance, the front guard has valances on each side extending the whole length of the guard, and a front wheel stand is provided. The rear portion of the back guard is arranged to fold upwards to facilitate tyre repairs when the puncture fiend scores a success.

After our thorough examination of the machine the engine was started by a



Diagrammatic sketch showing staggered cylinders, so arranged to enable the connecting rods to exert a direct thrust on the crankshaft.

couple of turns of the handle, and speeded up on the stand. There was a noticeable absence of vibration in the handle-bars. The engine, too, showed no sign of choking when the throttle was suddenly brought from half open to fully closed in order to bring the pilot jet into action. It cannot be stated when the  $3\frac{1}{2}$  h.p. Humber twin will be offered to the public. The machine we describe is part of a batch finished in Service colour to the order of one of the Allied Governments.

## A R.A.F. HILL-CLIMB.

### A Sporting and Well-organised Event held by Aircraft Workers. (Photographs on page 316.)

ON Saturday afternoon last, the B and E departments of the Royal Aircraft Factory held a sporting hill-climb on the steep ascent leading to Newlands Corner. Altogether, there were some twenty machines competing, but as there were six classes the event took some little time to run off.

Since all the machines were owned by young and enthusiastic engineers, there were several ingenious fittings, which are well worthy of mention. There was the  $2\frac{3}{4}$  h.p. Douglas owned by our old friend and colleague Sec. Lt. H. D. Teage, R.F.C. (T.), which had the valve stems neatly enclosed by tubular protectors, but not so neatly as those on Folland's Enfield, of which the workmanship showed no small amount of skill. Davey's Norton, one of the fastest of the competing motor bicycles, was fitted with an auxiliary oil tank behind the saddle tube, and provided with a pressure pump which delivered the lubricant through a sight feed fixed to the side of the main tank. We also noticed a Triumph and a Bradbury, both ingeniously fitted with well-made hot air jackets to their inlet pipes, kept warm by the exhaust gases.

## The Course.

The hill on the north side of Newlands Corner has an excellent surface, and on Saturday it was quite dustless. It begins with a steep pitch of 1 in 12 or thereabouts, which eases down to about 1 in 15. Competitors were timed over a course about half a mile in length. The weather was fine, though there was a high south-westerly wind, which blew across the road, and the rain held off. The event, which was timed to begin at 2 p.m., was rather late in starting, but once started it was well run off and well organised.

The competitors, all novices as regards competitions, rode well on the whole, but many changed up too soon.

## The Results.

In CLASS I., FOR MOTOR BICYCLES WITH ENGINES NOT EXCEEDING 350 c.c., there was no incident save the failure of one competitor and the effort of the rider of the smallest machine entered to change into top gear on the steepest part of the hill.

	Weight, m/c. & rider.	Fig. of merit.
S. J. Garratt (2½ Triumph)	225 294 74	4190
H. Elvidge (2½ Imperial)	292 273 63½	4350
R. Page (2½ O.K.)	180 280 87½	4390

In CLASS II., FOR MACHINES WITH ENGINES NOT EXCEEDING 500 c.c., there was, of course, greater speed, and it was of more interest to watch. English made a good performance, though he rode with his stand trailing on the road.

P. Davey (3½ Norton)	490 329 41½	2590
J. English (2½ Douglas)	347 280 51½	3320
D. Turner (3½ Rover)	499 322 47	3420

CLASS III. WAS FOR MACHINES WITH ENGINES NOT EXCEEDING 750 c.c. There was nothing to record as regards the performances in this class except to point out that the Norton passed us travelling at a good speed.

T. P. Mears (5 Ivy)	670 414 35½	2050
F. G. Kennard (4 Bradbury)	554 305.5 38½	2360
J. English (2½ Douglas)	347 280 47½	2920

CLASS IV., FOR MACHINES WITH ENGINES NOT EXCEEDING 1,000 c.c. In this class and also in Class III. Mears's Ivy, though travelling well, wobbled badly. His progress near the finish was somewhat

impeded by a Ford car. It will be seen that the Norton again distinguished itself.

P. Davey (3½ Norton)	490 329 41½	2600
F. G. Kennard (4 Bradbury)	554 305.5 38½	2700
D. Turner (3½ Rover)	499 322 44	3000

Unlike the previous classes, which were run on The Motor Cycle formula CLASS V. WAS DECIDED ON TIME ALONE.

T. P. Mears (5 Ivy)	670 — 35½ —
F. G. Kennard (4 Bradbury)	554 — 36 —
M. Baseden (8 Matchless)	964 — 39 —

It will be noted that Mears's Ivy made the same speed as in Class III.

The last event to be run off was CLASS VI., FOR SIDECAR MACHINES.

T. P. Mears (5 Ivy)	670 644 52½	2900
F. G. Kennard (4 Bradbury)	554 535.5 62½	4320
H. G. Clark (3½ Triumph)	490 573 76	5020

Mr. W. E. Wickham, the secretary of the meeting, deserves congratulations on its conduct, while the smartness with which he worked out the formula results earned our most sincere gratitude.

## AVERAGE PRICES.

(From "The Motor Cycle" of October 5th.)

Make.	Year.	H.P.	Average last week.	Latest average obtainable.
A.J.S.	1914	6 3-sp. sidecar	£60	£61
"	1916	2½ 3-speed	£49	£51
"	1915	6 3-sp. sidecar	—	£87
Allon	1915	2½ 2-sp. 2-stroke	—	£27
Alldays	1916	2½ 2-sp. 2-stroke	£38	—
Bat	1913	8 sidecar	—	£40
B.S.A.	1916	4½ 3-sp. sidecar	—	£64
"	1915	4½ 3-sp. sidecar	£61	£62
"	1914	4½ sidecar	£49	—
"	1913	3½ 2-speed	£30	—
Chater-Lea	1914	6 sidecar	—	£45
Calthorpe	1915	2½ 2-sp. 2-stroke	£24	£24
"	1915	2½ Jap 2-speed	£26	—
Clyno	1914	6 3-sp. sidecar	—	£50
"	1912	6 2-sp. sidecar	£31	—
Connaught	1914	2-speed 2-stroke	£24	£23
Douglas	1912	2½ 2-speed	—	£24
"	1913	2½ 2-speed	£31	£34
"	1914	2½ 2-speed	£34	—
"	1915	4 3-sp. sidecar	—	£66
"	1915	2½ 2-speed	£44	—
Enfield	1916	6 2-sp. sidecar	£76	£79
"	1915	6 2-sp. sidecar	£69	—
"	1916	2½ 2-sp. 2-stroke	£35	—
"	1915	3 2-speed	—	£39
F.N.	1912	4-cylinder	£17	—
H. Davidson	1915	7-9 3-sp. sidecar	—	£79
"	1916	7-9 3-sp. sidecar	£92	—
Henderson	1914	8-10 4-cylinder	£47	—
Humber	1913	3½ 3-sp. sidecar	—	£28
Indian	1915	7 3-sp. sidecar	—	£69
"	1916	Powerplus sidecar	£88	—
James	1914	4½ 3-sp. sidecar	—	£40
"	1916	4½ 3-sp. sidecar	—	£71
"	1915	2½ 2-stroke	£34	—
Lea-Francis	1915	twin sidecar	—	£70
Levis	1915	2-stroke	£22	—
Matchless	1914	8 2-speed	—	£49
"	1913	8 sidecar	£44	—
"	1915	8 sidecar	£76	—
New Hudson	1915	2½ 2-sp. 2-stroke	—	£27
"	1915	2½ 2-stroke	£21	—
"	1915	4 3-sp. sidecar	—	£55
New Imperial	1916	2½ 2-speed	—	£32
P. & M.	1914	3½ 2-sp. sidecar	—	£41
Premier	1914	3½ 2-sp. sidecar	—	£42
"	1912	2½	£18	—
Radco	1915	2½ 2-stroke	£24	—
Rex	1914	6 3-sp. sidecar	£45	£45
Rover	1914	3½ T.T.	—	£35
"	1914	3½ 2-sp. sidecar	—	£45
Rudge	1913	3½ multi gear	£26	—
"	1914	3½ multi gear	—	£35
"	1915	3½ multi gear sc.	—	£45
Scott	1913	3½ 2-sp. sidecar	—	£34
"	1914	3½ 2-sp. sidecar	£49	—
Sno	1915	V.T.S. 2-stroke	—	£25
Sunbeam	1914	3½ 3-sp. sidecar	—	£62
Triumph	1914	4 3-speed	£39	—
"	1914	4 sidecar	£47	—
"	1915	2½ 2-sp. 2-stroke	—	£35
Williamson	1915	8 3-sp. sidecar	—	£52
Zenith	1913	6 Gradua sidecar	—	£55
"	1915	8 Gradua sidecar	—	£60



## CURRENT CHAT

Time to  
Light Lamps

Oct. 12th	...	...	5.43 p.m.
" 14th	...	...	5.39 "
" 16th	...	...	5.35 "
" 18th	...	...	5.31 "

SPECIAL  
FEATURES

ANOTHER HORIZONTAL TWIN (illus.)  
ALONG THE YORKSHIRE COAST (illus.)  
HILL-CLIMBING COMPETITIONS.

## The "Lightwin"

Is the Hendee Manufacturing Co.'s name for their new horizontal twin-cylinder machine that was fully described in the last issue of *The Motor Cycle*.

## The 6 Cwt. Light Car.

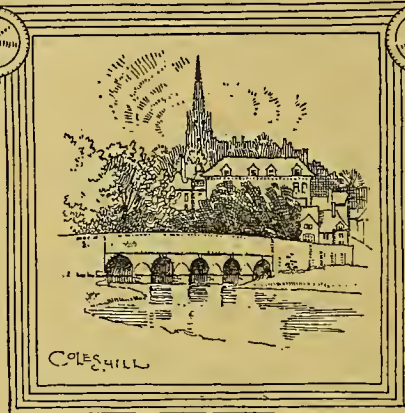
Motor cyclists interested in small, light four-wheelers should read the description of the Jackson twin-cylinder two-stroke light car in yesterday's (Wednesday) issue of *The Light Car*. The illustrations show the great simplicity of the design, and its weight (6 cwt.) is no more than some of the more powerful sidecars.

## Some Shell Charges.

As from January 1st, 1917, Shell motor spirit and other Shell petroleum products will be handled in this country by the Shell Marketing Co., Ltd., which has been established, and which will be controlled, by Shell Royal Dutch interests. The British Petroleum Co.'s contract as distributing agents for Shell spirit lapses with the year 1916.

## Adulterated Petrol.

A reader states, on the authority of a doctor of science, that the method of testing petrol to ascertain the presence of paraffin, suggested by a correspondent a fortnight ago, is quite useless, for the only meniscus or dividing line will be between the nitric acid and the mixture, which latter will not be separated into its component parts of petrol and paraffin.



## Discrimination in Petrol Allowance.

We are informed by a commercial traveller that special treatment is now being accorded to those who use their machines for professional purposes. In some cases as much as ten gallons per month is being allowed. Our correspondent is receiving six gallons for October. We should advise other riders similarly situated to write for a supplementary licence.

## A Passenger for the Sidecar.

A Birmingham reader, who uses a sidecar outfit every day in his business, his mileage averaging about 250 miles per week, has throughout the summer adopted an excellent plan that might be followed by others for giving trips to convalescent soldiers. On business trips he had previously travelled alone, but now he seldom starts out on a day or half day's run without calling for a soldier from a neighbouring hospital. This plan has proved very successful, and has been greatly appreciated by the men, and also the commandant of the hospital.

## The Second-hand Show.

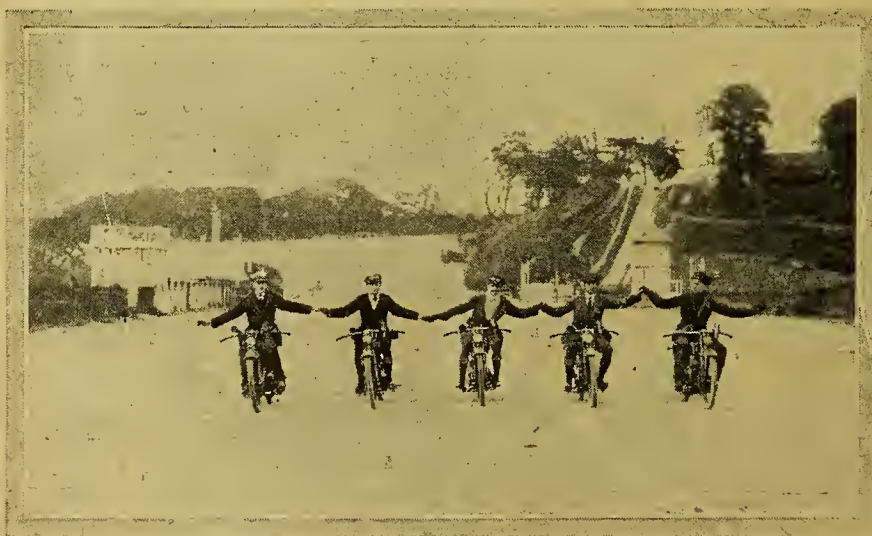
The promoters of the show of second-hand cars and motor cycles to be held at the Royal Agricultural Hall, from November 10th to 18th next, tell us that the bulk of the exhibits in the cycle section will be owned by men about to join the army.

## A Philipson Pulley Development.

Our last instalment of patent abridgments included a new edition of the Philipson pulley. The publication of this has resulted in a great deal of correspondence for the makers, Philipson and Co., of Bolton, and they ask us to point out that this particular design is only suitable for cycle cars.

## An Uncommon Record.

Two American riders recently made what might be termed a record hill-climb, or altitude record. The performance was the scaling of Mount Hood to a height of 9,000 feet, the machines travelling the entire distance by their own power. Leaving the camp at the base, they began their climb with the crust of snow bearing them up in fine shape. Occasionally, as the grade steepened and the sun gained power, the machines and riders were buried in the snow. The previous motor cycle record up Mount Hood was made in 1914 by Axel Kildow, who climbed 7,000 feet. The machines used were the Indian Powerplus models.



TESTING R.F.C. P. AND M's AT BROOKLANDS, AND INCIDENTALLY ILLUSTRATING THEIR EASE OF STEERING.  
Riding hands off with a passenger on the carrier is a particularly "ticklish" undertaking.





## A Zepp. Warning

brings out a swarm of Airmen, Cyclist-soldiers, and Special Constables, whose object is to save life.

Many a motor cyclist's life has been saved by the simple precaution of equipping his machine with

## Bates British-built Tyres

Be warned against the use of cheaper tyres, which are less safe because they are less scientifically constructed, and consequently more prone to skid. The growing popularity of Bates Tyres, and the consequent increased output, have enabled us to reduce prices, in spite of increased cost of material. Lose no time in taking advantage of the reduction.

**Bates**  
SUPER RUBBER  
**Tyres**

May we send you our  
New List ?

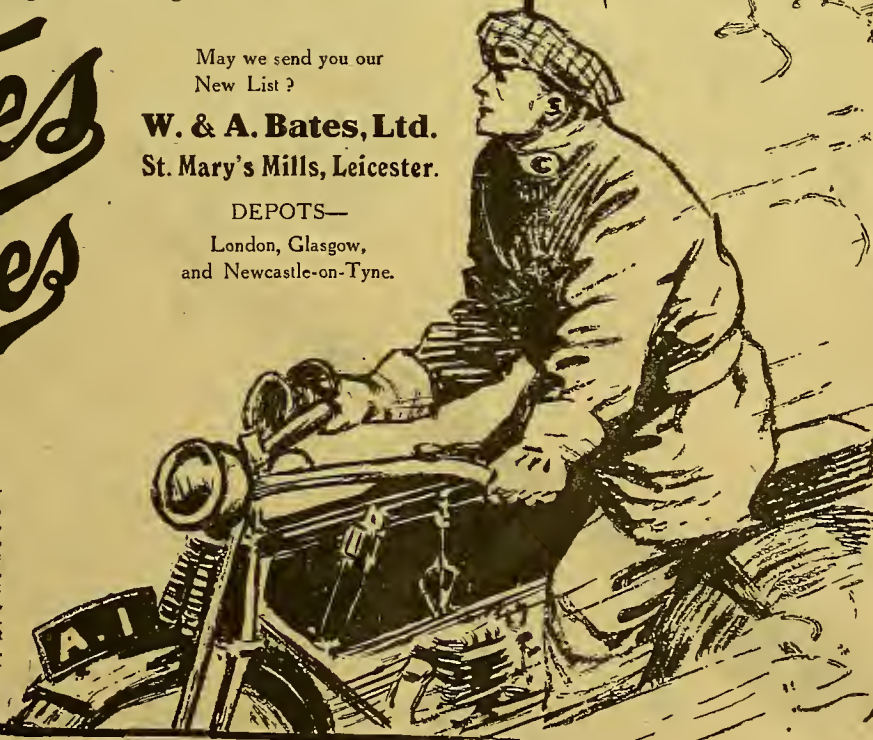
**W. & A. Bates, Ltd.**  
St. Mary's Mills, Leicester.

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Colonial Wholesale Stockholders.

Smith, Denham & Co., Henderson's Buildings, Von Brandis Street, Johannesburg, S. Africa. Childs, Parr, and Joseph, Nairobi, British East Africa. David F. Laing, 9, Weld Road, Kuala Lumpur, F.M.S. Cycle and Motor Supplies, Ltd., Farish Street, Wellington, New Zealand. W. Cornell & Son, 122, 124, Pirie Street, and 29, 31, 33, Hyde Street, Adelaide, South Australia. A. G. Healing & Co., Ltd., 354-356, Post Office Place West, Melbourne, Australia. Bennett & Barkell, Ltd., 124-132, Castlereagh Street, Sydney, Australia.



*In answering this advertisement it is desirable to mention "The Motor Cycle."*

BI.



# C.A.V. Magnetos

BRITISH THROUGHOUT

## Ignition troubles cannot exist

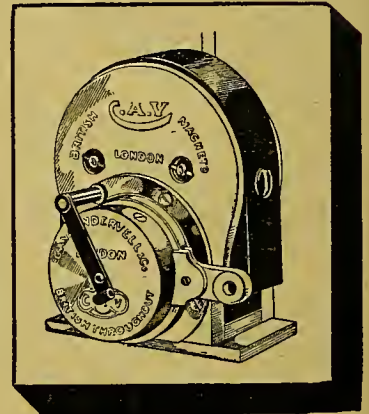
when the Motor Bike or Cycle Car is fitted with a C.A.V. Magneto.—It's the little contrivance that sparks for sure even at walking pace—the Magneto which water, dust, heat, or cold cannot put out of action—the Magneto that relieves all ignition anxieties. . . . Write now for folder.

Members of

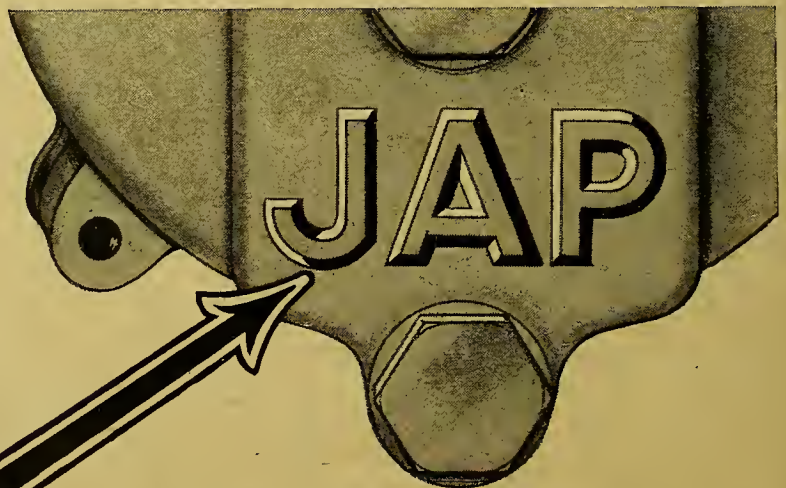


**C.A. Vandervell & Co., Ltd.**  
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SEE  
THESE  
LETTERS  
are on your  
CRANK CASE.



They mean that the Engine was built by  
**J. A. PRESTWICH & CO.,**  
LONDON.

The EXCELLENCE IN DESIGN AND WORKMANSHIP  
are your guide when choosing a machine.

REMEMBER BRITISH AND BEST.

**J. A. PRESTWICH & CO.,** Northumberland Park, TOTTENHAM, N.

Telegrams: "Prestwich Tottlane, London."

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**British Motor Cycles in Favour.**

A leading German General bemoans the fact that the German Army possesses no motor cycles like the British Army.

**Flat Twins.**

Following upon the exclusive illustrated description of the horizontal Indian which appeared in our last issue, we describe and illustrate this week another new flat twin, viz., the  $3\frac{1}{2}$  h.p. air-cooled Humber.

**More Petrol.**

We announced in our last issue that, instead of half a gallon a week, four gallons of petrol per month will be obtainable by motor cyclists after November 1st.

**Send in your Petrol Application Now.**

General satisfaction has been expressed by the official announcement of the Petrol Control Committee of increased petrol supplies commencing November 1st. Details were given on page 294 of our last issue, so that it only remains for us to remind readers to fill in the forms at the back of their existing licences and send them to 19, Berkeley Street, London, W., for new licences for the five months commencing November 1st.

**The National Relief Funds.**

At the week-end the principal war funds stood as follow:

The Prince of Wales Fund (£3,468,925 distributed) ..	£5,962,907	0	0
The Queen's Work for Women Fund .. .. .	170,779	7	6
British Red Cross Fund ..	4,460,653	0	0
Tobacco Fund .. .. .	115,263	0	0
Kitchener Memorial Fund ..	323,000	0	0
Belgian Relief Fund .. ..	2,020,000	0	0

**British Tyre Exports.**

Even if British motor cycles cannot be produced in sufficient quantities to satisfy a portion of the Overseas demand, our tyre manufacturers are going ahead with exports by leaps and bounds. Tyres certainly seem an instance where enemy trade has been definitely captured. The total exports of motor tyres for September alone was £141,569, and cycle tyres £42,096 = £183,665.

**Week-end Events in this Issue.**

Following our usual practice, week-end motor cycle events are described and illustrated in this issue. A hill-climb, organised by employees of the Royal Aircraft Factory, and a Motor Volunteer inspection were among the important events of the week-end. Readers of *The Motor Cycle* may read accounts of the proceedings a week in advance of other journals.

**Coventry Premier Ltd. Report.**

The directors of the Coventry Premier, Ltd., in presenting the accounts for the nine months ending 31st August, 1916, say that owing to the war it has been impossible to obtain the audited accounts of the company's Continental business for the period now under review. It must be borne in mind that the English side of the business has had to bear a large amount of expenses which otherwise would be borne by the business as a whole. The result shown on the Profit and Loss account is a profit for the period of £1,737 8s. This profit reduces the adverse balance to £61,486 18s. 6d.

**A Successful Wounded Soldiers' Outing.**

Mr. Stephen M. Crouch, of Wanstead, who recently organised a wounded soldiers' outing, kindly acknowledges our small assistance as follows: "The short paragraph you were good enough to insert on the subject of the outing for wounded soldiers in the West Ham Hospital enabled me to organise a successful outing, which took place on Saturday, the 30th ult. Nineteen patients were picked up from the West Ham Hospital on that day and given a run, via Chigwell, Abridge, and Theydon Bois, to the King's Oak Hotel at High Beech, where high tea was provided and a few of the voluntary helpers assisted with a short musical programme. The return journey was made to the hospital via Loughton and Woodford."

**Points of Indian 1917 Models.**

Last week we described the 1917 model Indian motor cycles, and we have since received a communication from Mr. W. H. Wells (who is at present at the works at Springfield, Mass.), in which he draws particular attention to one or two interesting features of the new models, which will appeal to Britishers. It will be recalled that the Powerplus model has twin tanks, and each compartment holds one and a half Imperial gallons. Incorporated with the reinforced frame head is a  $\frac{3}{4}$  in. eye-bolt hole for sidecar front main connection. Although the illustration of the complete machine shows the kick-starter on the left-hand side, the British models will have it fitted on the right-hand side as heretofore. The real novelty of the Indian range, viz., the

flat twin featherweight (they call it the Lightwin in America), is not likely to be seen in this country for some time yet, and when it does appear it is probable that its specification will be somewhat amended by Mr. Oscar Hedstrom, the designer. Mr. Wells says that the business outlook in the States is good.

**Motor Cyclist Volunteers.**

Mr. A. E. Beard writes stating that there are vacancies in the Motor Cycle Sections of the National Motor Volunteers, Blackburn Squadron. For full particulars apply to A. E. Beard, Mill Hill Blackburn, and for the Darwen Squadrons apply to J. Martin, Fantoft, Darwen.

**Manufacturers and German Magnetos.**

Astonishment is expressed in our leading article this week that the Motor Cycle Manufacturers' Union has yet done nothing publicly to stamp out the German magneto and so encourage British magneto makers to persevere and capture entirely this important trade hitherto held by the enemy.

**A Douglas Improvement.**

In our "Patents" column we show a new method of sidecar suspension patented by Mr. W. Douglas. It will be remembered that the 4 h.p. Douglas motor cycle can be supplied with an ingenious spring frame, and now that the Douglas people have gone one further and suspended all three wheels, and the even running of the big horizontal engine is considered, one cannot but conclude that the combination should prove one of the most attractive ever designed.



DESPATCH RIDERS AT WORK AND PLAY AT A HOME TRAINING CENTRE.

Revolver practice forms an important part of a D.R.'s training, and the upper view shows a batch of men at a range. (At left) In some spare moments a few of the men so rigged up the M.M.G.S. outfit illustrated! The sidecar body was removed from a  $3\frac{1}{2}$  h.p. twin Zenith outfit and an ancient cannon piece substituted.



## RECREATION FOR AIRCRAFT WORKERS.



WINNERS OF SATURDAY'S R.A.F.  
HILL-CLIMB,  
a report of which appears on page 313  
of this issue.

- (1) At the start. (2) T. P. Mears (5 h.p. Ivy), winner of three events. (3) P. Davey (3½ h.p. Norton). (4) S. J. Garratt (Junior Triumph). (5) F. C. Kennard (4 h.p. Bradbury). (6) T. P. Mears with sidecar attached to his Ivy. Mears was the star performer of the day.



## LONDON MOTOR CYCLIST VOLUNTEERS ON PARADE. Inspection of the N.M.V.

A VERY imposing gathering of the National Motor Volunteers formed part of the big inspection of Volunteers held in London and the Western districts last Saturday afternoon. The N.M.V., of which the motor cycle section is an important part, was inspected by Maj.-

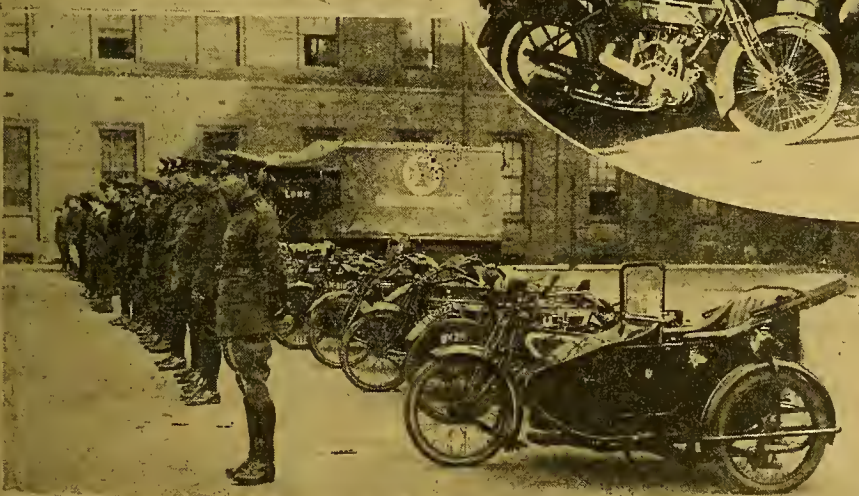
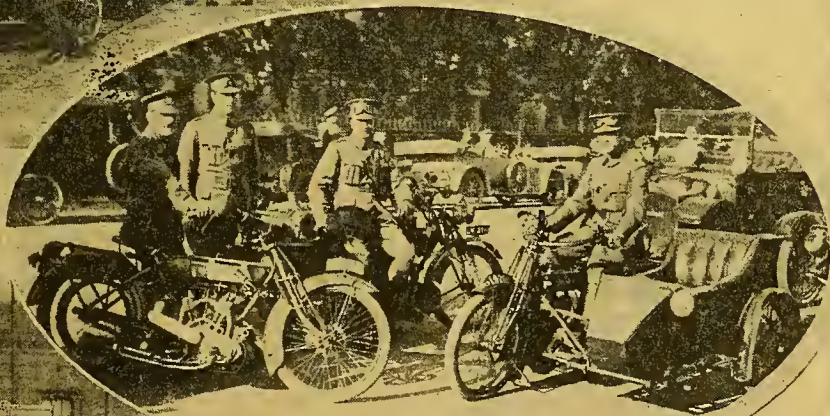


Gen. Sir Francis Lloyd, and in the topmost picture he is shown inspecting the motor cyclists.

The N.M.V. met in Eaton Square, where two of these pictures were taken, and the cars and motor cycles were then sent on to the Wellington Barracks, where the inspection took place. The task of arranging for the inspection of such a huge fleet of



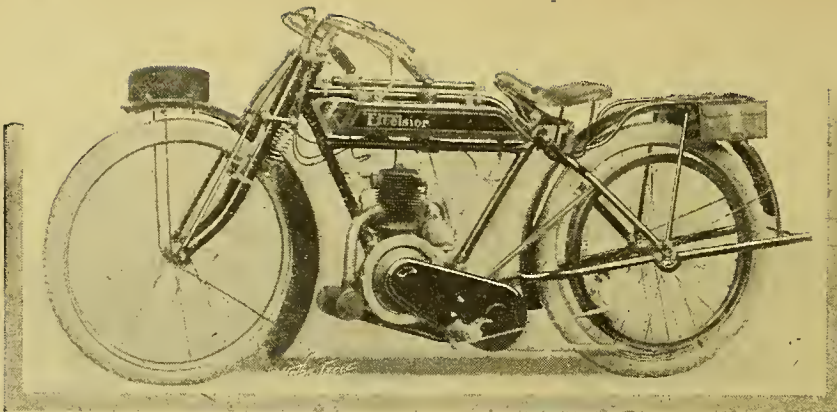
The gathering in Eaton Square.



cars, ambulances, bicycles, and sidecars, was no easy matter, and reflected great credit on Commandant F. Doland, the section being under the command of Maj.-Gen. D. C. F. Macintyre, C.B. Last week-end was memorable for Volunteers.

At the top Maj.-Gen. Sir Francis Lloyd is seen inspecting motor cyclists of the N.M.V. at Wellington Barracks. The two centre views were taken in Eaton Square, where the National Motor Volunteers foregathered prior to the inspection. The bottom view shows some motor cyclists ready for inspection, with the ambulance section in the background.





The 1917 model  $2\frac{1}{2}$  h.p. two-stroke two-speed Excelsior. It has chain and belt drive and no clutch.

### COVENTRY EXCELSIOR LIGHTWEIGHT.

FOR some little time past, Bayliss, Thomas, and Co., makers of the Coventry Excelsior machines, have been paying considerable attention to two-stroke models, and many have been sold both at home and abroad. The model illustrated is one of two standardised for 1917. This is the  $2\frac{1}{2}$  h.p. Peco-engined mount, the other being fitted with a  $2\frac{3}{4}$  h.p. Peco engine. Both are fitted with chain-cum-belt drive and Albion two-speed gear. The lower powered one is essentially a solo mount, but the  $2\frac{3}{4}$  h.p. can well take a light sidecar, and the pages of *The Motor Cycle* have chronicled the hill-climbing exploits of the little  $2\frac{3}{4}$  h.p. Excelsior sidecar. The light coachbuilt sidecar is enamelled and lined to match the bicycle, and is well sprung and upholstered.

The makers of the Coventry Excelsior are well known for their medium and high-powered machines, and it is just as well to mention that they will be continued for next year.

### ABOARD A "TANK."

#### Experiences of One of the Crew.

THE sensations experienced in action by a member of the crew of a "tank" are described by a wounded soldier now in hospital at Salford. In an interview with a *Daily Despatch* representative the soldier said: "It is not easy to describe my feelings as I sat inside at my gun while the strange monster slid down one side of the shell hole and slowly crawled up the other, until at last we were astride of the enemy's trenches. The waiting for the order to move was the worst sensation. When we got moving and began firing the excitement of the battle kept our senses alert.

"The motion of a 'tank' I can liken to nothing better than being on a stormy sea in a very poor sailing vessel. We felt quite safe inside the car. The Germans tried hard enough with their artillery, but the men in the trenches we were attacking were too demoralised by our strange appearance to do much.

"When we had done our bit the infantry came along and cleared out the trenches and dug-outs. It was a

pandemonium while it lasted, with the rattle of machine guns and bursting shrapnel about us.

"How was I wounded? Well, after our work was done, several of us left the machine to see how it had stood the strain, and also to render first-aid to our wounded. It was so hot in the car that I had taken off my helmet, and I had just picked up and put on a German shrapnel helmet—a thing like a small shallow barrel—when a piece of shrapnel came along and caught me on the right side of the head."

#### Will the "Tanks" be Filmed Publicly?

We understand that Lt. G. Malins, who has been responsible for obtaining front line pictures, has returned to England with a second series, which includes the great attack on Martinpuich, the Brigade of Guards in action, and the bombardment of the German lines. Provided these pictures are issued to the public, a portion of the film which will be of special interest to motorists will be that showing the "tanks" in action. We hope that in the near future the public may see pictures of the "tanks."

#### A Suggestive Comment.

An officer attached to the Heavy Section Machine Gun Corps, the section equipped with the heavy armoured cars, writes from the Front: "No doubt you have read in the daily press the stories of the 'tanks.' Some of them are true!"

### IMPORTS AND EXPORTS.

THE cessation of the importation of motor cycles into this country, first indicated in the July Board of Trade returns, applies to the returns for September just issued. Exports, unlike trade generally, show a large decrease compared with the previous month, though an increase compared with the corresponding period of last year. Following are the actual figures:

	IMPORTS.		
	Sept., 1916.	Aug., 1916.	Sept., 1915.
Number ...	—	—	437
Value, complete machines ...	—	—	£20,859
Value, tyres and parts ...	£9,215	£8,182	£9,267

	EXPORTS.		
	Sept., 1916.	Aug., 1916.	Sept., 1915.
Number ...	746	1,322	637
Value, complete machines ...	£31,700	£64,632	£28,847
Value, tyres and parts ...	£28,130	£35,395	£23,351

#### PETROL FIGURES.

It is interesting to compare the amount of petrol imported during the last three months:

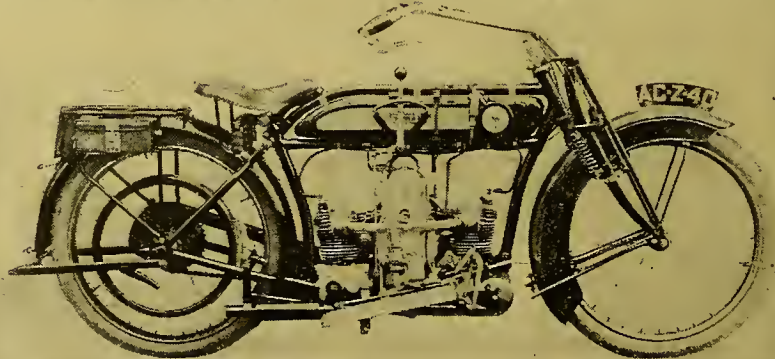
July, 1916.—11,526,600 gallons (duty paid on 10,528,695 gallons).

August, 1916.—28,773,053 gallons (duty paid on 10,017,985 gallons).

September, 1916.—13,532,420 gallons (duty paid on 8,272,239 gallons).

### PETROLIOR.

WE made a further test recently of Petrolior in a 4 h.p. Douglas sidecar, following the report made in our issue of August 17th. This time practically neat fuel was used. It was found that starting was difficult without a petrol injection, but after one injection the engine started to fire but ran badly for a few moments. When thoroughly warmed up no difference could be detected from petrol, except that the engine seemed to be a little more prone to knock, a common trouble with heavy fuels. The price of Petrolior has now been reduced to 2s. 5d. per gallon, in five or ten-gallon drums, and in barrels of forty-two gallons at 2s. 3d. per gallon.



Another view of the  $3\frac{1}{2}$  h.p. horizontal twin Humber. It is interesting to compare this design with the new Indian shown in our last issue. They represent the latest productions in "flat" twins of two countries. The new Humber is fully described elsewhere in this issue.



## WHY DOES THE ENGINE CARBONISE? THE PROBABLE CAUSE AND A SUGGESTED REMEDY.

**P**ERHAPS the greatest fault of the internal combustion engine is the comparative frequency with which the removal of carbon deposits becomes necessary, and the increasingly popular two-stroke type is a particularly bad offender in this matter. It is only reasonable to suppose that the mitigation of this evil, like most others, can best be arrived at through a knowledge of its causes, and for this reason it is worth while considering the most probable.

Air-cooled engines carbonise more rapidly than water-cooled; this appears to prove that the deposit is, to some extent, due to the decomposition by heat of a film of oil on the walls of the combustion chamber. The fact that the rate of deposit is influenced by both the quality and quantity of the lubricant employed gives additional support to the theory that a part of the deposit is derived from this source.

But the greater portion of it cannot be reasonably accounted for in this way. In a properly designed engine it is difficult to understand how an oil film can form to any extent either upon the piston top or the portions of the cylinder which do not come into contact with the piston, and consequently it seems reasonable to conclude that the major part of the deposit is derived from the explosive gas mixture.

### Incomplete Combustion.

It seems to be taken for granted by many that the combustion of the petrol vapour and air mixture is necessarily accompanied by the deposition of soot, a state of affairs which obviously could only be due to incomplete oxidation of the hydro-carbon produced in one of two ways—either by a badly-proportioned explosive mixture (*i.e.*, "too rich"), or by the cooling effect of metal surfaces preventing complete combustion, a reaction somewhat similar to that which takes place when cooled surfaces are brought into contact with a Bunsen flame.

The latter explanation is obviously disproved by experience which demonstrates that the rate of deposit decreases as the efficiency of the cooling is increased, within limits. If, therefore, we assume that the gas mixture be correctly proportioned for complete combustion, we must seek elsewhere for the cause of all deposit not derived from the lubricant, and, in the writer's opinion, the answer is to be found in the condition in which the fuel enters the combustion chamber. All carburetter designers aim at effecting complete vaporisation, and most of them undoubtedly succeed in splitting the fuel into the form of microscopically minute drops of liquid, a primary condition which is ideal for its subsequent conversion into a true vapour, but they usually completely ignore two equally important factors necessary for attaining this result.

### The Cracking of Hydro-carbons.

These are, first, that the vapour pressure of the fuel varies with the temperature, and, second, that energy in the form of heat is absorbed by the fuel when it passes from the liquid to gaseous state.

In other words, as the mixture of air and minute fuel particles changes into a mixture of air and fuel vapour,

the temperature tends to decrease until a point is reached at which further vaporisation practically ceases, and the remainder of the fuel enters the cylinder in finely divided liquid form. When this takes place the cause of carbonisation is obvious. If hydro-carbons in a liquid state are brought into contact with highly-heated surfaces, then in addition to simple evaporation a chemical change (termed "cracking") takes place, carbonaceous matter is deposited, and more volatile compounds are produced.

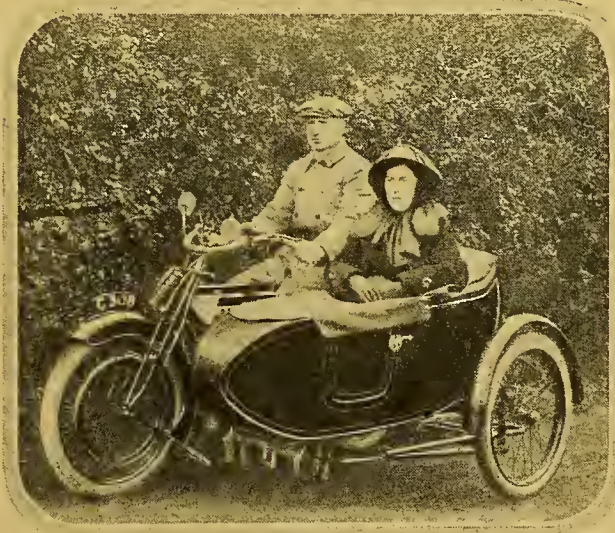
This method of accounting for the deposit would explain the beneficial effect of water-cooling, for in this case the combustion head is kept at a temperature too low for "cracking" to take place, and simple evaporation of any deposited fuel results.

### Heat the Induction Pipe.

If the above theory of deposit, other than that derived from the lubricant, is correct, then the remedy is obvious. After the fuel has been converted into fine spray and mixed with air in the carburetter, it should be brought into contact with surfaces hot enough to complete the evaporation *before* the mixture enters the combustion chamber. This would probably be most simply effected, not as is sometimes indirectly attempted by a hot air jacket to the carburetter, but by leading an exhaust-heated pipe through the induction tube itself.

The point where the heat energy is required is where the fuel in the form of fine spray has been mixed with the necessary air, and by proper application of this principle it should be possible effectively to vaporise the dense fuels commonly in use at present.

H. WEBSTER MOSS, F.I.C.



Mr. T. S. Bryant writes in praise of his 1916 B.S.A. and sidecar shown above. At the present time he is home on a well-earned leave from Nigeria, West Africa. Being a Government official he has had to overstay his visit to England until the war was over in the Cameroons. Recently, in company with his wife, he accomplished a tour through England of 650 miles and experienced no trouble whatever.



## A GERMAN CRY— MOTOR CYCLES WANTED.

ON Friday last there appeared in the daily papers an extremely interesting memorandum on the experiences of the Fourth German Corps in the Battle of the Somme during the month of July, and a copy of this memorandum has recently fallen into the hands of the British. General Sixt von Arnim writes, of course, without any idea that the document will ever be seen by British eyes. The parts which will especially interest our readers are his references to motor cycles. He points out the weaknesses developed in the German Army. "The reports on the experience gained in the Battle of the Somme submitted to Corps Headquarters unanimously agree as to the necessity for an increased allotment of weapons, means of communication, and transport of all kinds, such as *Flammenwerfer*, anti-aircraft machine guns, captive balloons, reconnaissance and battle planes, double telephone sections, motor lorries, horse-drawn vehicles, motor cycles, . . . etc." Further on he goes on to report, in referring to the question of communication, "The existing telephone system proved totally inadequate," and he makes various recommendations for doubling the telephone section attached to the divisions, for avoiding building lines through villages which we always shell, and asks for a better supply of motor bicycles. "The establishment of motor bicycles proved insufficient for the heavy fighting; the deficiency was painfully evident. The establishment of ordinary bicycles was also not sufficient for the work done."

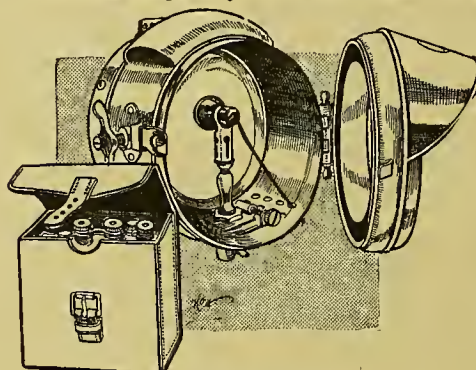
### British Motor Cyclists "Make Good."

All this is extremely interesting to the British motor cyclist student of the war. It will be seen how the indulgence in this health-giving pastime has been of invaluable service to the nation during the present terrible war. British motor cyclist reserves have not been drawn upon to any great extent. There are thousands and thousands of expert motor cyclists in the British Army doing useful work in riding their machines and keeping open communications. There are still thousands and thousands of motor cyclists in the British Army who are serving in other branches of the forces. If Germany wants motor bicycles it can doubtless get them, though even this is not an easy matter, since Germany's output of motor cycles is as nothing compared with ours. However, an effort could be put forward, and numerous machines could doubtless be delivered in a comparatively short space of time, but the difficulty is to find men to ride them.

We have always made a point of studying motor cycle conditions in all countries of the world, and we have found that England led, and led by many lengths. Germany produced but one make of any note at all, and motor cyclists on the German roads are few and far between. Doubtless the roads had a good deal to do with the development of the pastime. Germany had good roads round the principal touring centres, but the means of communication from one town to another were often in a very bad condition.

## THE F.R.S. ELECTRIC LAMPS.

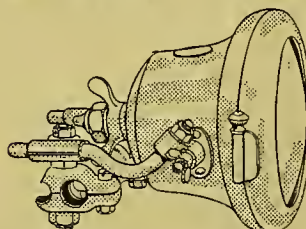
MANY riders who own first-class acetylene lamps have become somewhat tired of the messiness of carbide, especially so when their



An electric adapter.

journeys are short. Such riders will welcome the F.R.S. electric adapter, a little device which enables electricity to take the place of acetylene. It consists of a small clip carrying a miniature screw bulb, which can be instantly attached to the burner. The wire from the accumulator can pass through one of the ventilation holes.

Another useful article emanating from the F.R.S. factory is the lamp illustrated. This particular one is adapted for electric lighting, and the bulb and



F.R.S. electric motor cycle lamp.

holder can be taken out while the light is on and used for inspection purposes.

The address of F.R.S. Lamps is Per-shore Street, Birmingham.

## DESPATCH RIDERS ON CAMELS.

WE hear that for operating in certain portions of Egypt despatch riders replace their motor cycles with camels. Rather a change in the riding position!

## "THE MOTOR CYCLE" ON ACTIVE SERVICE.

A DESPATCH rider writes from France: "I have been out here now since January, and I have never missed one week in obtaining your most interesting and useful journal. I always manage to get to the nearest town and buy one at an average price of one franc twenty-five centimes (1s.)! I have paid two francs fifty centimes (2s.) for one copy! But then it's worth it out here!"

## THE MAN WITH THE SIDECAR.

WE have received from a correspondent a booklet dealing with the Koehring Mixer. What the Koehring Mixer is or what it does is no concern of our readers or ourselves, but in the pamphlet is to be found a rather cunning eulogy of the sidecar, which we reproduce below, in the real "American" language:

### "THE MAN WITH THE SIDECAR.

"We have seen beautifully finished, costly automobiles with all the 'class,' distinction, snappy lines, and freak tops that fancy paint-mixing and money could produce; but the most beautiful family car we ever saw was a second-hand motor cycle with a home-made sidecar.

"The sidecar wasn't even painted.

It carried the other two-thirds of the family—a wife, who, you could be mighty sure, had given her youth and good looks to the family welfare, and a youngster dolled up like a little princess in a fairy chariot.

"The man on the motor cycle plainly showed that he was not the 'son' of anybody, and that his living came from hard work. His motor cycle outfit was the product of industry, thrift, and his own ingenuity.

"We maintain that he is a better man than many of the nabobs who ride in the stunning big car, for several reasons:

"First of all, he built part of his outfit with his own hands. How many nabobs can even turn down their grease cups?

"Secondly, there's no hypocrisy or four-flush about him.

"Best of all, he takes the whole family along; he finds companionship where he should find it—with his family, not with the 'boys' or at the neighbouring saloon.

"We believe that the sidecar is the sign of a real family man, a symbol of his thoughtfulness and affection. Our hats are off to the man with the home-made sidecar."

## LIVERPOOL MOTOR CYCLIST VOLUNTEERS.

MR. S. W. PHILLPOTT reports excellent progress on the part of the Motor Cycle Section of the Liverpool Heavy Car Battalion of the National Motor Volunteers. The strength of the section is now nearly seventy, and it forms a unit of the battalion.

Drills, lectures, and field days are held at regular intervals, and an interesting diversion was a gymkhana to assist the funds of the Motor Cycle Section. One of the members—a building supplies contractor—has lent the section free of charge a piece of ground on which he will put up a small drill shed and garage for which he will charge a nominal rent. The members, equally enthusiastic, will also assist. Among the members is the Liverpool amateur heavyweight boxing champion, Liverpool City F.C. goalkeeper, and merchants and solicitors, small mechanics and tradesmen.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Herford Street, Coventry, and must be accompanied by the writer's name and address

#### The Scott Sociable.

Sir,—To me it appears that if the front wheel of the Scott Sociable were placed centrally, the machine would be far more likely to tip over in turning corners. Also it would upset the position of the engine with its extreme accessibility. Of course this is only a suggestion.

Norwich.

R.E.C.

#### Will the Single-cylinder Survive?

Sir,— "Some may come, and some may go,  
But Norton goes on for ever."

Nothing on earth, or Brooklands, in my opinion, will ever oust this magnificent production. Usual disclaimer.

H. W. WILLIAMSON (Lr.), M.G.C.

Sir,—As an old reader of your splendid paper, and an old motor cyclist with an experience of nearly every type of machine made, I would like you to find me a little space to add my "shout" to the many and varied expressions of opinion on the ever-green subject, single *v.* twins.

I was very interested in "H.F.M.'s" letter of September 28th, giving his experiences with a 4½ h.p. big single—the last word in discomfort. He is evidently new to the ranks of motor cyclists, and has not yet heard of the A.J.S., Sunbeam, or Matchless combinations. As a rider of the best makes of both singles and twins, I have come to the firm conclusion that the only place for the single is the track or fast road work (solo), and to use it for the motive power of a sidecar combination is absurd. If, after his 4,000 odd miles of thump, "H.F.M." would get one of the aforementioned machines, he would wonder why makers still manufacture one-lungers. The last few years motor cycle manufacturers have copied "car lines" more and more, as in the instance of starters, three or four-speed gears, interchangeable wheels, mechanical lubrication, etc. (springing is coming, *after the war*). Who makes a single-cylinder car to-day? And who would buy one if one were made? Cost in most cases need not be considered, as the man who can afford to buy a combination can afford the slight extra cost in running attributable to the twin. A. S. BRADLEY.

Sir,—In a recent issue of your paper your contributor "Ixion" says that he tried a modern single-cylinder mount after having confined himself for several years to "twins," and latterly to horizontal twins, and that the effect was electrifying, inasmuch as he would not now think of riding a single. He further invites any reader who has been riding "twins" to try the same experiment.

Now I have ridden "twins" exclusively for some years past, and have always been prejudiced against the single. My last two "twins" were of the horizontal variety. I am now riding a 1916 T.T. single, and the effect has certainly been electrifying, but in the opposite sense to that which is meant by your contributor. I am amazed at the merits of the single. Theoretically, its balance is not to be compared with that of the horizontal twin, but, in practice, with this particular engine the vibration is not noticeable at any speed under 50 m.p.h. At this speed there is a "period," and the vibration is quite noticeable, but above and below this it is negligible. It is far less trouble to decarbonise and keep in tune than the twin, and, engine for engine, it is, in my opinion, far superior to the horizontal twin, its performance with a single gear being equal to that of the horizontal twin with a two or three-speed gear. Take away the gear box from the "flat" twin and put it on level terms with the

single, and you will find it is as dead as mutton. The only feature possessed by the "flat" twin which the single does not possess is the ability to attain excessive engine revolutions, and this it does at the expense of hill-climbing on a reasonably high gear.

Take any decent main road hill, say, good old Westerham, my 500 c.c. single will ascend this hill at 30 m.p.h. on a 4½ to 1 gear with an entire absence of fuss, engine r.p.m. 1,750. The 500 c.c. "flat" twin will not climb the hill at all on a similar gear, and to attain a speed of 30 m.p.h. requires a gear in the region of 9 to 1, with which the engine r.p.m. are 3,500. Now my "single" will also ascend the hill at 30 m.p.h. on a 9 to 1 gear if I require it, and will not make any more fuss about it than the "flat" twin does either; but which performance is the more pleasurable?

Has "Ixion" tried such an ascent on a "flat" twin which has covered 6,000 or 7,000 miles? When the chains and sprockets are worn the gear box shows signs of wear owing to frequent running on the lower ratios and the engine bearings, pistons, and cylinders are not quite as tight as they were once. If he derives any pleasure from the absolutely appalling racket which such a machine makes in the ascent, I venture to think that such will not be the experience of the majority of riders, and it certainly is not mine.

To sum up, no one appreciates an engine's ability to "turn over" under load more than I do; but, if the "flat" twin is going to attain this at the expense of flexibility at low speeds and inability to tackle hills on a reasonably high gear, it will, in my opinion, be a long time before it displaces the properly designed modern single-cylinder.

A. C. HUSKINSON.

Sir,—Does "Road Rider" realise that when war expenditure ceases all the world will feel, and be, poor? Cheap conveyance, not luxury, will be the cry of nineteen buyers out of twenty. Peace will bring many vacant factories. The firm for my money will bar luxuries, and turn out only one type of plain, serviceable, and reliable double-purpose mount, with one about 550 c.c. cylinder and well-balanced engine. Its transmission should be non-rigid, and a long range of ratios available. A strong frame and a 5½ in. clearance are essential. With plain strong sidecar or carrier and accessories it ought to sell for less than £40 by the 100,000; while £100 to £150 combinations will only sell by the score, for the next ten years.

TRANSIT.

#### An Expert One-armed Sidecarist.

Sir,—With reference to the paragraph in *The Motor Cycle* of October 5th and work with the R.F.C., I write to say that I am a cripple to the extent of the loss of my right foot, and I have just recently corresponded with the R.F.C., to which I had an introduction, and they reply saying that "under my circumstances it is not possible for the R.F.C. to accept my services, and that no Army doctor could pass me as fit for any form of Army service." This latter point, to my mind, will always be against us, unfortunately, however keen we may be to help and be active. I should be glad to do anything for anyone requiring practical help and experience, if you could put me into communication with such a one. I am a rider of a 3½ h.p. F.E. Triumph at the present moment, and have had riding experience of other makes, and sidecar driving, and car upkeep, and am capable of all the ordinary running repairs and handling. I should be only too glad of any job in connection with motor cycles or cars.

J.B.S.

Christchurch, Hants.



**A Warning.**

Sir,—I should advise motor cyclists visiting the Blackpool district, when purchasing petrol, to make certain that they get it. Returning home recently I purchased one gallon of petrol (?) from a well-known garage. This was measured out from a — tin, and I was charged 2s. 9d. I speedily found out that the so-called petrol was entirely substitute. I do not object so much to being "had," as to the fact that this was debited against my petrol allowance with all due pomp and ceremony.

As substitutes go, I may say that I have found them very satisfactory.

Manchester.

ZENITH.

**Something Wrong Somewhere!**

Sir,—A few of those fellows who passed through your hands to join this corps thought the following incident might interest you.

A N.O. attached to this company managed to borrow a two-stroke for the night. He was not a motor cyclist; no, he had never seen one of the things until he came here, and he did not join up at Coventry, but was transferred from an infantry regiment. Well, he was heard asking for information as to the controls, etc., and the information was given him by another N.O., also of the transferred variety, who had managed to click for another two-stroke.

Everything went well for a few miles, and just as they were nearing Bury the engine of No. 1 started racing. After much deliberation it was decided the gears were broken and the bicycle was pushed a couple of miles. The proprietor of the garage looked at the pair and smiled, then charged them 16s. for a new belt!

We have just heard the box body driver being given most strict instructions to pick that lost belt up to-day.

"NO.4,"

HEAVY SECTION, MACHINE GUN CORPS.

**Electric Lighting for Motor Cycles.**

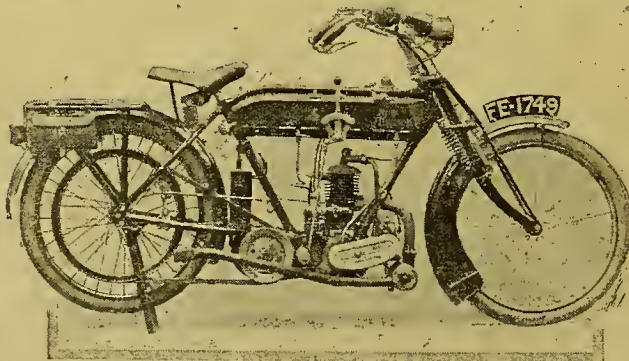
Sir,—I notice in *The Motor Cycle* for September 28th an interesting article on this subject, and I thought it might be of interest to some of your readers to see how neatly such an arrangement can be carried out.

I enclose a photograph of my machine, and would call your attention to the following points: The accumulator is a Fuller-Block (type BL1), which, in my opinion, is the most suitable accumulator for motor cycle work, as it never "shorts" internally, and it holds its current indefinitely. The accumulator box is a tin-carrying case, which can be purchased for a nominal sum with the accumulator. A lid has been fitted to this, and the accumulator is held inside it between rubber pads.

The screw which can be seen on the lid of the box holds this down securely on the frame and tightens the accumulator in the box at the same time.

The head lamp is a cheap motor car side lamp carried on a home-made bracket, and I have carefully focussed up the bulb (four volt one ampère) by means of packing washers on the lamp holder.

The tail lamp is an F.R.S., in which I use a flash-lamp bulb, with its light somewhat dimmed by means of a resistance coil.



A New Hudson fitted with a storage battery lighting set.

Both lamps are insulated from violent shocks by rubber pads, and, as a result of this precaution, I have never yet broken a filament.

During the last two seasons this outfit has proved extremely reliable, and I obtain from thirteen to fifteen hours light without recharging.

E. C. FRANK EVANS.

**Hub v. Countershaft Gears.**

Sir,—To settle an argument which bids fair to result in bloodshed amongst the D.R.'s at this Divisional H.Q., we should be much obliged if you would give us your views as to the respective speed capabilities of the hub gear and countershaft Triumphs. What we really wish to know is the highest speed attainable by the two models, i.e., hub gear and countershaft (W.D.) on a sprint, assuming the engines to be in decent running order, geared as turned out for D.R. work at the Front. It may interest the writer of the article on page 241 in your issue of September 21st to know that in this Signal Squadron we still have three 1914 hub gear Triumphs in commission, which have done service since the early days of the war, and do not show any signs of giving out.

So far as regards the lightweight, one complaint is inability to get started in four to six inches of mud, when carrying full kit, including blanket, etc., as has been the writer's experience. It is practically impossible to run alongside the machine when endeavouring to start it up. A clutch fitted to this model would certainly be a boon, in winter at any rate.

One of the greatest drawbacks of all machines out here is insufficient mudguard clearance, but I think this point has already been emphasised by other D.R.'s.

As much as I appreciate the good points of the models supplied to us, I am longing to return to my own mount, namely, a Harley-Davidson, which machine carried me with full camping equipment across the U.S.A., a distance of 3,125 miles, to New York, without the slightest mechanical trouble. A great portion of this distance was over trails which even out here at the Front we would not designate as roads. It took seven weeks to complete the journey, this, of course, including stops for sight-seeing, such as Chicago stock yards, Lake Erie, and Niagara Falls, not forgetting Milwaukee, the home of the Harley-Davidson. The worst roads encountered were in Dakota, Wisconsin, and Michigan. In the latter State we had quite a hostile reception from the German settlers, who appeared to guess our ultimate destination, but we pushed on, and finally landed in Broadway, New York, none the worse for our experiences. After a week's sojourn in New York, we boarded the *Adriatic*, reaching Liverpool in eight days.

I.E.F., France.

R. FRANK (CPL.), R.E.

[We submitted the question contained in this letter to the Triumph Cycle Co., who reply as follows: "There is very little difference between the speeds of the Triumph hub gear and countershaft models. Both machines tuned up without structural alterations will do well over fifty miles per hour."—Ed.]

**Overhead Valves.**

Sir,—With reference to the letter from "Rhodesian" on page 299 of your issue of October 5th and the accompanying sketch, it would seem that the placing of the spring at the foot of the long tappet would tend to keep the overhead inlet valve continually open.

S. C. ARMOND.

[The inlet valve spring will close the valve against the lighter pressure of the spring which has been moved.—Ed.]

**Petrol Substitutes.**

[We continue to receive a number of letters complaining of the business methods of Messrs. C. Binks, Ltd., of which those published are a fair sample. Since the publication of readers' experiences, we have received the following letter from Mr. Binks. Both sides having had a hearing, the correspondence is now closed.—Ed.]

Sir,—Referring to the letters which have appeared in this journal complaining about delays and the delivery of Binks fuel, I will make no comment here as to the inaccuracies contained in many of these letters. No doubt they were intended to do me an injury, so I think it is



only right for me to state here the position and the object of the business in Binks fuel.

This fuel department was started primarily to supply motor cyclists who had already purchased my carburettors with this fuel at cost price, to enable them to continue to use their machines. Eventually I was persuaded to supply users of any other type of carburettor. The orders that I have received have been simply enormous, and I think, speaking generally, the great majority of my customers have been highly satisfied, not only as to the excellence of the fuel, but in my general business methods, and also have thoroughly appreciated what I have done for them. I will admit at once that in a certain very small percentage of cases delay has occurred, and the reason of this delay has been from various sources quite outside any control of mine. The procedure is as follows:

A customer writes ordering fuel. He is then supplied with a printed form to fill up, in which it states that some delay may occur, and if he cannot put up with some possibility of delay his money is to be returned at once. Delays may occur for the following reasons:

- Losses of letters in post.
- Insufficient addresses given.
- Incorrect amount of remittance.
- Absence of remittance, although stated enclosed.
- Temporary closing of railways in certain districts for military reasons.
- Cases of fuel side-tracked on railway system.
- Lost on the railway altogether.
- Shortages of men who have been called up to join the Colours.

Urgent calls by military authorities for fuel.

Want of organisation capable of dealing with an absolutely unexpected and unparalleled volume of business.

Apparently some few of those who have ordered fuel have been in difficulties caused by one of the above reasons.

I also receive hundreds of letters every week with no address whatever. In one case I received four letters without any address whatever, and only discovered who my correspondent was by him instructing his lawyer to apply for the return of his money.

I also receive larger numbers of prepaid telegrams without any address, and I really often wonder, if the people who criticise me were in charge of this business, with its 5,000 technical letters and messages per week, whether they would do any better. Personally I doubt it.

The distillers with whom I am working in connection with the making of this fuel are one of the largest and most important firms in the world, and the business of C. Binks, Ltd., is in a sound financial position. Apparently there are some few of your readers whose motto is "Business as usual." I had quite thought and hoped that this idea had died a natural death long ago, as it was one which, if persisted in, would have placed this country in serious danger.

Our manufacturing business here is conducted with the very greatest difficulty, and I feel that the situation is one that calls for patience and forbearance, and I greatly regret that certain of your readers, whom I had intended to benefit, should have endeavoured to cause me an injury by publishing letters such as they have done, many of which, I regret to say, are absolutely untruthful.

I am pleased to be able to say that the organisation, which has been one of the causes of the delay, has now been perfected, and I have made arrangements for the fuel to be actually delivered from our works instead of from the distillery. This fuel can now be despatched the same day or the next day following the receipt of the order, and if no stoppage occurs on the railway customers can expect to receive the fuel in the course of a week's time, but I strongly advise my customers to come and fetch it away from our new department if at all possible.

I feel I must also take this opportunity of thanking a very considerable number of gentlemen who have written to me expressing their gratitude for

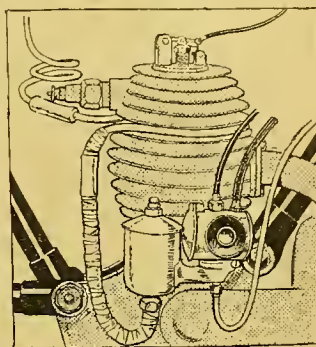
what I have been able to do for them, and expressing in no measured terms their indignation that such letters should have been sent and published in this journal.

CHAS. BINKS.

### A Two-stroke on Heavy Fuel.

Sir,—I have three machines in my hands, all of which are fitted with auxiliary tanks for petrol start. They are: 7.9 h.p. American Excelsior sc., 7.9 h.p. clutch Indian, and the 2½ h.p. Champion (illustrated). The Excelsior is fitted with a half-gallon tank on the sidecar chassis, with force feed to the carburettor, the pressure gauge being mounted on the tank itself. Two other pipes, also force feed, are used for cylinder priming. The compression is lowered by two plugs fitted into a Y piece.

The Champion is fitted with the standard Villiers engine and two-speed Albion countershaft gear. The float chamber of the Senspray is bent round to be as close to the cylinder as possible. The fuel, Binks or Kempol, passes round the cylinder inside the radiating fins.



Mr. H. Brocklebank's engine, showing lagged fuel pipe led round cylinder.

The silencer is a new one, and the extension pipe polished copper—the tone given being that of an aeroplane!

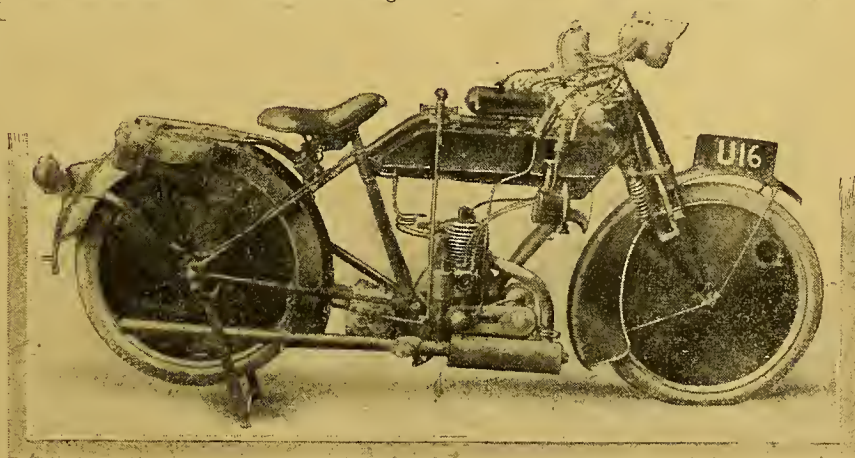
The little tank on the top tube holds pure petrol, which feeds primarily to the jet and floods the carburettor without tickling if so much petrol be needed to start. The mechanical horn has a special clip to the down tube, and is very conveniently placed for really making a row. You cant in the ordinary positions of these horns on a solo mount.

Petrol lubrication having been found hopelessly inefficient, a sight feed drip lubricator has been fitted, feeding into the induction pipe, and this, set to keep the engine constantly smoking, allows one to drive at 25 m.p.h. to 40 m.p.h. for three or four hours without any trouble. The engine is always run practically all out, and has been so run for eighteen months, and the bearings have scarcely any wear at all. The disc wheels are made locally, are enamelled red, and look very smart. This machine takes practically all main road hills on top, and will go anywhere on bottom.

As to two-stroke engines, I do not love them. They always four-stroke at starting, and when running down hill the machine overruns the engine; they are very inelastic, and really painfully slow. Their good points are easy starting, handiness, and lightweight for short journeys and constant stops.

The machine in question looks exceptionally smart, and goes well, running as well on Binks or paraffin as on petrol, without any injury to bearings, over a four months' test constant riding.

HUGH BROCKLEBANK.



Mr. Hugh Brocklebank's 2½ h.p. two-stroke Champion fitted with disc wheels and adapted for running on heavy fuel. (See letter.)



# Motor Cyclist Infantry in German East Africa.

## More Experiences of Motor Cyclists with General Smuts.

AS we have already intimated, infantrymen mounted on motor cycles are being used in the German East African campaign, the men being recruited from South Africa and the section known as the South African Motor Cycle Corps. It must not be confused with the despatch riders operating in the same region, a description of whose experiences appeared in our issue of September 21st. The South Africans are mounted on B.S.A.'s, and in addition to these men there are the motor cycle infantry attached to the armoured cars sent out from England. With this introduction we follow on with descriptions of the experiences of the South African motor cycle infantrymen, the first being extracts from a letter from Capt. J. F. Ashley, chaplain of the corps, which appeared in a recent issue of *The Cape Times*:

"... we set out, in a column miles long, for the frontier. Each man had his B.S.A. loaded wherever he could hang something. The first day took us past Bura and Maktau to Mbupuni, the chief difficulty being sand, which caused many spills, accompanied by congestion of traffic and vigorous sarcasm on the part of those following. The second day we set out early, and it proved to be such a day that no one in the corps could recall one like it. A few miles brought us to Salaita, where we viewed the scene of the battle, and in the distance first had revealed to us Kilimanjaro in all its glory.

"Now began difficulties in real earnest. A few miles and we left good roads behind once for all; mud, ruts, rivers, and bumps ever since. The chief sign of the discomfort experienced soon became evident to those riding half-way or further back along the column. All sorts of belongings were strewn along the road, tins of bully (oh, so valuable days later), knives, forks, boots, socks, cups, kettles—all sorts of things that had dropped off machines loaded like miniature pantechinons. So we bumped and jolted to Taveta on the border, where we left our first real casualty with a broken ankle.

### Crossing Rivers.

"A few miles brought us to a river, across which men each carried a bicycle—an exhausting game when you are tired already. A few miles more and another. Then a third of the same unrideable nature; and here darkness fell. The fourth river was passed, though this could be ridden. The roads consisted simply of narrow tracks, about a foot wide, alternately road and lorry ruts, and the great game was to maintain your equilibrium on this narrow track while unable to see more than a cycle's length ahead, and expecting to hit a stone or tree stump every moment. Every now and then the ruts crossed, and disaster followed. And so the procession struggled on, until at last a welcome light flickered over one long ascent. This mounted, sure enough there was a fire and bicycles parked near it. One rode up, throttled down a few yards away, thanking Providence this ride was over, and was assailed by frantic shouts of

'Keep her going! Don't stop! Turn to the right; only four more miles.' You can picture the black despair that settled on one after that. The fire was there to prevent you riding on over a broken bridge and dropping into a watery grave. Some felt for the moment they wished they hadn't been stopped. Then we lay down and slept, feeling that fifty bugles wouldn't get us out in the morning. No, that ride will not be forgotten.

### A Mountain Road.

"The corps rested here three or four days, but our indefatigable O.C. took the strongest from each platoon, and pushed on some ninety miles to see the state of affairs. He came back with them three days later, and his retinue was eagerly questioned as to the road. These men might well have been descendants of those Israelite spies who came back and disheartened their countrymen. But the corps refused to be discouraged. 'It can't be worse than what we've done, or we simply couldn't move.' And away we went—but the machine no longer loaded so cumbrously.

"The roads improved day by day, but still sorely tried our patience and endurance. At one place we passed a remount camp and halted a while. For two days these remounts astonished us by the way they forged along. Hindered by our lorries as we sometimes were, they passed us frequently (chaffing us, too), but then we drew away from them and went ahead. The last sixty miles to the front were on the style of the mountain railway system of some fair or exhibition, for the road travelled along the top of a mountain range, descending at last by a fine piece of engineering by a spiral staircase route."

### Another Officer's Impressions.

Another description is extracted from a letter received from an officer serving with the S.A. Motor Cycle Corps:

"Up to ten miles from Voi (the junction of the new line being built to German East) the ground rises slightly, and the road is straight and very good. My platoon was the advance guard, so I was able to look back; it was a grand sight to see the 400 B.S.A.'s thundering along with their exhausts open. When the corps is on the move it covers seven miles of road, and the engines make a noise just like the breakers on the sea shore. We made fifty miles the first day, which was very good when one takes into consideration the numerous stops which were made to enable the men to adjust their kits and machines. I might mention, incidentally, that our kits take some fastening on, as we carry everything on the cycle. There is about 140 lb. of kit and equipment, viz., blankets, change of clothing, spare boots, three days' rations, 300 rounds of ammunition, dynamite, cooking utensils, rifle, bayonet, sou'wester suits (oilskins), overcoat, semaphore flags, and a hundred and one other things too numerous to mention. We slept the first night by a river, and started off again just as dawn was breaking. The temperature was 120° in the shade, and encountering many rivers with their cold

water every couple of miles was a god-send.

"We again slept on the banks of one of the numerous rivers and struck camp just as the sun was peeping over the horizon. We struggled along manfully all day over the worst roads it has been my misfortune to see, but darkness overtook us before we reached our destination, i.e., New Mosche, which it was essential for us to reach that night. The roads were bad in daylight (never once getting beyond first gear), but, good heavens, riding the same roads at night with all the men knocked up was simply appalling. However, we pitched up at New Mosche (well in the enemy's country), at about 11 p.m., dead beat.

### A Necessary Overhaul.

"The next day the C.O. told us we could devote to overhauling the machines, and I can assure you it was needed. Seventy-five per cent. of the footboards had gone, and nearly every handle-bar required to be straightened, but with the exception of minor repairs, such as replacing nuts, straightening forks, etc., there was no material damage.

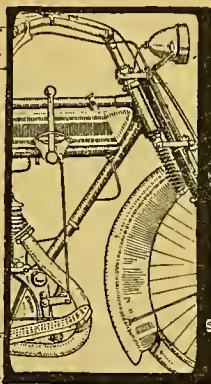
"The next day we started off, minus six men who had sprained their ankles, for Kondoa Irangi, the seat of operations. From New Mosche onwards we had sand so deep and soft that the footboards were dragging in the sand that had been made by those in front, and when a poor unfortunate fellow stuck you can just imagine the language that was thrown at him by those in the rear. It was impossible to turn out and pass the offender. However, everything comes to an end, even a road in German East Africa, and on the third day we pitched up at Kondoa Irangi. It was about 11 a.m. as we rode down the slight incline into Kondoa Irangi, and the Huns gave us our first baptism of fire, putting about twenty shells into us from the long range gun (brought from the *Koenigsburg*), but as we were riding at one hundred yards distance between each cycle nobody was hit. We took up a portion of the defence known as 'Observation Kop,' and sweated here for six long weary weeks, enduring many hardships. When our large guns got down to us we were able to retaliate a bit.

### How the Machines stand up.

"Up to the present, after 2,800 miles, with the cycles very much overloaded and used over the worst roads (?) in the world, there is not one machine that cannot take the road at once. Only one gear box has been taken down, and this was owing to the rider having forgotten to fill it up with oil; consequently it seized. The footboards have nearly all been torn away, and 50% of the carriers have broken, owing to the excessive weight loaded on to them. We have found that Dunlop tyres are the best for this rough work, as they appear to be hard and able to resist the action of the sand, and the thorns break off before they penetrate sufficiently deep to puncture the tube."



## DRIVING INSTRUCTIONS FOR TWO-STROKES.



Concise Hints on the Use and Upkeep of the Levis in particular.

**M**ESSRS. BUTTERFIELDS, LTD., makers of the two-stroke Levis, have issued a small booklet of "Driving Instructions and Useful Hints and Tips," and as these are likely to be of considerable use to all riders of two-strokes (though, of course, to Levis riders in particular), we propose to recapitulate some of the most valuable pieces of advice.

### To Start.

After the usual starting instructions, which refer to the filling of the tanks and the setting of the levers, we read: "It is advisable to start the machine with the low gear engaged. When a speed of twelve to fourteen miles an hour has been obtained let in the high gear sharply, to avoid the engine racing unnecessarily while in the free position. Care should be exercised in starting this model, as, owing to the extraordinary acceleration, the machine may 'get away' with you. The clutch should also be handled judiciously, especially when the gear is new.

### Adjustment of Chains.

"It is very necessary the chains should be run at proper tension, neither too tight nor too slack. The two chains from the engine-shaft sprockets to the countershaft sprockets are very simply adjusted by means of the eccentric in the bottom bracket. To take up any stretch which may develop in these chains, proceed as follows:

"On the end of the bracket eccentric will be found a lock ring and adjusting quadrant. Loosen the lock ring, also the

nut which holds the quadrant in position; the eccentric may then be adjusted by means of the quadrant. This adjustment should be very carefully made to ensure neither of the chains being over-tensioned. It is sometimes a difficult matter to get both gear chains adjusted to the same degree of tension, in which case one of the chains must be left with a slight tendency towards slackness. See that the lock ring is properly tightened up after the adjustment has been made.

"The two-speed gear is the Enfield, and is of the expanding clutch type, and is operated by a hand lever affixed above the tank, in a position convenient to the driver's hand. There are no clutch or gear pedals whatever."

### Lubrication.

There is much useful information on this important point and also a description of the method of lubrication employed on the Levis, which is as follows:

"We lubricate our cylinder and piston walls by leading oil to the side of the cylinder, this oil-feed being passed onwards on every upward and downward stroke by the gudgeon pin, giving a steady feed of oil to both sides of the piston. Any surplus of oil that is swept off the piston on its upward stroke is not allowed to fall into the base chamber, but is collected and led to the pulley side bearing, which, of course, is the longest and most important of the crankshaft side bearings. The crankshaft is drilled and plugged, giving a free passage from the one side, through the webs and throw pin, to the other side; the hollow crankshaft being fed through the magneto driving side main bearing, this feed corresponding with the feed hole to the inside of the crankshaft, and an outlet hole is placed in the throw pin, feeding the big end bearing, the other outlet hole feeding the pulley side bearing.

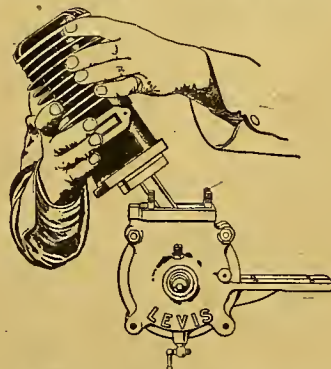
"Will riders please note that we have given up drilling the central holes in the gudgeon pin, for we have found that the little end bearing gets sufficient lubrication from the accumulation of surplus oil, in view of the fact that this bearing only oscillates and does not revolve, therefore requiring but little oil. Our chief reason for discontinuing to drill these holes is that we have found, when the little end bearing wears, a 'blow-back' is set up through the hole, preventing a steady and regular supply of oil to the piston and cylinder walls.

"Riders are warned to use plenty of oil of a correct quality, and as a safeguard in this respect to keep the engine smoking for the first 500 miles or so. Too much oil in the crank case, however, makes a two-stroke very difficult to start, and causes four-stroking. When this occurs riders are advised to proceed as follows:

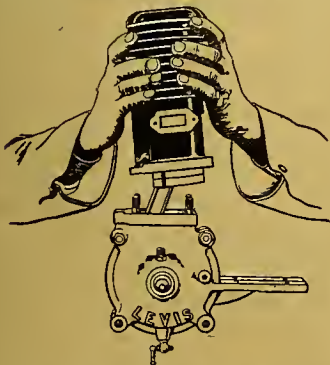
"If the oil-regulating screw has been accidentally left on while the machine has been standing, and a quantity of oil has entered the engine, proceed thus: Open the oil-drain tap or plug at the bottom of the crank case and drain off all the oil; oscillating the flywheel will facilitate this. While the oil is running out, remove the sparking plug, and, if oily, clean it with petrol, pouring some into the plug where the points are. When the oil drain tap has stopped dripping, leave the tap open and wheel the machine a few yards, so that the oil from the cylinder can work out; after doing this, close the crank case drain tap, or re-insert the drain plug, as the case may be, when the machine should start in the usual way. The engine may misfire for a little time, and smoke will issue from the exhaust. During all these operations it is, of course, necessary that the lubrication be turned off, and it should not be turned on again until the silencer ceases to smoke.

### Magneto.

"The timing, when controlled by a lever, is as usual, but when the timing is fixed it is necessary to proceed as follows:



**CORRECT** way of removing cylinder. The crank case is in such a position as to cause the piston and connecting rod to be in line with the cylinder while drawing the cylinder off.



**WRONG** way of removing cylinder, which may result in a broken piston.



**Driving Instructions for Two-strokes.—**

"Turn the flywheel forward till piston reaches top of the stroke; now turn flywheel backwards until piston has descended  $\frac{5}{16}$ ths to  $\frac{7}{16}$ ths of an inch, according to the circumstances (for hilly country  $\frac{5}{16}$ ths is recommended, whilst for a comparatively flat district  $\frac{7}{16}$ ths may be used). The points should just be in the act of breaking. See that the gap at the platinum points corresponds to the gauge on the E.I.C. magneto spanner. The E.I.C. magneto requires no lubrication.

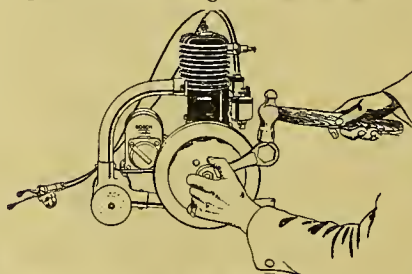
**Removing and Replacing Flywheel.**

"To remove the flywheel, after unscrewing the nut, the end of the shaft should be given one or two sharp square blows with a fairly heavy hammer, at the same time holding the wheel firmly with one hand, and pulling away from the engine. At the first or second blow the flywheel should come away, and, if the blows are square and decided, no damage will be done to the threads on the end of the crankshaft, as the end of the shaft is toughened.

"When replacing the flywheel, great care should be taken that both the end of the crankshaft and the hole in the flywheel are perfectly clean and free from grease or grit.

"It is not sufficient merely to pull up this nut as tightly as possible with a spanner by hand, but the special spanner supplied with each tool-kit should be used, and the nut 'jarred' up dead tight by

hammering the end of the spanner as far as it will go—after taking particular care that there is sufficient thread on the end of the crankshaft remaining below the face of the flywheel boss to allow the nut to force the wheel dead tight upon the taper without fouling the last thread.



Removing and replacing flywheel of two-stroke Levis engine.

"A movable spanner is not sufficiently strong for this job, so always use the spanner supplied for the purpose. If a key is fitted in the flywheel, or if a new key is being fitted, see that it takes a bearing on the sides, but not on the top, otherwise the wheel will be prevented from going tightly on the taper, and the flywheel will probably not run truly.

**Removing Gudgeon Pins and Cylinders.**

"Do not remove the gudgeon pin unless absolutely necessary; a light piston may easily be distorted. When it is necessary

to remove the gudgeon pin, make sure that you drive it out the right way, which is towards the flywheel.

"When refitting the piston, be sure you do not put the piston on back front. This mistake has been made more times than one would credit, and results in a surprising loss of power.

"The Levis pistons are made light for efficiency's sake, and while they have an ample margin of strength, it is very important that they be carefully treated when dismantling the cylinder. It is most advisable to stuff the inside of the piston with rag before the cylinder actually comes away, otherwise the heavy deflector head will cause the frail skirt of the piston to come sharply in contact with the connecting rod immediately the cylinder is removed, and will, in all probability, break a small piece out of the piston.

**Fitting New Piston Rings.**

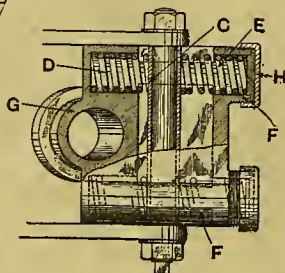
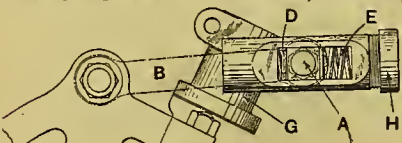
"Replacement rings, as sent out, are necessarily a fraction larger than new ones, and will therefore fit the cylinder after slight wear. Before fitting the rings, squeeze into mouth of cylinder. The gap between the ends should be only three or four thousandths of an inch, and, if necessary, file the ends slightly till the gap is correct. Check that the ends fit nicely round the pegs. If necessary, rub down the top and bottom edges of the ring on a flat sheet of emery cloth till the ring is just free all round. Run in with plenty of oil."

## PATENTS.

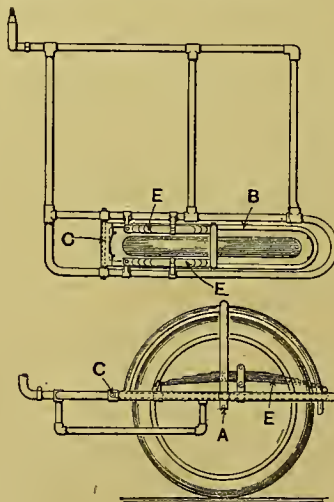
Abridged by  
ERIC W. WALFORD.

**An Improved Spring Fork.**

It has often been proposed to form the upper links of spring forks in such a manner that a certain amount of fore and aft movement is permitted. In the construction illustrated this object is attained, and a neat and strong construction is provided by mounting the rear pivots A of the upper links B upon a spindle C, which is free to slide between springs DE in boxes F carried by the upper ball head G. The spindle A passes through slots in the walls of the boxes, so that it is free to slide backwards and forwards within limits, permitting the desired movement of the spring fork. The springs are thus enclosed, and may



be removed by detaching the screwed end caps H.—W. Douglas, No. 14,541, 1915.

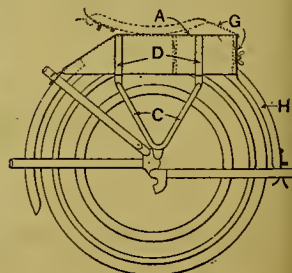
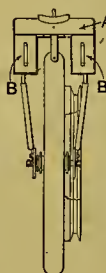
**Sidecar Suspension.**

The sidecar wheel spindle A is carried by a fork B, which is pivoted by a long bearing member at C in a loop in the sidecar frame. The wheel carrying fork is acted upon by either a full or half cantilever spring E. The drawings selected show two different ways of carrying out the invention. In the plan view there are two short cantilever springs, one

each side of the wheel, and in the side view is one long cantilever which engages the end of the fork, but in either case the spring can be of the half cantilever type, and arranged above the wheel.—W. Douglas, No. 15,099, 1915.

**A Tool Carrier.**

Instead of this being constructed of tubes with boxes strapped to it, it is built up of sheet metal, so bent as to form a platform at A, which constitutes the top of the carrier, and two boxes B, into which push drawers containing the tools. The sheet metal carrier is supported upon bearings C, the upper ends of which are secured by straps D, which pass round the sheet metal portion and serve to stiffen it. The pockets B enclosing the tool boxes are closed at the back by the flap G, which is hinged to the platform portion A, and can be folded up or down, as the dotted lines show. To the hinged flap is attached the rear extremity H of the mudguard, which consequently can be moved out of the way to facilitate tyre repairs.—G. I. Francis, No. 101,198.





# QUESTIONS & REPLIES



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Hub Gears.

**Q.** Will you please tell me if there is any other difference between the Armstrong T.T. three-speed hub and the Armstrong three-speed free engine hub, other than the absence of a clutch? Does the gear occupy the whole of the hub, or only the same space as in the free engine type?—D.R., B.E.F.

The T.T. three-speed hub is much smaller, and does not contain a clutch. It does not occupy the whole of the hub. The main spindle inside is without a slot for the clutch, and a larger sun pinion is fitted.

## Magneto Trouble.

**Q.** I have a J.A.P.-engined  $2\frac{1}{2}$  h.p. motor cycle. When I got the machine the engine would run with the ignition lever slightly retarded. Now it will only run with the lever fully advanced. It is an E.I.C. magneto. Can you tell me what is wrong, and how I can put it right?—D.G.R.

Examine the contact breaker points, turn the engine round, and see if the points separate properly. The distance of separation should be .4 mm. If this is the case the magneto should fire throughout the whole range of advance. If the trouble is as suggested you can easily adjust the break of the points by means of the special spanner and gauge supplied with all magnetos.

## Sidcar Incorrectly Attached.

**Q.** I am riding a Triumph with sidcar, three-point attachment. When going at any speed and I attempt to turn to the right the front wheel immediately skids. I dare not indulge in a burst of speed unless on a perfectly straight road, as this always occurs, even when turning ever so slightly at speed, and I have to shut off at once or skid off the road. The bottom cross stay of the sidcar is cranked to bring the sidcar wheel in line with the back wheel of the motor cycle; and the distance between both wheels, back and front, is equal, and the combination appears to be lined up straight. I should esteem it a great favour if you would tell the probable cause and how to effect a cure.—J.A.

It is rather hard to say what is the matter with your machine without actually seeing it. Evidently the distribution of weight is wrong, and there is too much weight behind and not enough in front. Try and see if you can advance the sidcar slightly.

## A Leaky Pulley Bearing.

**Q.** I am troubled with oil leaking out of the crank case past the pulley flange in my machine, the oil being thrown on to the belt and the left hand side of the machine. I have fitted a new key on to the flywheel, but this has not cured the trouble. Also, I have tried all sorts of packing and washers, felt, and so on, but after a few runs the trouble occurs again.—A.W.

You might possibly cure the trouble by fitting a second air release valve or by having the crankshaft on the pulley side drilled down the centre, and a hole drilled vertically to meet it inside the crank case, so that you get an extra release by this means. This is a practice which is carried out on several makes of machines, and might cure the trouble of which you complain.

## Overheating.

**Q.** I have a 2 h.p. Humber motor cycle, which overheats after a run of about five miles. I am using good oil. B. and B. carburettor, size 26 jet. The gear is 7 to 1, and the petrol consumption 80-90 m.p.g. I drive at about 20 m.p.h. What do you think is the cause of the trouble? The engine will start from cold with the throttle a quarter open and the air lever closed. When the engine has become warm, with the throttle lever a quarter open and the air lever one-third open, I get a speed of 20 m.p.h. If I open the air lever as wide as it will go, I have to open throttle also, then the speed is too fast.—C.B.

We should advise you to use a smaller jet, say a 24, and ride with the spark fully advanced. Also use a good single-point plug, the points of which do not project too far into the cylinder and which are not too thin. You might try a slightly higher gear.

## Lubrication.

**Q.** My machine is a  $2\frac{1}{2}$  h.p. four-stroke. (1.) Which is the best oil for lubricating an Albion gear box? (2.) Which is the best oil for lubricating hubs and forks? (3.) Should the handle-bar exhaust lifter raise the exhaust valve as much as the engine does? (4.) I have a two-speed Albion gear box with no clutch. Would it hurt the engine to run on the stand in the free position? (5.) Can the free position be used going down hill with the engine stopped? (6.) Can the free position be used going down hill with the engine running?—L.J.

(1 and 2.) The engine oil will do for both. (3.) The valve lifter should raise the exhaust valve rather more than does the exhaust cam. (4.) You can run the engine in the free position for about half a minute without doing any harm. (5.) It is better to keep the engine in gear when descending a hill, and raise the exhaust valve. This enables you to cool the engine, also to use the engine to some extent as a brake. If you coast down a long hill with the engine out of gear the difficulty is to engage the gear again unless you have a clutch. (6.) There is no object in doing this with the engine running, as you do not cool the latter in any degree, and it simply wastes petrol.

## Automatic Inlet Valves.

**Q.** I have an old single-cylinder engine (make unknown) of about  $3\frac{1}{2}$  h.p. It has an automatic inlet valve which leaks badly, and allows the engine to blow back into the carburettor so much that I cannot get more than about two consecutive explosions. I have ground in the valve, and also had it ground in at a garage, and I have fitted a stronger spring, but I cannot make it any better. The stronger spring seems to have made it worse. If the engine is turned over compression with the induction pipe off one can feel the air being blown out of the top of the valve. Can you tell me what to do? The valve appears to fit the seating perfectly, and I am sure that the mixture is not too weak, as the engine runs no better when the carburettor is flooded.—L.F.I.

The leak may be not at the valve itself but in the orifice into which the valve fits. See that the surfaces of the joint are clean and true, while a copper and asbestos washer might also overcome the difficulty. The opening should be about five-thirty-seconds of an inch. If it is greater than this it should be reduced by means of a washer.

## IMPORTANT NOTICE.

### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD



**Registration.**

**Q.** I recently purchased a motor cycle, paying part of the cash down and the balance monthly. I paid the fee for the transfer of the number, but I shall not get the transfer papers until the machine is fully paid up. Some few weeks ago our police officer interrogated me regarding the registration, and said he had been informed it had been transferred to me, and asked to see the papers. I explained the position to him, which he said was satisfactory. He stopped me again the other day, and now threatens me with a summons if I do not get the papers showing the transfer. Would you inform me if I am clear of the law or not?—G.W.T.

If it is a fact that the machine is properly registered you need not worry in the slightest. All the policeman can do is to summon you for using an unregistered machine, if the registration is not in order. He is clearly exceeding his authority, and he has no right to demand to see your registration papers, though, of course, he may demand to see your local taxation licence to keep and use a motor cycle, and your driving licence.

**Front Cylinder Refuses to Fire.**

**Q.** I have a 1913 twin motor cycle. No. 1 cylinder does not fire until the engine is raced. It has been so for a long time. I have cleaned the plug points, and still it does not fire. Lately, while retiming the Bosch magneto, I noticed that the platinum points of contact breaker in No. 1 open much wider than No. 2. I presume they open too wide. If so, please say what can be done to make them open alike.—H.C.

It is probable that your trouble is due to air leaks in the induction pipe. See

that all doubtful unions and joints are bound with adhesive tape. You should also attend to the following points: Make sure all valves are seating properly, and that the springs are in good order. Try changing the plugs from the sound cylinder to the faulty one. This will show whether the plug is at fault. You should also attend to the contact points; see that they are clean and breaking correctly. The distance should be .4 mm., i.e., about the thickness of a visiting card. You should remove the cam which has the smaller break and pack it up with a thin piece of packing—a piece of strong paper would probably be sufficient. The points separating unevenly might cause the trouble.

**Pre-ignition.**

**Q.** My motor cycle is a 2½ h.p. two-speed A.J.S., 1912, or late 1911 model. It was thoroughly overhauled four months ago, and I have ridden 290 miles since. Up to a few days ago everything seemed mechanically perfect, but now the engine gets excessively hot after a mile or two, and is positively "unrideable" in two or three minutes. Carbon deposit is, of course, naturally suspected, but having regard to the trouble coming with such suddenness, I am loth to go to the trouble of taking down the cylinder. Therefore, I turn to you in the hope that, with your varied experience, you may be able to supply a simple solution of the overheating. I fitted a new sparking plug recently, and the magneto was cleaned only the other day.—R.S.D.

We should certainly recommend you to take down the cylinder and carefully examine every part of the engine, and make sure the piston rings are free in their grooves. Also note if the exhaust valve is lifting properly. The new spark-

ing plug might be the cause of the trouble. Sometimes an unsuitable plug will cause pre-ignition, which may be easily mistaken for overheating, as one gets very much the same symptoms. And do not ride with a retarded spark.

**EXPERIENCES WANTED.**

"R.J.W." (Cork).—4½ h.p. James sc. Hill-climbing, consumption, speed, reliability, and ease of control.

"F.L." (London).—Grado-Multi gear or Philipson pulley on 3½ h.p. single. Belt slip and wear.

"J.M.S." (Leeds).—1913-14 Auto-wheel. Speed, hill-climbing, and use of paraffin.

**READER'S REPLY.****Difficult Starting.**

If "G.H.L." will adopt the following plan he should be able to start his 5-6 h.p. Rudge without difficulty: Turn engine over until inlet valve is open. Inject petrol with oil gun down inlet valve guide; also spray a little petrol over carburettor gauze. Air lever one-third open, and small throttle opening only until engine is started, when air lever can be opened as wide as possible.—H.J.

**RECOMMENDED ROUTES.****NEWCASTLE TO MANCHESTER.—J.W.A.**

Newcastle, Durham, Darlington, Thrusk, Ripon, Ripley, Spacey Houses, Poole, Apperley Bridge, Bradford, Halifax, Sowerby Bridge, Rochdale, Middleton, Manchester.

**CAMBRIDGE TO SOUTHAMPTON.—J.S.B.**

Cambridge, Royston, Baldock, Hitchin, Luton, Dunstable, Tring, Chesham, Amersham, Beaconsfield, Slough, Windsor, Bagshot, Camberley, Hartley Row, Basingstoke, Winchester, Southampton.

**BOURNEMOUTH TO ST. IVES.—H.C.**

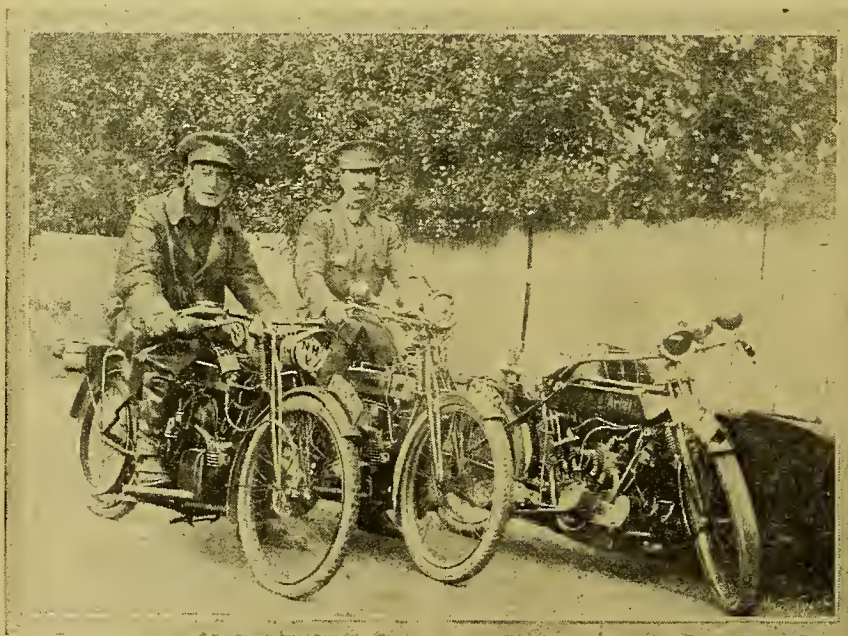
Bournemouth, Fleets Corner, Lytchett Minster, Bere Regis, Dorchester, Bridport, Charmouth, Lyme Regis, Colyford, Sidford, Exeter, Moretonbampstead, Two Bridges, Tavistock, Callington, Liskeard, Bodmin, Mitchell, Zelah, Redruth, Hayle, St. Ives. Approximately 193 miles.

**STROUD TO ST. LEONARDS-ON-SEA.—P.R.C.**

Stroud, Nailsworth, Cold Aston, Bath, Warminster, Heytesbury, Wilton, Salisbury, Blandford, Southampton, Fareham, Cosham, Emsworth, Chichester, Arundel, Broadwater, Old Shoreham, Brighton, Lewes, Beddingham, Polegate, Pevensey, Bexhill, St. Leonards. Approximately 182 miles.

**HIGH WYCOMBE TO CHATHAM (AVOIDING LONDON).—F.H.S.**

High Wycombe, Beaconsfield, Windsor, Staines, Hampton Court, Kingston, Sutton, Wallington, at the cross roads turn right and make your way to Purley, then continue through Upper Warlingham, Westerham, Riverhead, Igham, Wrotham Heath, Aylesford, to Chatham. Approximately 90 miles.



Despatch riders attached to the National Motor Volunteers. Two of the machines are Douglasses, whilst the sidecar outfit is a twin Ariel. The photograph has been sent us by F. J. Watson, the owner of the sidecar, and a well-known rider of Swift and Ariel machines.



Fit

# Wood-Milne

## Motor Cycle Tyres

and experience *real* "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

Wood-Milne, Ltd.



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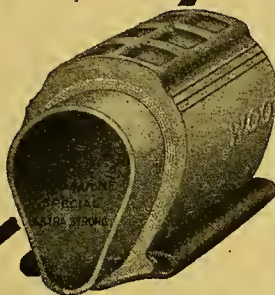
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LONDON Manchester Avenue, E.C.

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P.Pat. 11638/16

A  
Watch-  
protector  
that **SHOWS**  
the time—not hides it

This *improved* watch-protector reveals the time in any position, yet protects perfectly. It fits any wrist watch,—once fixed you need not touch it.

Telephoning, writing, driving—whenever the hands are employed, turn your wrist and the time is before you.

**WRIST WATCH**  
*"Mesh-Guard"*

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Have one fitted to-day—then the first fall or squeeze your watch receives the "Mesh-Guard" has paid for itself.

Insist on the "Mesh-Guard". British-owned and British-made. Sold by leading Jewellers everywhere. Nickel or Rhaki 1/-; in Rolled Gold or Hall-marked Silver 2/6.

If any difficulty in obtaining, please send your name & address to the "Mesh-Guard" Advertising Dept., 10-13, New Bridge St., London

## GAMAGES GREAT FREE GIFT SALE.

SOME SPECIAL OFFERS for the Motor Cyclist.



### SPECIAL EYE PROTECTORS.

Give a large range of vision, very light and comfortable.

Sale Price **10 1/2 d.**

Usual Price 1/3 Post 2d.

390 of the "CYCLECAR."



### COLLAPSIBLE GOGGLES.

Dustproof, comfortable, light, ideal for motor cyclists.

Sale Price **1/3** Sold elsewhere 2/-

Post 2d.

### MOTOR CYCLING CAPS.

"The Oban."



One of the most satisfactory Caps produced.

4/8 1/2 Usual Price 6/6

Stout Waterproof Cap, with Neck and Ear Flaps to fasten on the crown. All sizes.



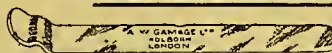
250 Very Useful Motor Cycling or Travelling Caps. Made of Fawn Waterproof Craveotte, with flaps to let down or fold on crown. Silk lined.

3/4 1/2 Usual Price 4/6

### MOTOR CYCLE TYRE LEVERS.

6 1/2 in. long.

3d. each, 8d. Set of 3. Post extra.



### 9 in. ADJUSTABLE SPANNERS.

Sale Price **1/9** Post 4d.

Wonderful Value.

### SPECIAL

3 only shop-soiled Allon single-speed Motor Cycles, 1916 models. Special Sale Price £30 0 0  
1916 New Imperial Motor Cycle. Hand-controlled clutch and kick-starter. Almost new. £38 0 0. Usual price £43 0 0

Send for NEW BARGAIN CATALOGUE giving details of our wonderful FREE GIFT OFFER.

### SPECIAL TO MOTOR CYCLISTS.

1,000 of our Special Showerdust Overalls, Jackets, and Leggings.

Very Strong and Durable.

All Sizes in Stock.



500 Jackets and Overalls, as illustration .. 16/11  
500 ditto, Jackets lined with a warm Fleece,

Overalls lined Italian Cloth..... 28/9

Post Orders Enclosing Treasury Notes should be registered.

Telephone No. Holborn 2700 (12 lines).

**A. W. GAMAGE, Ltd.,** Holborn, LONDON, E.C.



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON King Dick, 3 1/2 h.p., 2-speed, handle-bar starter, in good order, with sidecar; £22/10.—17, Goldhawk Rd., Shepherd's Bush, London. [3056]

### A.J.S.

**A** J.S. 6h.p. Combination, the very latest.—Bull. St. Giles's Sq., Northampton. [X9033]

**A** J.S. 1914 2 1/2 h.p., 2 speeds, in real nice condition; £28.—6, Warren St., London. [3093]

**A** J.S., 2 1/2 h.p., 3-speed, 1916, new, also 4 h.p. combination, in stock.—Pickering, Mardol, Shrewsbury. [X8240]

**19** 16 4h.p. A.J.S. Combination, ridden 150 miles, better than new; £85, no offers.—Russell, Clifford St., York. [3150]

**6** h.p. A.J.S., early 1914, Gloria coachbuilt sidecar, new tyres; inspection; £36.—Partington, Long Lane, Hildes Green, near Wigan. [X8985]

**A** J.S., 1916, 3-speed, Binks carburettor, for Endowment Insurance Policy, or sell £46.—Particulars to Box 325, c/o The Motor Cycle. [X8624]

**A** J.S. 6h.p. Combination, late 1914, just overhauled, all accessories; owner joined army; £72/10.—Evans, Garage, Newport, Salop. [2983]

**19** 16 A.J.S., 2 1/2 h.p., 2-speed, done under 600 miles, in superb condition; offers.—Gilmour, Tullibody Rd., Alloa, N.B. (Private owner.) [X8995]

## IT PAYS TO COME BACK TO



after reading all the other advertisements, or to call and see our great show after looking over all other offers.

Nowhere do you find such a great number and variety of bargains in best makes, in such splendid order, fully guaranteed, offered for cash or easy terms at such

## Record Clearance Prices.

HERE ARE A FEW SAMPLES. WRITE FOR TO-DAY'S FULL LIST. CALL AND SEE THE EXCEPTIONAL VALUE.

No.	h.p.		
10682.	6	1914 3-sp. BRADBURY	£47 10
10684.	7-9	1914 3-sp. INDIAN	£27 10
10687.	12	single-speed J.E.S.	£10 0
10688.	2 1/2	1911 2-sp. DOUGLAS	£22 10
10696.	2 1/2	1915 A.J.S.	£40 0
10698.	2 1/2	1913 2-sp. DOUGLAS	£35 0
10699.	3	1913 3-sp. HOBART & Sidecar	£35 0
10700.	5-6	1913 2-sp. F.N. and Sidecar	£32 10
10701.	2 1/2	1911 single-speed	£22 10
10683.	3 1/2	1912 single-speed INDIAN	£20 0
10643.	3 1/2	1914 RUDGE Multi	£40 0
10644.	4-5	1914 ZENITH-GRADUA & Se.	£70 0
10649.	3 1/2	1913 single-speed B.S.A.	£25 0
10661.	6	1913 ENFIELD and Sidecar	£45 0
10663.	7-9	1914 2-sp. INDIAN	£35 0
10664.	7-9	1913 2-sp. INDIAN and Sidecar	£37 10
10668.	3 1/2	1914 2-sp. DOUGLAS	£42 0
10673.	4 1/2	1914 3-sp. B.S.A. and Sidecar	£45 0
10674.	6	1914 CLYNO and Sidecar	£68 0
10693.	2 1/2	1913 2-sp. DOUGLAS	£25 0
10698.	4	1915 3-sp. JAMES and Sidecar	£55 0
10670.	2 1/2	1913 3-sp. NEW HUDSON, Se.	£45 0
10674.	3	1911 single-speed HUMBER	£25 0
10640.	7-9	1913 INDIAN and Sidecar	£65 0
10627.	3 1/2	1914 3-sp. MAXIM	£15 15
10628.	1 1/2	1914 single-speed DAYTON	£12 10
10629.	3 1/2	1914 3-sp. ROVER and Sidecar	£50 0
10632.	4	1915 3-sp. DOUGLAS and S'car	£72 0
10633.	4	1914 3-sp. SINGER and Sidecar	£45 0
10637.	4	1914 3-sp. QUADRANT & S'car	£42 0
10683.	3 1/2	1913 3-sp. RUDGE Multi and Sidecar	£45 0
10690.	3 1/2	1912 2-sp. MATCHLESS & Se.	£35 0
10696.	3 1/2	1913 RUDGE Multi	£35 0
10697.	4	1915 2-sp. 2-str. CALTHORPE	£25 0
10670.	4-5	1915 2-sp. BAT	£47 10
10673.	2 1/2	1915 2-sp. CALTHORPE	£31 10
10674.	2 1/2	1915 2-sp. JAMES	£37 10
10681.	3 1/2	1912 PREMIER and Sidecar	£20 0
10638.	3 1/2	1915 twin INDIAN	£47 10
10640.	4 1/2	1914 3-sp. JAMES and Sidecar	£50 0
10642.	3 1/2	1913 3-sp. HUMBER	£25 0
10633.	3 1/2	1908 2-sp. TRIUMPH	£22 10
10633.	1 1/2	J.E.S.	£10 10
10695.	3 1/2	twin N.U.T.	£35 0
10677.	3 1/2	single-speed 1912 TRIUMPH	£25 0
10679.	3 1/2	1914 2-sp. PREMIER	£35 0
10623.	2 1/2	1913 2-sp. DOUGLAS	£44 0
10633.	4 1/2	1912 3-sp. QUADRANT	£27 10
10477.	2 1/2	1912 2-sp. SINGER	£20 0
10485.	4	single-speed BRADBURY	£23 10
10430.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10435.	6	1912 REX-J.A.P. and Sidecar	£27 10
10448.	4 1/2	1914 3-sp. B.S.A.	£57 10
10453.	3 1/2	1915 SUNBEAM and Sidecar	£65 0
10458.	2 1/2	1914 2-sp. 2-stroke CLYNO	£25 10
10462.	5-6	1913 2-sp. N.S.U.	40 gns.
10390.	2 1/2	1915 2-sp. WOLF-J.A.P.	£30 0
10396.	3 1/2	2-sp. FAFNIR	£12 10
10402.	4 1/2	1915 GRANDEX	£37 10
10342.	1 1/2	1914 AUTO-WHEEL	£10 10
10323.	2 1/2	1911 2-sp. DOUGLAS	£25 0

**WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON**  
Phone: 5777 Holborn. Wires: "Opifcer, London."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all application received. The necessary forms of application can be obtained from any Labour Exchange, or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

**19** 16 A.J.S. Combination, latest 4h.p., broad new with spare wheel, tyre, and wind screen; in stock for immediate delivery.—Prices and particulars, Robinson's Garage, Green St., Cambridge. [305]

**19** 13 A.J.S. 3-speed 6h.p. Combination, several 1916 improvements, complete with hood, wind screen, lamps, horn, etc., all in splendid condition; £60.—Boyce, 331, Archway Rd., Highgate, N. [302]

**A** J.S., latest 1915, 6h.p. twin, 3-speed, interchangeable wheels, spare wheel complete, car tyres, speedometer, patent hood, side curtains, extra large body, adjustable wind screen, handsome turnout, runs entire on substitute; £85, or nearest.—Scott, c/o Catlin's Car Grantham. [X793]

### Alldays.

**A** LLON, 2 1/2 h.p., 2-stroke, 2-speed, 1916; in stock.—Pickering, Mardol, Shrewsbury. [X824]

**A** LLONS in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [264]

**C** OLMORE Depot, 31, Colmore Row, Birmingham can supply immediately all models of Alldays Alloy. [1079]

**A** LLDAYS Matchless, 2-speed, enamelling and plating excellent; £35.—Parker and Son, St. Ives, Hunt. [316]

**19** 14 Alldays, 7h.p., splendid condition, minimum silencer; bargain, £35.—Carmichael Bros., Col. stream. [X899]

**A** LLDAYS Allon, 1916 models in stock; cash; gradual payments 2% only.—Referee Cycle Co., 33, High Holborn. [1076]

**A** LLDAYS Allon, 1916, 2 1/2 h.p., 2-speed, 2-stroke £32.—Elce and Co., 15-16, Bishopsgate Av., Cannon St., E.C. [1049]

**P** ETROL Free with 1915 Alldays Matchless, 4h.p. clutch, kick start; 26 gns.—Troward, 78, High St., Hampstead. [320]

**A** LLDAYS Allon, 2-stroke, 2-speed, in practically new condition, all accessories; £28.—106, St. Paul Rd., Canonbury. [311]

**A** LLON, 1916, 2 1/2 h.p., run 400 miles. Like new, Mille lamp set, etc.; cost £40 new, sacrifice £29.—Kinn Chemist, Sutton. [307]

**19** 16 Alldays Allon, 2-speed models, in stock; 24 easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [264]

**A** LLON, 2 1/2 h.p., 1915 1/2, accessories, run 1,500 miles, perfect; £25; appointment.—Stokes, 3, Kempshott Rd., Streatham Common. [304]

**A** LLDAYS Allons, all models, delivered from stock and 1915 single-speed with original tyres at £27/10; and late 1915, 2-speed, hand clutch, £36/10 original tyres; deferred payments entertained; changes.—Lamb's, 151, High St., Walthamstow, on 50, High Rd., Wood Green. [279]

### Antoine.

**P** ETROL Free with 1911-12 Antoine 6h.p. twin clutch, kick start, new tyres, belt; 14 gns.—Troward, 78, High St., Hampstead. [319]

### Ariel.

**S** ELL Ariel Combination, perfect, 3-speed, kick start spares.—Particulars, Herrod, Luton. [X894]

**A** RIEL, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [264]



## MOTOR CYCLES FOR SALE.

## Ariel.

**ARIEL**, 3½ h.p., variable pulley gear, h.b.c., lamps and horn, fast, excellent condition; £27.—Trolley, Banbury. [2956]

**2** h.p. Ariel, mag., Amac, lamp, pump, horn, all in 22, good condition; must sell, joining up; £8, bargain.—13, Batley Rd., Stoke Newington. [3121]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

**1914** Ariel Combination, N.S.U. 2 speeds, Millford sidecar, decompressor, electric horn, lamps, aluminium footboards, Bosch mag., splendid machine; £38.—22, Chesholm Rd., Stoke Newington. [2965]

**1916** 5-h.p. Ariel Combination, almost new, all black finish, done 2,000, all possible accessories in splendid order and condition guaranteed; £80; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3175]

**ARIEL** Combination (1914-1915), 3½ h.p., 3-speed countershaft gear box, clutch and kick starter, electric lamps, and special switchboard, horn, luggage and petrol carrier, in splendid condition throughout; cash £42/10, or by deferred payments 2% extra; deposit £10/10 and 12 monthly instalments of £21/4/9; carriage paid to any address in Great Britain.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [2932]

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**AUTO-WHEEL** and lady-back, nearly new; £15, bargain.—29, St. Leonard's St., Bow. [3036]

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**1916** Bat Combination, petrol; cost £103, £73.—Letters, 18, Pinfold Rd., Streatham. [2892]

**BATS**—P. J. Evans, Birmingham agent.—Immediate delivery 4½ h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X9053]

## Bradbury.

**1912** Bradbury, complete, lamps, etc.; £15.—Cross, Agent, Rotherham. [X9103]

**BRADBURY**, 4h.p. free engine model, splendid condition; £23/10.—73, Church St., Camberwell. [3000]

**1912** 4h.p. Bradbury, fixed pulley, in perfect running order; £23.—Richards, 24, Wood St., Ilkerton. [X8912]

**BRADBURY**, 1912, 4h.p., good condition, spares; genuine bargain, £17.—81, Newington Butts, S.E. [2974]

**BRADBURY**, 1912, 4h.p., almost new coachbuilt sidecar, engine very good condition; £15.—Booth, Beethroyden, Blackpool. [X8942]

**BRADBURY** 1915 Twin 3½ h.p. Motor Cycle, Bury sidecar, 1916, coachbuilt, very little used.—Richardson, Horace St., Boston, Lincs. [3098]

**BRADBURY**, 4h.p., June, 1911, cane sidecar, 1913, 2 speeds, kick starter, chain-cum-belt, Binks, new back tyre, all accessories, in fine condition; £28.—Sim, 29, Broadlands, Paisley. [X8957]

**BRADBURY**, 1914 (October), 4h.p., coachbuilt sidecar, 2-speed, clutch, splendid condition, only run 3,000 miles, new extra heavy Dunlops, all accessories; bargain, £39.—Shaw, 50, King St., Oldham. [X8969]

## Brough.

**3** h.p. Brough Horizontal Twin, overhead valves, 2 semi T.T. 3-speed, h.b.c. clutch, mileage under 2,000, perfect; £49, lowest.—Davidson, Chemist, Nuneaton. [X9039]

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"	2½	h.p. CALTHORPE—J.A.P., Enfield 2-speed, variable ign. .....	£37 16 0
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## B.S.A.

**B.S.A.**: 3½ h.p., 2-speed, gear, kick starter, and coach-built sidecar; £35.—A.B., 17, Sandtoit Rd., Charlton, S.E. [2962]

**1916** 4½ h.p. B.S.A., delivered July, F.R.S. lamps; £56, lowest.—Shaw, Book of Liverpool, Wolsingham, Co. Durham. [X9069]

**B.S.A.** Combination, 1916½, 4½ h.p., hood and screen, 3-speed, speedometer, as new; £70.—213, Cassland Rd., South Hackney. [X8907]

**B.S.A.**, 4½ h.p., 1914½, 3-speed countershaft gear, lamps, horn, tools, fine order; £42.—Walker, 36, Clarence St., Kingston. [3167]

**B.S.A.**, 1913, fitted with 2-speed gear, full set of lamps and horn, spare valve and tools; £32.—W. Bint, Evesham St., Redditch. [X8803]

**1915** B.S.A. Model K, carefully used, splendid condition, lamps, horn, trip speedometer; £45, no offers.—23, R.F.C. Villas, S. Farborough. [3062]

**1913** 2-speed B.S.A., chain drive, all accessories, guaranteed perfect; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [2655]

**1913** 2-speed B.S.A., belt drive, all accessories, in splendid condition; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [2656]

**B.S.A.**, 1915, model K, countershaft combination, splendid order, wind screen, luggage grid, mechorn, paraffin device, spare tank; £60. Garaged Norbury.—Spencer, 6, Dansey Yard, Wardour St., W. Gerrard 4405. [3131]

**B.S.A.**, 1915, 4½ h.p., and sidecar, 3-speed countershaft, clutch, kick starter, chain drive, in perfect condition, new Dunlops, Cowey speedometer, spares; £50, or near offer, or accept lightweight and cash.—Immar, Hutton, Bedale. [3083]

**4** h.p. B.S.A., with special Canelet sidecar, late 1915 model, speedometer, Lucas horn, 3 P. and H. lamps; this machine is in perfect condition, and is very smart, mileage driven is under 2,000; bargain at £68/10.—Apply, Beadle, Motors, Dartford. [2312]

**1916** B.S.A. 4½ h.p. Combination, in perfect condition, ridden about 1,000 miles, Lucas £3/10 lighting set, face lot of accessories, £64, or nearest; exchange good recent solo mount, A.B.C. or Brough.—Wm. Harlock, Jun., Ltd., 63, Denmark Hill, S.E. [3186]

**B.S.A.**, 1916, 4½ h.p., 3-speed, all chain driven, kick starter, B.S.A. coachbuilt Gloria sidecar (cost £23), 3 lamps, 3 generators, horn, speedometer, like new, £2 worth of spares; cost £35, accept £59, real bargain.—Smith, Charlton Villa, Staines Rd., Bedford, Middlesex. [3002]

**B.S.A.'s**—Three 1917 models, K, belt-cum-belt, £64 each; one model H, all chain, £66, actually in stock; also Canelet sidecars, 13 guns, to suit, hoods and screens extra; liberal exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2791]

**B.S.A.**, 1915, model K, 3-speed countershaft, with B.S.A. sidecar, and usual accessories, quite the best one year old combination we have seen, price £56; B.S.A., 1914, model H, 3-speed, chain drive, with light coachbuilt sidecar, complete, a very fine and well cared for combination; price £46; approval.—Laytons' Garage, Bicester, Oxon. [X8749]

## Calthorpe.

**2** h.p. Calthorpe-Jap, 1915, Enfield gear, perfect condition.—35a, Lyric Rd., Barnes. [2954]

**CALTHORPE** Lightweight, 2-speed, perfect; £19; exchange higher power.—497, Old Ford Rd., Bow. [3036]

**CALTHORPE** Junior, 1914, 2 speeds, £14; Calthorpe Junior, 1915 J.A.P. engine, Enfield 2-speeds, £20.—6, Warren St., London. [3095]

**CALTHORPE**, Dec., 1915, 2½ h.p., 2-stroke, 2-speed, lamps and spares, only used 5 months; £26, quick sale.—Bernards, 17, Ommamney Rd., New Cross. [3106]

**BARGAIN**—1915 2½ h.p. Calthorpe-Jap, Enfield 2-speed gear and free engine clutch, perfect order; £20.—After 6 p.m., 24, Tudor Gardens, Barnes. [3009]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**CALTHORPE-J.A.P.**, 1916, 2½ h.p., Enfield 2-speed, now, but slightly shop-soiled; special bargain, £31, usual price £37/16.—Wilks, Simpson, and Co., 11, Hammersmith Rd., London. [2945]

**CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

**CALTHORPE-J.A.P.**, 2½ h.p., 2-speed models actually in stock. £37/16; also a 1916 Calthorpe-Jap, with 2-speed gear, Lucas accessories, horn, registration, special fittings, £34/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2787]

## Campion.

**1915** Campion, 2½ h.p., lamps and horn, excellent condition; £25.—Lance Corporal Williams, A.P.M.'s Office, Kinnel Park, North Wales. [X9042]

## Chater-Lea

**CHATER-LEA** No. 7 Combination, 8h.p. J.A.P. twin, new condition, accessories; £50.—24, Gwendolen Av., Putney. [3063]



## MOTOR CYCLES FOR SALE.

## Chater-Lea.

CHATER-LEA No. 7 Combination, 8hp. J.A.P. twin, magnificent condition; £65.—12, Gray's Inn Residence, 180, Clerkenwell Rd., London. [2487]

CHATER-LEA Combination (1914), 8hp., with coach-built sidecar, 3-speed countershaft gear, clutch, and kick starter, in nice order and condition; cash £42, or by deferred payments 2% extra; deposit £8/10 and 12 monthly payments of £2/17/3; carriage paid to any address in Great Britain.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [2934]

## Chater-Lea-Jap.

CHATER-LEA, 6hp. J.A.P. twin, free engine, and sidecar, all in nice order; £20, a bargain.—6, Warren St., London. [3091]

CHATER-LEA, 4hp. J.A.P. engine, N.S.U. gear, with sidecar, would separate; £27, rare bargain; trial.—17, Belmont Hill, Lewisham. [3104]

CHATER-LEA, 1912, 8hp. J.A.P., just overhauled thoroughly, modernised, brand new 3-speed Sturmer-Archer countershaft, h.c. clutch, new Binks 3-let carburettor, new Avon cover back tyre, new Stewart speedometer, lamps, auxiliary tank, spares, extra large sidecar; bargain, £40.—Brett, Recreation Office, Slough. [3155]

## Chater-Torpedo.

CHATER-TORPEDO, 3½hp., Grado multi pulley, Phoenix sidecar; £29, bargain.—11, Bareness Rd., Hackney Rd. [3020]

## Clarendon.

3½hp. Clarendon, Bosch mag., B. and B. carburettor, 2nd Saxon spring forks, good condition; £14.—G. Joynton, 5, Princess Sq., Longport, Staffs. [X9082]

## Clyno.

PETROL Free with 1912 Clyno, 6hp., 2-speed, sidecar; 28 gns.—Troward, 78, High St., Hampstead. [3205]

CLYNO and Sidecar, 1914, Cape hood and wind screen, speedometer; £60, or nearest offer.—Box L2304, c/o The Motor Cycle. [2992]

1914 Clyno 2-stroke, in new condition, 2-speed, hand-controlled clutch, Lucas lamp and horn; £26.—Missin, Cotingham, Hull. [X9124]

1914 Clyno, 2-stroke, 2-speed, free engine, clutch, 2 lamps, good tyres, excellent order; £25.—Robinson's Garage, Green St., Cambridge. [3046]

5-7hp. Clyno, with Montgomery sidecar, quick fit connections, kick-starter, chain drive, usual accessories, excellent condition throughout; £35.—Webster, 8, Shalstone Rd., Morklake. [3059]

## Connaught.

CONNAUGHT, 1914, 2-speed gear box, perfect; £26. W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [2596]

1915 2½hp. Connaught, 3 speeds, Senspray, drip lubrication; £28.—52, Woodcote Rd., Wanstead. [3122]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6; one shop-soiled miniature model, with horn and numbers, £23.—87-91, John Bright St., Birmingham. [X9047]

## Daw.

DAW, 2½hp., good running order; for quick sale, £7/10.—Leveridge, Clevedon, St. Mary's Rd., Harlesden. [3015]

## Douglas.

DOUGLAS, 2½hp., first to view will purchase; £15, no offers.—14, Dodd Brooke Rd., West Norwood. [1541]

DOUGLAS, 1915, 2-speed, new condition, with accessories; £45.—Pickering, Mardol, Shrewsbury. [X8239]

PETROL Free with 1911-12 T.T. Douglas, good order; 15 gns.—Troward, 78, High St., Hampstead. [3199]

DOUGLAS, 1911, new belt, tank, tyres, lamps, splendid running order; £17/10.—2a, Hythe Rd., Willesden. [3006]

1911 Douglas, engine recently overhauled, new tyres and belt, reliable, fast.—26, Morley Av., Birkenhead. [X8804]

1912 Douglas, 1916 engine and Amac, new tyres, belt, fully equipped; £25.—Empson, Gamlingay, Sandy, Beds. [3064]

DOUGLAS, 1914, 2½hp., 2-speed, T.T., just overhauled, all accessories; £34.—Jamie, Burnham House, Hendon. [3040]

DOUGLAS, 1912, good condition, recently overhauled, T.T. bars, Amac carburettor; £25.—11, Deacon Rd., Kingston-on-Thames. [X9023]

1913 2½hp. 2-speed Douglas, T.T., just overhauled, new piston, tank re-ranellised, new Dunlops; £35.—Railway Garage, Staines. [3178]

DOUGLAS, new, latest pattern, 2½hp. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 2½hp., new December, 1914, in excellent condition, very little used, all accessories; £40.—Corke, Butcher, Kenley, Surrey. [X8795]

2½hp. Douglas, late 1913, 2-speed, clutch, good tyres, 24 lamps, accessories, engine new condition; accept £42.—Short, Wingfield Rd., Sherborne. [2908]

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 IVY, 1915, 2-stroke, single-speed..... £18  
 NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine... £29  
 REX, 1912, 3½ h.p., 2-speed, and clutch..... £25  
 RUDGE, 3½ h.p., Philipson pulley, 1915 improvements £42  
 SUN-VILLIERS, 2½ h.p., 1915, 2-stroke ..... £18  
 ENFIELD, 1915, 2½ h.p., 2-speed, 2-stroke ..... £32  
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 INDIAN, 1915, 3½ h.p., 3-speed twin ..... £43  
 INDIAN, 1915, 5 h.p., 3-speed twin ..... £53  
 HARLEY-DAVIDSON, 1914, 9 h.p., 2-speed twin ..... £27  
 ENFIELD, 1911, 2½ h.p., 2-speed twin, as new..... £31  
 TRIUMPH, 1913, 3½ h.p., 3-speed, excellent order ..... £30  
 ROVER, 1912, 3½ h.p., T.T. clutch model..... £20  
 ZENITH, 1912, 3½ h.p., Gradua gear, J.A.P. engine... £26  
 DOUGLAS, 1912 2½ h.p., single-speed ..... £10  
 ALLWAYS ALLEN, 1915, 2-speed, 2-stroke ..... £32  
 DOUGLAS, 1915, 2½ h.p., colonial, 3-speed ..... £53  
 NEW HUDSON, 1915, 2-stroke, as new ..... £24  
 TRIUMPH, 1913, 3½ h.p., 3-speed ..... £33  
 TRIUMPH, 1914, 2 h.p., 2-speed, 2-stroke ..... £35  
 DAYTON, 1914, 1½ h.p., 2-stroke, lightweight ..... £15  
 ALLEN, 1915, 2½ h.p., 2-speed, 2-stroke ..... £32  
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## Douglas.

1915 2½hp. 2-speed T.T. Douglas and accessories in perfect condition; £43; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [2968]

1914 Douglas, 2½hp., 2-speed, free engine, lamps and generator, excellent condition, late model; £37.—Teer, 32, Dartmouth Rd., Chorlton-cum-Hardy. [3137]

DOUGLAS, 1912, 2½hp., 2-speed, kick starter, in good condition, lamps and generator; £26. After 7.—Sanderson, 28, Cambridge Rd., Lee, S.E. [3007]

DOUGLAS, 1913, 2-speed, speedometer, accessories, Binks carburettor, guaranteed; £32.—Parker, Officers' Mess, R.E., Penny Stratford, Bucks. [2981]

DOUGLAS, 1914, 2-speed, kick starter, fully equipped, new rear tyre, excellent condition; £34.—A. E. Wooding, 178, Mitcham Lane, Streatham, S.W. [2957]

DOUGLAS Specialists.—Cibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

DOUGLAS, 2½hp., 2 speeds, 1914, new January, 1915, complete with lamps, etc., good condition; £37.—C/o J. Green, Timber Merchant, Rotherham. [X9028]

1914 W Douglas, 2-speed, kick-start, touring or T.T. bars, footboards, 2 lamps, horn, engine guaranteed perfect; £36.—Robinson's Garage, Green St., Cambridge. [3048]

MOTOR Cycle For Sale, Douglas 2½hp., 2-speed, new September, 1914; owner ordered France; excellent condition; £35.—Housekeeper, 56, Victoria St., Westminster. [2307]

DOUGLAS 1915 Combination, almost new, fully equipped, Douglas 1916 T.T., 2 speeds, new; Douglas 1915 T.T., 2 speeds, as new.—6, Warren St., London. [3087]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [10800]

DOUGLAS, 1914, 2½hp., 2 speeds, in good condition, with footboards, lamp, speedometer, horn, etc.; price £34.—Ashworth, Rose Villas, Stockport Rd., Ashton-under-Lyne. [X8956]

1912 Douglas, 2½hp., 2-speed, footboards, engine overhauled, new tyre and tube, lamps and horn; £25.—Lance Corporal Williams, A.P.M.'s Office, Kinnel Park, North Wales. [X9043]

DOUGLAS, 1911, 2 speeds, fine order, £18; Douglas, 1914, T.T., 2 speeds, £36; Douglas, 1915, T.T., lamps, horn, 2 speeds, fine order, £44.—Batchelor, Clarence St., Kingston. [3166]

1913 Douglas, 2½hp., 2-speed, clutch, kick starter, lamp, generator, horn, speedometer, engine perfect, very smart machine; accept £38, or nearest offer.—L2303, c/o The Motor Cycle. [2993]

DOUGLAS, 1913, 2½hp., 2-speed, tyres nearly new, P. and H. head lamp and generator, rear lamp, horn, spare belt and tube case; £35.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [2949]

1913 Douglas, 2-speed, lamps, horn, recently overhauled, new back tyre, excellent order, fitted with arrangement for easy starting on heavy fuel; £50/10, or exchange.—Lieut. Puckle, Forton Barracks, Gosport. [3120]

1915 Douglas, Colonial T.T. model, 2½hp., 2-speed, lamps, mechanical horn, etc.; £43; also 1910 single-speed model, good running order, £12/10.—Newnham, 223, Hammersmith Rd., W. Phone: Hammersmith 80. [3029]

1916 Douglas, latest pattern, 2½hp., model W, 3-speed, kick-start, Amac carburettor, C.A.V. mag., Lucas horn, ridden few miles only, genuinely indistinguishable from new; £56.—Robinson's Garage, Green St., Cambridge. [3047]

1916 4hp. Douglas Sidecar Combination, War Office model, run about 1,500 miles only, perfect condition, sidecar with spring and fitted with Dunhill wind screen, complete with Lucas horn, tools, and spares; can be seen and tried in London; £85; no dealers.—Box L2,270, c/o The Motor Cycle. [2905]

## Enfield.

ENFIELDS.—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. [2658]

2½hp. Enfield Twin, 2-speed, perfect, just overhauled, £35.—Surrey Rd., Peckham. [2936]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [10801]

1915 Enfield, 3hp., all accessories, excellent condition; £39.—W. 201, George Lane, Lewisham. [2963]

ROYAL Enfield, 1912½, 2½hp., 2 speeds, splendid condition; owner called up; £18.—Patrick, Longford, Coventry. [X8960]

ENFIELD 6hp. Combination, 1913, all accessories, including speedometer; £45.—64, Shelgate Rd., Battersea, S.W. [X8988]

1915 Enfield Combination, 6hp., lamps, horn, tools; £65.—Barnes, Middleton's Garage, Stroud Green Rd., N. [3045]

ENFIELD 1916 6hp. Combination, hood, special 3-fold screen, watch, mechanical horn, back-rest, splendid complete outfit; £77.—70, Wallwood Rd., Leytonstone. [3116]



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Enfield.

2 1/2 h.p. 1915 2-stroke 2-speed Enfield, not done 400;  
£30; condition as new.—L2,274, c/o The Motor  
Cycle. [2919]

ENFIELD Coachbuilt Combination, late 1913: £50,  
bargain.—W. and H. Motor Co., Ltd., 287, Deans-  
gate, Manchester. [2598]

1916 2 1/2 h.p. 2-stroke Enfield, 2-speed, latest model;  
in stock for immediate delivery.—Robinson's  
Garage, Green St., Cambridge. [3051]

ENFIELD, fast, 1916, 3h.p., T.T., 2-speed, complete  
with lamps and horn, in new condition; £40.—  
Brown, 17, Monnow St., Monmouth. [X9084]

ENFIELD Combination, new, not done 100 miles.  
speedometer, horn, perfect reason for selling; what  
offers?—Ridout, High St., Swaleay. [3075]

8h.p., 6h.p. Enfield Combinations, 3h.p. twins and  
2 1/2 h.p. 2-speed 2-strokes; immediate delivery from  
Jones, Garages, Broadway, Muswell Hill. [2651]

ENFIELD, 1913, 3h.p., excellent condition, lamp,  
horn, speedometer, new tyres; £32, or near offer,  
bargain.—Dr. Hough, County Asylum, Gloucester. [X8992]

ENFIELD Combination, 1914, excellent condition and  
appearance throughout, tandem sidecar, fully  
equipped; £60.—53, Ross Rd., Wallington, Surrey. [X9088]

1915 Enfield 3h.p. Twin, in splendid condition after  
little and careful riding, with speedometer, etc.;  
£45, no offers.—Hanbury Francis, Pharmacist, Clifton,  
Bristol. [X9022]

1916 6h.p. Enfield Combination, 90 gns.; 1916 3h.p.  
twin, 55 gns.; delivery from stock.—Exeter Motor  
Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd.,  
Plymouth. [0838]

1914 6h.p. Enfield Combination, every conceivable  
accessory, tip-top condition, £50; new trade  
carrier box, £2/10.—3, The Mews, Victoria Rd., Chap-  
ham, S.W. [3189]

ENFIELD 1916 6h.p. Combination, latest model, new,  
but slightly shop-soiled; special bargain, 80 gns.,  
usual price 90 gns.—Wilkins, Simpson, and Co., 11,  
Hammersmith Rd., London. [2948]

1916 Enfield Combination, 6h.p., purchased March,  
P. and H. lamps, Stewart tip speedometer,  
mileage 2,800, beautiful condition; £70, no offers.—  
Brunsden, 87, Caversham Rd., Reading. [3043]

ENFIELD 1916 2-strokes, 2-speed, and free engine,  
clutch drive, just arrived from works; immediate  
delivery; make sure of this now; £44/2.—Wilkins,  
Simpson, and Co., 11, Hammersmith Rd., London. [2950]

ENFIELD, 3h.p., 1916, latest model, just arrived  
from works, immediate delivery; make sure  
of this now; 55 gns. We are Enfield specialists.—Wilkins,  
Simpson, and Co., 11, Hammersmith Rd., London. [2946]

1916 Enfield, 6h.p., and sidecar, 2-speed gear, hand  
clutch, handle starter, tyres perfect, Stewart horn,  
Miller lamp, machine in lovely running order, and abso-  
lutely as new; 70 gns.—Julian, Broad St., Reading. [0856]

ENFIELD Combinations, latest models. We have  
them in stock, and desire your enquiries concern-  
ing either exchange or extended payment propositions;  
very high prices allowed for good machines.—Laytons'  
Garage, Bicester. [X8738]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91  
John Bright St.—Immediate delivery all models,  
including lighting set combination, special 8h.p. with  
hood and screen, and standard 6h.p. combination, also  
3h.p. standard and sporting models, and 2 1/2 h.p. 2-  
stroke; prices from 42 gns. [X9046]

ENFIELD, special bargain, late 1915 electrically-  
equipped model, with hood and screen, original  
tyres, £79/10, deferred terms if desired; also a 1916  
6h.p., hood and screen, Lucas lamps, horn, ridden  
only 400 miles, 80 gns., deferred payments, exchanges.—  
Lamb's, 151, High St., Walthamstow, and 50, High  
Rd., Wood Green. [2784]

1916 8h.p. Enfield Combination, Colonial model,  
special 2-seater sidecar, purchased Sept. 20th,  
ridden 50 miles; must sell, unable to obtain licence to  
take motor abroad; makers' guarantee; spares of every  
description, all unused, two 26x3 covers and tubes,  
valves, plugs, chains, links, etc.; £105, cost £120.—  
Dr. Woollett, c/o 48, Holborn Viaduct, E.C. [3070]

ENFIELDS—Actually in stock, 8h.p. electrically-  
equipped combination, with hood and screen,  
spring handlebars, and their newest sidecar, oversize  
tyres, £116/16; 6h.p. standard combination, with  
oversize tyres, and their newest sidecar, 90 gns.; 6h.p.  
standard combination, electrically equipped, 105 gns.;  
3h.p. T.T. model, 55 gns.; and 3h.p. touring model,  
55 gns.; demonstrations; deferred payments, exchanges.  
—Lamb's, 151, High St., Walthamstow, and 50, High  
Rd., Wood Green. [2783]

Excelsior.

EXCELSIOR, 1914, 5-6h.p., big single, 3-speed, and  
coachbuilt sidecar, and accessories, in perfect con-  
dition; £40, or will exchange for Douglas.—Seen Bounds'  
Garage, 223, High Rd., Kilburn. [2971]

AMERICAN Excelsior, 1915, 7-9h.p., kick-starter, 3  
speeds, delivery combination, suit ironmonger,  
builder, or window cleaner; cost £90, accept £59; only  
run 500 miles; bargain.—Harris, 10, Gt. Chapel St.,  
Oxford St. [3156]

Fafnir.

FAFNIR, 5-6h.p. twin, ball bearing, m.v., Bosch, B.  
and L. Druids, Chatter frame, 3-speed, Mont-  
gomery sidecar, new Dunlop belt; trial; £24.—Smith,  
141, High St., Merton, S.W. [3162]

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## MOTOR CYCLES FOR SALE.

## F.N.

- 4-**OYL**, F.N., good running order, new tyres; £12, or exchange.—Glaus, Carleton, Carlisle. [3103]
- PETROL** Free with 1912 F.N., 5.6-h.p., good tyres; 16 gns.—Troward, 78, High St., Hampstead. [3200]
- F.N. Lightweight, just overhauled; sacrifice £14; owner called up.—Star, Rylands Row, Wigan. [3135]
- F.N., 4½-h.p., Bosch, Binks, low position; footboards, splendid order; £15.—Barlow, Plumber, Moulton, Manchester. [X9004]
- F.N., 1912-13, 5.6-h.p., clutch model, new Dunlops, like new, snip of the week; £13/10.—3, The Mews, Victoria Rd., Clapham, S.W. [3188]
- F.N., 2½-h.p., 2-speed, clutch, Bosch mag., tyres, tubes new, perfect order, starts easily; £17/10, or offer.—Sutton, Little Clacton, Essex. [X9076]
- F.N., 5-h.p., just overhauled engine, mag., etc., new tank, carburettor, etc., re-enamelled and plated; £17.—8, Half Moon Lane, Herne Hill. [3144]

## Harley-Davidson.

- 7-9-h.p. Harley-Davidson Combination, 1916, in stock.—Pickering, Mardol, Shrewsbury. [X8238]
- HARLEY-DAVIDSONS**, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]
- 1913 Harley-Davidson, 6-h.p., 2-speed, only been used about 3,000 miles; £45.—Boyce, 331, Archway Rd., Highgate, N. [3023]
- COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]
- HARLEY-DAVIDSON** Combination, coachbuilt sidecar to match, outfit like new; £65, bargain.—Seen, Brixton Motor Works, Brixton Rd., S.W. [3154]
- HARLEY-DAVIDSON**, late 1915, 7-11-h.p., all accessories, lamps, Swan sidecar, carrier, screen, etc., nearly new; £80, a bargain.—Gladwin, Empire, Kingston, Surrey. [X9121]
- HARLEY-DAVIDSON** 1916 Coach Combination, 7-9 h.p., mag., dynamo lighting, 3 speeds, beautiful condition; great bargain, 68 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [X8792]
- HARLEY-DAVIDSON**, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]
- HARLEY-DAVIDSON** (1915 model), and handsome Millford sidecar, in splendid going order and condition; a bargain, cash £75, or by deferred payments 2% extra; deposit £20 and 12 monthly payments of £41/4; carriage paid to any address in Great Britain.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [2929]
- HARLEY-DAVIDSON**, 16F and 16J models, actually in stock, with their latest sidecars, £101/15 and £110 respectively, quite the latest outfits, deferred payments if desired; also a 1916 16F, with Canoelet sidecar, F.R.S. accessories, used three times only, 90 gns., great war bargain.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [2785]
- HARLEY-DAVIDSON** (1916 model), fitted with magnificent Empire sidecar, electric light model, fully equipped, Stewart speedometer, mirror, and tools, condition in all respects equal to new; cash £92/10, or by deferred payments 2% extra; deposit £20 and 12 monthly payments of £63/11; carriage paid to any address in Great Britain.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [2933]

## Henderson.

- 1914 Henderson, in perfect condition, all accessories, short wheelbase; any trial; £47/10; consider lightweight exchange.—Henley, 7, Woburn Place, W.C. [2906]
- DECEMBER** (1915) Henderson, with Swan sidecar, wind screen, all accessories, condition perfect, mileage 1,700; £85.—Tripp Hill Cottage, Fittleworth, Sussex. [3125]
- Humber.
- HUMBER, 3½-h.p., 2-speed, free, and sidecar, like new; bargain, £42/10.—26, Grange Rd., South Norwood. [3084]
- HUMBER 3½-h.p. Combination, 2-speed, F.E., handle-starter, speedometer; £21.—87, New Park Rd., Brixton. [3100]
- 1915 3½-h.p. 3-speed Humber, brand new; £55.—Exeter Motor Cycle Co. Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0844]
- 1913 3-speed Humber, reliable machine, kick starter, and upholstered sidecar; owner bought car; £40.—F., 611, High Rd., Tottenham. [2904]
- HUMBER and Sidecar, 3½-h.p., 2-speed and free, good condition; sell or exchange lightweight and cash.—Cutter, 40, Priory Rd., Dartford. [X8967]
- 1912 3½-h.p. 2-speed Humber, with coachbuilt sidecar, in good order; £32/10.—Exeter Motor Cycle Co. Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]
- HUMBER, 1913, 4-h.p., 3 speeds, handle starting, new Dunlops, new belt, speedometer, lamps, horn, absolutely like new, £26/10; coach sidecar, £3/10.—45, Victoria Rd., Clapham, S.W. [3187]

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272-274, GT. WESTERN RD., GLASGOW.

## MOTOR CYCLES FOR SALE.

## Indian

- 7-9-h.p. Indian, 1915, coachbuilt sidecar, complete, as new; £63.—Tompson, Moors, Morden, Kent. [1954]
- INDIAN**, 1914, 7-h.p., clutch, good condition; £30, quick sale; appointment.—9, Bulstrode Rd., Hounslow. [2922]
- INDIAN**, 1914, clutch model, ready for road; owner officer going abroad; £32/10.—Twiddy, London Rd., Sevenoaks. [X9002]
- 1915 Indian and Sidecar, 7-h.p., excellent condition, only done 1,500 miles; £60.—Apply, 93, Grove Lane, Handsworth. [X9012]
- LATE** 1915 Indian, 3½-h.p., 3-speed, and accessories, as new; £50; seen any time.—Bounds, Garage, 223, High Rd., Kilburn. [2970]
- INDIAN** Powerplus 1916 Combination, run 340 miles only, guaranteed like new, fully and well equipped, cost £115; a bargain, £90. [2970]
- INDIAN**, 1915, 7-9-h.p., T.T., indistinguishable from new; 42 gns. [2970]
- INDIAN** 1914 7-9-h.p. 2 Speeds Combination screen, speedometer, electric equipment, nice order; £45.—6, Warren St., London. [3090]
- INDIAN**, 1915, 7-h.p., T.T. model, disc to back wheel, long exhaust pipe, exceptionally fast, and in perfect order; £45.—Embro Motor Co., Charlotte St., Hull. [2944]
- INDIAN**, 1915, 5-h.p., 3 speeds, kick-start, T.T. bars, with Phoenix coachbuilt racing sidecar, complete with lamp set, horn, speedometer, etc., good condition; £60.—Below. [2944]
- INDIAN**, road racing model, 1915, 7-9-h.p., speedometer, good condition; £45.—Ede and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0551]
- INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X9049]
- 1915 Indian, 5-h.p., semi-T.T., Montgomery sporting cane sidecar, Stewart mechanical horn, and speedometer, beautiful; £56.—Woodman, Blencathra, Maidstone Rd., Chatham. [3021]
- INDIAN** 1916 Powerplus Model, with coachbuilt sidecar, guaranteed not ridden 80 miles; a bargain at £80.—Exeter Motor Cycle Co. Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]
- INDIAN** Powerplus, 7-h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £85.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X9051]
- INDIAN**, 1914-15, 7-9-h.p., spring frame, and low sporting sidecar, guaranteed as new, some turnout; photo on request; £60, or exchange 2-seater car.—C.H.R.L., 38, Langham Rd., Teddington, S.W. [2958]
- 1915 7-9-h.p. Indian, 3 speeds, and luxurious 2-seater sidecar, electrically equipped, speedometer, new tyres, all spares, splendid turnout, guaranteed perfect order; £75.—1, Richmond St., Bainsley. [X8945]
- BIRMINGHAM** Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5-h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X9050]
- 1916 Powerplus Indian Combination De Luxe £21 sidecar, mag., dynamo outfit, electric lamps, and horn, speedometer, the lot as new and unscratched, perfect condition; cost £113, for quick sale, £80, no offers.—Particulars, Russell, Clifford St., York. [3149]
- BARGAIN**—Indian, 7-9-h.p., T.T. model, in new condition, lamps, speedometer, etc., £40; 1915 7-9 h.p. combination, in perfect mechanical condition, electrically equipped, speedometer, De Luxe sidecar, with apron, etc.; £72/10.—Oram, 20, Caddington Rd., London. [3078]
- 1914 7-9-h.p. Indian Combination, new April, 1915, 2-speed and clutch, spring frame, speedometer, electric lighting and horn, Montgomery 20 gns. sidecar, all as new, and unscratched; no dealers; £58; appointment.—C. P. O. Wolsey, Naval Air Station, Roshamptown, London. [3134]
- NEVER** Again.—Genuine 1914 7-9-h.p. Indian, spring frame, 2 speeds, clutch, electric lamps and horn, 28x3 covers, speedometer, engine and gears overhauled at cost of £10, complete with £35 Gloria Projectile sidecar, climb all hills on top; £48 secure if unsold.—Millards, Drapers, Chesterfield. [X9037]
- P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5-h.p. 3-speed model, £70; 7-h.p. T.T. Powerplus, £75; 7-h.p. 3-speed, spring frame, and electric light, £78; special De Luxe 7-h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X9045]
- Ivy.
- IVY-PRECISION**, with sidecar, 1913, 4½-h.p., Sturmer-Archer 3-speed, overhauled; £26.—Stares, 65, Tulseimere Rd., West Norwood. [3099]
- 1915 Ivy, 2½-h.p., quarter-plate Ensign De Luxe, accessories, acid glass; sell £38; exchange 2.3 speed higher power, cash adjustment.—O.P., Aston Tirrold, Wallingford, Berks. [3108]
- Ixon.
- IXION**, 2½-h.p., late 1915, fitted to use substitute, in splendid order; £20, or nearest offer.—3, Kingsley Rd., Daventry. [X8941]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## The Desirability of Larger Tanks.

**W**E have on several occasions pointed out the advantages that would accrue to motor cyclists by the fitting of larger tanks to their machines. This has been done by many makers in the case of machines used for competition purposes, but has not become at all general on touring motor cycles. In these days of petrol restrictions the necessity for ample fuel carrying capacity has become more marked, even when a petrol substitute is used, for most riders will have their own particular fancy in fuel, and these fuels cannot be purchased in every place in small quantities. We have heard of a garage where not less than a gallon of petrol was ever supplied at a time, because the garage possessed only a gallon measure and the regulations order that all petrol must be sold by imperial measure. Some garages indeed refuse to supply less than a tin, the excuse being that it is frequently impossible to give two separate gallons from each tin. On the other hand, we have seen petrol weighed out to a customer (half a gallon being reckoned as 4 lb.—presumably it was No. 3).

Increased tank capacity is one of the requirements for machines intended for Overseas service. Even comparatively near the centres of population, stores where petrol may be obtained are much farther from one another than in England, and consequently Overseas motor cyclists are lucky to have machines fitted with large capacity tanks carrying spare tins. Some of the demands of Overseas riders may appear somewhat unnecessary, but there is no doubt that the appeal for increased tank capacity is quite justified, so that bearing this point in mind also manufacturers can "kill two birds with one stone" by making modifications on the lines indicated.

It is desirable, moreover, that a motor cyclist, especially when on tour, should be able to carry a good supply of fuel, and if his tank will accom-

modate the contents of a two-gallon can, so much the better. Spare cans attached to the carrier are, to say the least, unsightly; they are apt to interfere with the balance of the machine, and unless very firmly fixed they will certainly rattle. Also it is advantageous to be able to take in a gallon while the tank still contains enough spirit to run twenty miles or more, as this minimises the risk of running short where supplies cannot be obtained.

## Warm the Carburetter.

**A** GOOD many readers who have taken an interest in the descriptions and drawings of vaporisers which have appeared from time to time in these columns have latterly tried the effect of such fittings in conjunction with pure petrol, often with extremely satisfactory results. Of course, the vaporisers introduced of late were primarily intended for use with heavy fuels, but the improvement detected even with petrol only confirms an impression we have had, and which we have stated in print on several occasions, viz., that the average carburetter fitted to motor cycles would be improved were it possessed of some permanent form of heating device. Users of early motor cycles fitted with Longuemare carburetters will recall that a pipe conveying warm air to the heating compartment around the spray chamber was regularly fitted ten or twelve years ago. A user of a 6 h.p. sidecar outfit, who is himself an engineer, quite recently fitted up a warming jacket around the induction pipe of his machine, a pipe being led from the exhaust to heat up the chamber. The result obtained quite surprised him, for, instead of his former sixty-five miles to the gallon, he is now regularly obtaining seventy-five miles, so we are told. The scarcity of petrol was the cause of the heating device being fitted, but the owner is now delighted that he effected the change. Other readers' experiences would be interesting.





## A TALE OF JOY AND WOE.

An Officer's Story of a "Glorious Blind,"  
with a Sequel.

By GEOFFREY S. DAVISON, Lt. R.E.

**T**HIS is a tale of disappointment—of misplaced confidence and shattered hopes. I have had my experiences on the roads of Flanders. I have had my sideslips and my falls, my pirouettes and my hairbreadth escapes. These were on roads that were not roads, but sandy tracks, and where mud clogged the wheels or dust choked up the carburetter.

There were no hills there, but the top gear of  $5\frac{1}{2}$  to 1 was none too low for my 4 h.p. "bus." Often, to negotiate a bad bend, it would be necessary to change down to second, sometimes to low. There was no excessive vibration on the big single—no sign of overheating.

At times I would enter into argument with some new-comer to the land of war. He would decry low gears. In England, he would remind me, he geared his  $3\frac{1}{2}$  h.p. sidecar machine at  $4\frac{3}{4}$  to 1. Here was I riding a 4 h.p. solo at a considerably lower gear. It was disgraceful—cruelty to petrol engines!

I would advise him to leave well alone. Six months I had had, riding almost every day, and I had never as yet found the gear too low. I could bear my hand on the cylinder immediately after a run—vibration was not noticeable.

Then came the day when the powers that be pulled us ruthlessly from the line, and placed us in a spot—by courtesy a village—in which billets and beds did not abound. (This was a pity, for we had expected to live in clover for a time!) Here was a difference in the countryside. It was no longer flat. No longer did we see a ditch on each side of every "road." There were *hills*, and, more than that, broad wide roads.

I was astride my trusty horse when first we came to these roads, and I swore the time would not be long before I was on them with a motor bicycle. One road in particular was better than the rest. It was wider than any I have seen in England; it was smooth and straight.

That is the first part of the tale. The second is of my disillusionment.

### The "Old 'Bus'" "Blinds" Again.

What is more delightful than a glorious "blind," with no concealed turnings or hidden men in blue? Motor cyclists who have lost their machines for the period of the war or have been unable to use them will appreciate my feelings as I turned into the main road and gave the old "bus" a final pump of oil before letting it go "all out." I had six miles to go, and I made bets with myself that I would cover it in ten minutes. That would be from thirty-five to forty miles an hour. Ye sparking plugs—what easier?

I opened the throttle and leant forward on the bars. We were away, "blinding" along with the noise

(if not the speed) of an aeroplane. Oh, the delirium of it! What a bicycle, what an engine! Six months of cart tracks and fields, and then—this! For the time the war was but a pleasant game.

It lasted just two minutes, in which I covered close on a mile and a half. Then, with a few "splutters," a few sickly "pops" in the silencer, the old "bus" knocked off work and came slowly to a standstill at the side of the road.

### Burnt Valve!

I got out my toolkit, and realised that the war was indeed a terrible affair. The valve cap, as I might have expected, was "solid" in the cylinder. Hammering, kicking, swearing were of no avail. It was immovable.

Just when I was giving up hope, and deciding that in future my pastimes would be push-bicycling or marbles, salvation presented itself, in the form of an R.E. subaltern, whose horse I had scared off the road a mile back. Luckily he failed to recognise me as the cause of his sudden plunge across country, and listened to my tale of woe with sympathy and concern. He was a motor cyclist in civil life it appeared (What R.E. subaltern is not?), and there was a dear old Rudge awaiting his return to England. So he dismounted and hit the spanner with the butt-end of a King Dick till he missed the spanner and hit his thumb. . . .

### Ignominious Progress.

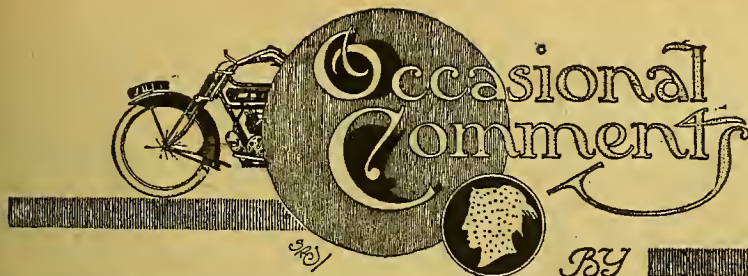
Then we tied the motor bicycle to the back of his horse, and he towed me to a village blacksmith. After an hour's heavy hammering the blacksmith, gabbling French the while, managed to shift the refractory cap. I fitted a new exhaust valve, replaced what was left of the cap, and in a few minutes went on my way rejoicing.

I went slowly for a mile or so, afraid that the new valve might burn in the same way as the old. But the engine had such a healthy beat, and the call for speed was so irresistible, that once more I opened out and fastened my nose to the lamp. Off again, faster than before. Odds pistons and gudgeon pins—'twas grand! Phew! That dog nearly had me! Never mind—he was only a pup, and would probably have squashed out flat! What's the use of worrying? D—, here's a cow! Didn't miss her by much, either!

But every joyous experience must come to an end—and war is war.

At home my old single-gear  $3\frac{1}{2}$  is waiting on its stand. Its usual gear is 4 to 1. On this it scales all ordinary English hills, and, if the pulley be let down, it climbs Porlock or Rising Sun with ease. I prefer it too, for the army 'bus, excellent as it is for bad roads and ploughed fields, must necessarily carry its heavy tyres, gear box, reinforced frames, and huge tanks!





### Discarding the Two-stroke.

It would be interesting to have heard the discussion between the technical heads of the Hendee Company at which the jettisoning of their 1916 baby two-stroke was decided upon. This is the first instance—to the best of my belief—of any leading firm adhering to cheap lightweights, but scrapping the two-stroke principle. Needless to say, in this case the two-stroke was not judged on its merits. In the absence of competitions and the existence of prohibition, the British market, on which two-strokes were already popular, was practically barred to the 1916 baby Indian. Of the American market we know little, except that lightweights are scorned there, and that the riding conditions are exceptionally severe—so much so, indeed, that nothing under 7-9 h.p. has really made good in the States. Nevertheless, the Hendee people have not abandoned the manufacture of lightweights, and their new flat twin is distinctly reminiscent of the 249 c.c. A.B.C. engine, which has yet to make a public *début* on a motor cycle, and was originally produced in response to the demand for a feather-weight engine starter for seaplanes. The real interest of the Hendee programme lies in the following question—has the two-stroke been scrapped out of deference to American prejudices or because the Hendee Co. have satisfied themselves that the miniature flat twin has the two-stroke beat for ordinary purposes? We may have to wait a long while for this piece of information.

### More Flat Twins.

Whatever may be the facts of the above enquiry, it is abundantly clear that the horizontal twin is rapidly gaining ground. One of the largest British firms (the Humber Co.) takes its stand with the Indian firm among the latest converts. The *pros* are its perfect balance and colossal revolutions, as contrasted with single-cylinders; and the greater durability of its bearings, as compared with the V twin. The *cons* are the difficulty of making all the engine details accessible, and the problem of designing a satisfactory frame to accommodate this type of engine in sizes over 350 c.c. In other words, its conquest over the single and over the V twin in sizes up to 350 c.c. is already inevitable. The extension of its field must depend on the success achieved by designers in dodging the pitfalls of inaccessibility and faulty frame construction. I am not sure that I ought not to add easy starting to the list of *pros*, but I hesitate to do so, as a certain percentage of singles and V twins are splendid starters nowadays. So I will only say that I never owned a flat twin which was not absurdly easy to start. For example, I am a very lazy man, and my A.B.C. 3½ h.p. is on the heavy side. I broke its kick starter in the first week of ownership, and I have never made any adjustments to the engine, carburetter, or ignition.

But I have not troubled to refit the kick starter, because the machine invariably starts in a yard from stone cold, even on the noxious fluids which now masquerade as No. 3 petrol.

### Workmanship.

Mr. D. H. Smith probes the core of the British motor cycle industry when he names workmanship as its distinguishing feature. Our best workmanship is still head and shoulders above that of any foreign motor cycle I have ever seen; and our ordinary workmanship, as exemplified in our second and third-rate machines, is superior to the average in rival countries. This dictum may not be endorsed by the dilettante type of week-end rider, who never forces his machine, and who rides chiefly at week-ends, but I have no doubts of its truth. I secretly fancy that two friends and myself constitute a trio of the hardest riders in the kingdom; we are out every day in all weathers; we ride long distances; we like speed; and we are so busy that we never tinker until we have to do so. Whenever we foregather, we find ourselves unanimous on this point of workmanship. On the other hand, workmanship is not everything. I ventured to slang a farmer for using American binders the other day, pointing out the shoddy character of the details by contrast with a far more substantial British machine. He agreed with my point *in toto*; but he mentioned four defects of our agricultural machines which had influenced him in buying American stuff. The British machines were too costly; they were too heavy; they wore too well, being out of date long before they were worn out; and they lacked many ingenious little conveniences offered by American makers at a far lower price.

### Mutatis Mutandis.

The comparison does not apply very precisely to motor cycles. American machines are not cheaper, partly because America has never produced a decent single-cylinder machine, and freights and tariffs prevent their big twins from selling at highly competitive prices (this will come; America's best 7 h.p. sells at £55 in the States, whereas our best singles cost more than that). American machines are not appreciably lighter, because they prefer to include such weighty items as lighting outfits, 3in. tyres, and rear springing, which few British makers have adopted as yet. Neither British nor American machines are within measurable distance of becoming absurdly durable. Nevertheless, considering the comparatively undeveloped state of the motor cycle industry, the comparison bids fair to be realised. Superb workmanship may in time become the main keynote of British motor cycles if we do not wake up. It is a splendid feature; but it cannot stand in isolation against a combination of satisfactory workmanship, low prices, and lavish specification, especially as many riders fancy new machines each year.



# TWO LUXURIOUS MOTOR CYCLES

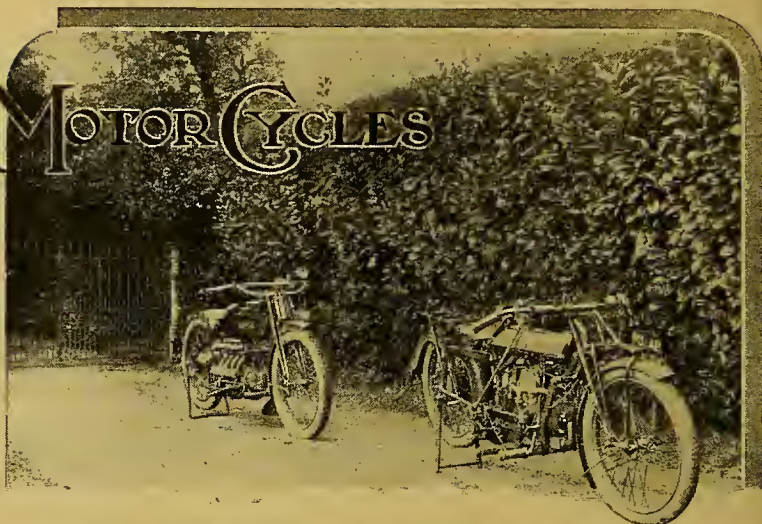
## A COMPARATIVE ROAD TEST OF TWO MULTI-CYLINDER MACHINES.

**W**E have recently been able to sample one of the few 1916 model 8-10 h.p. Hendersons at present in this country. It is just a year since we last described the running of the 1915 model of this machine, and very well pleased we were with it. Although the present engine has a cubical capacity of 978, and the cubical capacity of last year's model was 1,065, we cannot say that we noticed any difference in power.

It may be gathered from a reference to our description of the machine, which appeared on page 470 of the issue of May 18th, 1916, that the chief improvements of the 1916 model over the 1915 were in points of convenience. We were especially struck by the very convenient clutch control now fitted, which could be operated either by hand or foot. Personally we should prefer the hand control of the clutch to be effected from the handle-bar, whereas actually it is carried out by the usual American practice by means of a side lever. We also much appreciated the fact that the control, as regards the pedals, followed usual car practice, the clutch pedal being on the left and the brake pedal on the right. Both clutch and brake work with commendable smoothness, the clutch, though of very small dimensions, taking up the drive with an altogether silky sweetness, yet never slipping in the slightest degree. The brake, though amply powerful, was in no degree fierce.

### Flexibility and Acceleration.

The great charm of the four-cylinder Henderson is its extreme flexibility, which permits one to crawl on

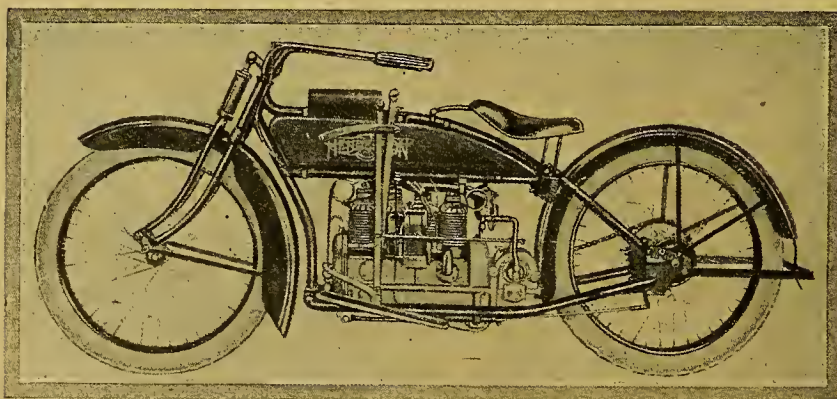


Two distinctive machines on the road—a four-cylinder Henderson and 3½ h.p. A.B.C.

top speed without slipping the clutch almost at walking pace. From the latter speed the engine will accelerate to almost any degree, and a wonderful acceleration it is. Up to about twenty-five miles an hour the engine is quite imperceptible, though at speeds over that there is a slight tremor, which, though noticeable, is not unpleasant. A share of the credit for the ample power, flexibility, and acceleration is due to the excellent Schebler automatic carburetter with which the 1916 Henderson is fitted.

All one can find fault with in the Henderson is its weight, a point not noticed when the machine is started, but one which renders it somewhat awkward to handle while wheeling it about. Another point open to improvement is the kick starter, which does not appear very strong and does not give sufficient surface for the foot. On the occasion when we took over the machine the engine started on the third kick, but it did not behave quite so well in our hands, and eventually the pin of the kick starter broke. The engine thereafter was started by pushing the machine along with the low gear in and the clutch out, then engaging the clutch with the hand lever and quickly declutching it again. In about thirty seconds the engine was hot enough to run with the air fully open, and would continue to run likewise throughout the day.

In the open country the Henderson's acceleration was exhilaratingly glorious, and, although no opportunity came of letting the machine out on the road, we had a very good inkling of the speed it would attain. On hills it was a real joy to drive, and would take quite respectable gradients at a fast speed, slow down at corners, and then quickly pick up again as if the road were level. The excellent saddle, which properly fitted the body, hinged at its forward end and its rear end suspended on coil springs, was



On the 1917 model Henderson (just introduced in the States) the chief feature is the adoption of a three-speed countershaft gear.



**Two Luxurious Motor Cycles.—**

delightfully comfortable, and further comfort was due to the 28in. x 3in. tyres.

**A Comparison between Two Entirely Different Machines.**

This machine was in our possession for some time, and before parting with it we were invited to try another very ambitious mount, namely, the  $3\frac{1}{2}$  h.p. A.B.C., the rider of which was equally keen to try the Henderson. Accordingly we set out together, he on the four-cylinder monster and we on the lighter A.B.C. The comfort of the bigger machine was due in some degree to not pumping the back tyre very hard. The difference between it and the A.B.C., which, as all the world knows, has a spring frame, was practically negligible. The reason for this, we take it, was due to the fact that the A.B.C. had an extremely uncomfortable saddle, which in no way conformed to the shape of that part of the anatomy which rested upon it. The A.B.C. had standard 26in. x 2 $\frac{1}{2}$ in. tyres, but the spring frame rendered the comfort of the two just about equal; still, we venture to think that had the A.B.C. had a slightly better saddle it might have scored from the point of view of comfort. It is an extraordinarily handy machine, running with comparative quietness, and possessing a degree of acceleration almost equal to that of the Henderson, if not quite, although one had perhaps to change gear occasionally to obtain it, and an absolutely vibrationless engine. We drove the smaller machine practically all day, and no matter which of the four gears provided was in engagement no vibration could be felt from the engine at all, while the four-cylinder machine which possessed a two-speed hub produced a slight, though not altogether unpleasant, "period," which was apparent at certain speeds.

**Evenly Matched.**

Of the two, perhaps the Henderson may be called the more complicated on account of the multiplicity

of cylinders. The 1916 model possesses only two speeds, and these were ample on account of the power of the engine, as the low was only used for starting and once on taking the bad corner on Ranmore Common, while the A.B.C. has four, and yet so easily was the gear changed that the complexity of the four-speed box in no way detracted from, but on the contrary greatly added to, the pleasure of riding. It should be added that the 1917 Henderson has a three-speed countershaft gear box.

We have referred previously to the extraordinary acceleration of the Henderson, but on the few occasions on which we tried it when running with our companion we found that the A.B.C. was not left half a length behind. As regards flexibility, the A.B.C. was almost equal to the four-cylinder, and there is no doubt that it is a wonderfully efficient machine, as our contributor "Road Rider" has stated.

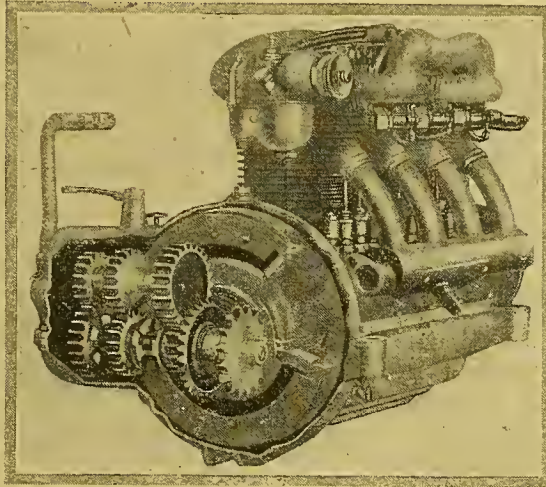
**An Interesting Day.**

A curious fact was noticed on letting down the A.B.C. from the stand. Instead of the back wheel dropping with a thump, as happens with an unsprung machine, it came down with a curious cushioning effect only experienced on motor bicycles when the back tyre is half flat.

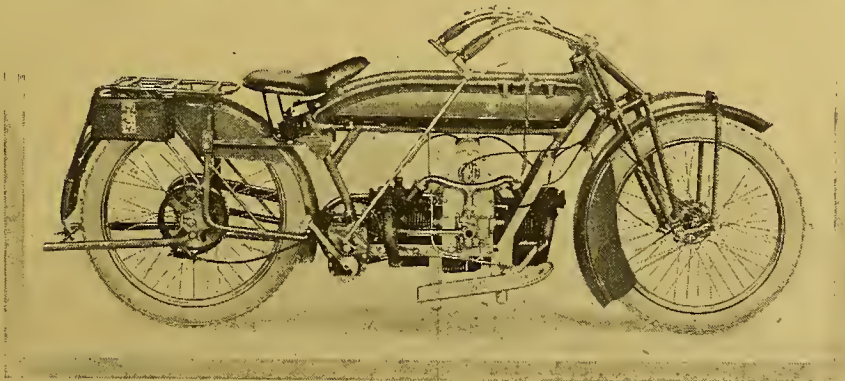
From the point of view of brakes there is very little to choose between the machines. The A.B.C. was fitted with two side-by-side internal expanding brakes which have recently been described in *The Motor Cycle*.

Altogether the day was a most interesting one, as it is very rare for us to have the opportunity of testing two machines which probably show more originality in design and a greater divergence in construction than any other pair which could be selected in this or any other country. These models represent the British and

American designers' ideas of a luxurious two-wheeled motor cycle, so ambitious that they are devoid of no refinement obtainable in a car. Moreover, they are thoroughly sporting mounts, having such a turn of speed as would enable them to leave any but the best cars far in the rear.



Power unit of the 1917 Henderson. The three-speed gear lies transversely to the plane of the machine. The crankshaft is prolonged to take the clutch and a bevel pinion, the latter engaging with the crown wheel on the mainshaft of the speed gear. The kick-starter is seen on the left.



The four-speed horizontal twin spring frame A.B.C. On the latest models the kick-starter is enclosed.



## BEARING PRESSURES.

### A Comparison between the Long and Medium Stroke Engine.

SOME little while ago "Ixion" issued an invitation for a reply to Mr. Norton's claims with reference to the superiority of the long to the medium stroke engine. Now I happen to have been using two machines, one representative of each type, and I have taken the trouble to compare the two engines closely, and have put the results of the comparison into non-technical language, which will, I think, be more readily understood by the majority of readers.

It is first necessary to tabulate a few details of both engines:

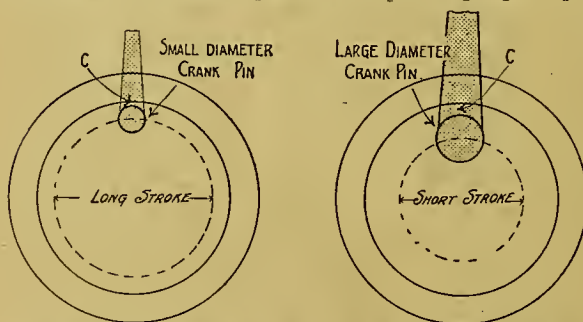
82 x 120 mm. Engine (633 c.c.)	88 x 96 mm. Engine (584 c.c.)
Revs. per min. .. 1,500	Revs. per min. .. 1,500
Big end speed .. 1,854 ft. per min.	Big end speed .. 1,585 ft. per min.
Piston speed .. 1,181 ft. per min.	Piston speed .. 945 ft. per min.
Diam. of gudgeon pin .. 5/16 in.	Diam. of gudgeon pin .. 5/16 in.
Diam. of crank pin .. 7/16 in.	Diam. of crank pin .. 1 1/4 in.
<b>Weight of Parts.</b>	
Weight of piston .. 17 ozs.	Weight of piston .. 19 ozs.
Weight of connecting rod .. 17 ozs.	Weight of connecting rod .. 18 ozs.
(divided as)	(divided as)
On big end (rotating) .. 10 ozs.	On big end .. 11 ozs.
On small end (reciprocating) .. 7 ozs.	On small end .. 7 ozs.
Total reciprocating parts .. 17+7=24 ozs.	Total reciprocating parts .. 19+7=26 ozs.

Employing flywheels of the same diameter, we can, on the short stroke engine, make our crank pin of a greater diameter than that on the long stroke engine.

The diagram representing the flywheels of any engine, bringing out mainly the rim portion, proves this. The distance marked C is the clearance which is essential under the flywheel rim to admit the connecting rod big end.

In two engines, one of 120 mm. stroke and the other of 96 mm. stroke, the difference in this clearance is 12 mm., enabling the crank pin to be at least 6 mm. larger in radius, i.e., 12 mm. larger in diameter for the medium stroke engine.

Having a larger bore, the short stroke engine will, of course, have more space between the gudgeon pin



Showing how a larger crank pin can be used in a medium stroke engine, flywheel diameter being the same in each case. The necessary clearance for the big end is shown at C.

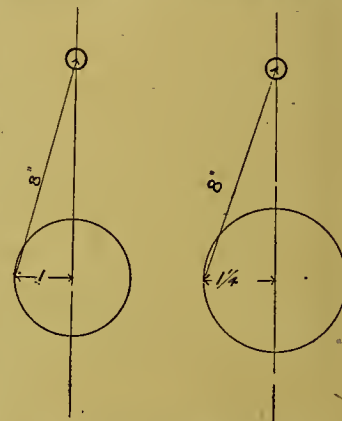
bosses in the piston than will the long stroke engine, and will thus admit of a wider small end to the connecting rod and a wider bush. There is practically no reason for supposing the gudgeon pin can be larger in diameter in either case. These points appear to have been grasped by the designer of the medium stroke engine under consideration, as his gudgeon pin is the same diameter as that of the long

stroke, but is wider, whilst his crank pin has a greater diameter. Of course, another point arises in the width of the big end bearing. By placing a comparatively small diameter cylinder on a wide crank case, the long stroke engine designer can make his big end as wide as the big end of the short stroke is naturally, but, of course, a slight sacrifice of appearance is entailed.

### Explosion Pressures.

With regard to the greater pressure due to the explosion on the bearings of a medium stroke engine, owing to the greater

arc of the piston head, we must remember that wear is dependent not only on the pressure, but also upon the distance through which the pressure is exerted. Now, granted we do not obtain a higher explosion pressure on a long stroke engine, and the area of the medium stroke engine piston is greater, therefore, to equalise the work done, the pressure on the bearings of a long stroke



The greater angularity of the connecting rod in the long stroke engine.

engine must occur through a greater distance, and thus tend to equalise wear. This accounts for the peculiarity of a long stroke engine known as "hanging on" under load at low speeds especially, but it is not a help to long life for the bearings by any means.

Briefly, we may thus sum up for the effect of explosion pressures on the bearings of the connecting rod.

1. The bearings can be larger for a medium stroke big bore engine than for a long stroke small bore engine, other conditions as specified being equal.

2. Although the pressure is momentarily greater for a medium stroke engine, its greater bearing area helps to equalise matters, but the long stroke engine suffers wear for a greater distance of its bearing travel.

3. On the main shaft bearings the wear will be equal, as far as explosion pressures are concerned, on both engines, as the total power transmitted will be equal. These bearings, of course, will be of the same diameter and length in either case.

I will now consider wear on cylinder walls and piston, as these have the same relation to each other as a bearing and pin.

Regarding the cylinder walls, as, of course, a greater length of cylinder will be exposed on the long stroke than on the short stroke engine, we may fairly assume that the question of lubricating the walls of the long stroke engine will be more difficult to solve than in the medium stroke engine, and where, as is usual on motor cycle engines, the lubrication is by



**Bearing Pressures.—**

"splash" from the flywheels and connecting rod, the cylinder will, it is reasonable to assume, be starved of lubricant at the higher end. This state of things will cause heat and wear in the cylinder and piston, and a greater tendency to distortion than will occur in a medium stroke engine.

**Angularity of Connecting Rod.**

Another source of wear is derived from the angle which the connecting rod makes with the cylinder wall.

In the engines I am discussing the length of the connecting rod is in either case 8 in. between centres. Therefore, as can be seen in the sketch on the previous page, the centre line of the connecting rod must be more nearly parallel to the cylinder wall on the medium stroke engine, and must thus exert less thrust on the wall than is possible with the other condition of engine.

The stroke of the long stroke engine is 120 mm., that of the medium stroke engine 96 mm., i.e., the former engine has a stroke exactly  $1\frac{1}{4}$  times the latter. This, then, will be the ratio of the pressure acting on the cylinder walls in favour of the medium stroke engine. Again, the angle through which the connecting rod swings is, of course, dependent on the length of stroke, this in its turn governing the wear on the small end bush. The further the bush moves on the pin in a given time the greater will the wear be. I think we may say, then—

1. Pressure of the piston on the cylinder wall must be greater on the long stroke engine, and therefore cause more wear.
2. Allowing equal gudgeon pin bearing pressures, owing to the increased movement of the bearing on the long stroke, greater wear takes place.

**Centrifugal Pressures.**

Having now dealt with the question of wear generated by the explosion pressure entirely, I will turn to the question of the very important inertia pressures, which, in a high speed engine, play the greater part in wearing the engine bearings.

The factors which influence this wear are:

1. Weight of reciprocating parts.
2. Speed of reciprocating parts.
3. Amount of rotational balance obtained.

In the two engines we have under consideration, we have given already the speed of the piston and rotating parts, taking the balance weights as being effective on a circle equal to the stroke in both cases. This would be the usual method of balancing.

With regard to weights, the advantage is, in these two engines, slightly on the side of the long stroke, and these have been given previously. Knowing we cannot balance a reciprocating body by means of a rotating one, as we must try to do in a single-cylinder engine, we must concede a certain amount of unbalanced weight acting on the crank pin radius.

Now, supposing one takes a mass, say, of 1 lb., and swings this round on a string, it is at once evident that a considerable pull is felt by the hand. Exactly the same condition is set up for the bearings of an engine which is slightly out of balance, causing undue wear. Assuming the engine in both cases to be 4 oz. out of balance, we require to know the magnitude of the unbalanced force at, say, 1,500 r.p.m. This is

found by the formula  $P = \frac{wv^2}{gr}$ , where

$P$  = The pressure or force required.

$w$  = Weight of unbalanced mass in lb.

$v^2$  = Velocity of mass in ft. per sec. squared.

$g$  = Acceleration due to gravity = 32.2 ft. per sec. per sec.

$r$  = Radius at which mass swings in ft.

Thus  $P = \frac{.25 \times 30.9 \times 30.9}{32.2 \times .1968} = 38$  lb. approx.

for the long stroke engine, and

$P = \frac{.25 \times 26.4 \times 26.4}{32.2 \times .157} = 27$  lb. approx. for the medium stroke engine.

It must be clearly understood that these forces are an addition to the existing loads on the bearings. Of course, the stresses due to the reversal of the reciprocating weights at the end of each stroke would show favourably for the medium stroke engine approximately as the above.

When the question of higher speeds is entered, the favourable conditions rest more pronouncedly with the medium stroke engine, owing to the lesser speed of the moving parts. It is important to note the  $v^2$  factor in the given formula, as this, combined with the lesser radius, will always render the short stroke engine the smoother running of the two when other conditions are equal.

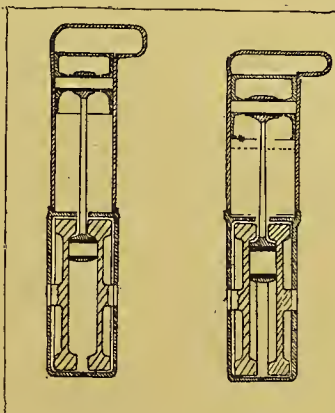
From this we are correct in assuming that the medium stroke engine will be lighter on its bearings, and will thus be more suitable for high speed work. There will be much less vibration, and the engine will be more pleasant to handle.

We may say, then, for inertia pressures:

1. The bearing pressures are greater in the long stroke engine, and increase rapidly with speed.
2. There is less vibration and smoother running on a medium stroke engine.
3. Wear on all bearings, especially big end and main shaft bearings, is greater on a long stroke engine.

In conclusion, I may add that, although the long stroke is fairly successful on an engine of four or more cylinders, owing to better rotational balance, on a single-cylinder engine a bore-stroke ratio of more than 1 to  $1\frac{1}{4}$  to 1 is undesirable, and creates unnecessary difficulties in designing a smooth running engine which will wear well.

A.A.S., WH. EX., ETC.



Sections of two engines, 82 x 120 mm. and 88 x 96 mm., approximately to scale. Note that the longer stroke has a narrower small end bush and a small diameter crank pin, whilst the crank case, big end widths, and the flywheel diameters are the same in either case.





### SOME USEFUL WINTER CLOTHING HINTS BY A CANADIAN.

BEING a Canadian and used, as readers can imagine, to great cold, I will outline in this article a few hints and tips as to how to keep warm on the coldest winter day. Although there is a great difference in the cold of Canada and the cold of these Islands, I think the clothing and methods I suggest will meet all requirements.

Firstly, I think I had better explain this difference of cold. In Canada it is a dry cold, so dry, in fact, that the snow is powdery and light. Hence we get a blizzard when strong winds blow, and to make a snowball out in Canada is an impossibility.

Now in this country it is a wet cold, and I think we will leave it at that, except to point out that it is more difficult to deal with a damp cold.

The usual method in England employed to keep out the cold generally amounts to smothering oneself in multitudinous

I have met many and many a motor cyclist with a strap round his midriff in the middle of the summer. Believe me, he only makes himself warmer by doing that, because he generally creates a warm air jacket around himself by the bunching of his clothes. But I digress.

Canadian socks  
worn under  
trousers.



#### How to Keep Warm.

First get, beg, borrow, buy, or steal a real witney blanket, and make what we call a parka. Now blanket is about the finest material we can get for keeping out the cold, and, strangely enough, it ventilates in the most extraordinary way. For instance, many a time have I seen my "pard" "packing" a trail for the dogs. (That is worse than pushing a 7-9 h.p. combination in compression on low gear, I can assure you, and getting whiter and whiter every minute through his perspiration oozing through and freezing solid on the outside.)

Make your parka on the very loose side, so that when you buckle it across the middle you have an air space all round your vitals as in sketch No. 1. As blankets soil, or rather show the dirt

easily through their light colour, it is advisable to have it dyed some shade of brown or grey according to your taste. You can pipe the seams off with leather if you like, so that you can ride without any other over-covering; but, of course, there being more rain than not, you must wear an overall over the

parka. Oilskins I would never advise, because of all the unhealthy garments they are the worst, especially when they are strapped in about your middle.

Now although you have your parka on, I suppose it is needless to tell you that you must still wear your flannel shirt and vest and pants. My own plan is to wear a silk vest next to the skin and a wool one over that. The same with your nether garments.

#### Leg Coverings.

It may astonish you, but the most vulnerable parts of your anatomy for feeling cold, or rather for conveying cold to your system, are the shins. If you will just bend down while you are reading this and feel the poor amount of flesh between your bones there and the cold, cold world you will get at my meaning, and any doctor will tell you the same. So you must protect the skinny parts.

Personally, I wear field boots, one pair of silk socks, one pair of heavy wool over



A coat made of witney blanket.

clothing, leather waistcoats, or leather coats, overalls, oilskins, etc., until one looks like a petrified mummy. Have you ever seen an ordinary no account grey pirate of a two-legged sparrow try to keep warm? If you have I guess you have not known why he keeps so snug during the snow months. Well, I will tell you. He puffs his feathers out at very nearly right angles to his body, with the result that he creates a warm air jacket around himself, and that is the whole secret of keeping warm.



Wool socks over thin  
silk socks.



them, and a pair of Canadian socks. Now Canadian socks are great cold defiers, but if you cannot get them you must try the next best thing which will act in the same way. Take some old sweater and cut off both arms, slip your leg into the arm, and pull to its full length so that the sweater arm covers from just below the knee to the heel. Now take the heel part and turn it back until it reaches about the middle of the calf.



**Cold Weather Clothing.—**

The doubled over part fills every cranny of the loose part of the boot (looseness again, you see, tells), thus forming a very warm nest for the ankle and effectually warming the foot down to the toes, the upper part of the sweater warming the shin bone and lower leg.

For the thighs, a good thick pair of Bedford cord breeches will do with your wool pants; but, to feel really warm, over the pants should be worn very loose wool breeches cut on the same principle

as the Bedfords as in the illustration. You would have to have these made, but they repay you, as cold is a thing of the past when wearing them.

Now as to gloves. You cannot do better than purchase a pair of bag gloves with the index finger free from the bag part, but be sure to get a pair that straps at the wrist. You will want a pair of similar gloves of light wool inside them.

For headwear I have never worn anything more cosy than a racing helmet, and I cannot recommend anything better;

but, attached to mine, however, is an adjustable flap that I can pull down at will to protect the eyes in rain.

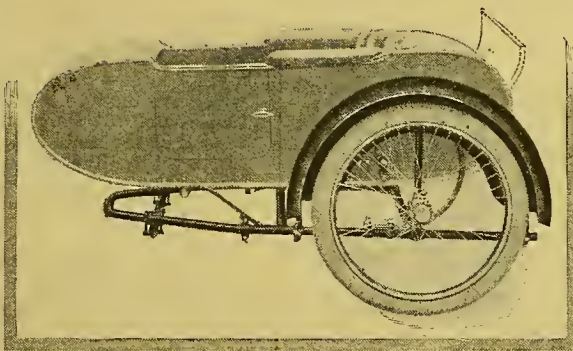
To close. Do not forget a woollen muffler round your throat. This will keep the draughts from exploring too familiarly.

Never go out feeling cold. If you do feel cold stamp or run about until you feel warm, or try and start your engine on paraffin (I guarantee this will warm you), but do not go near a fire to get warm whatever you do. H.M.

## A Sporting Sidecar.

A Light Model specially produced for Low-powered Machines.

THE taking sidecar illustrated is the latest product of Cooper Sidecars, Belgrave Road, Balsall Heath, Birmingham. It is a light sporting body, suitable for fast, but comfortable, touring, attached to a low-powered machine. The chassis is of the simplest type, and, although very strong, is quite light. The main frame is formed with one main tube, bent in a triangular loop, which, when bridged at intervals and attached to the substantial axle which also forms the rear connection to the cycle, makes a strong yet light chassis. Three points of connection are provided. The body, which is, of course, the Cooper speciality, is very neat, and, while providing a very sporting appearance, is thoroughly comfortable. The back of the seat is not high, being, in fact, on a level with the front. The upholstering, however, is so arranged that a perfectly comfortable



The Cooper sporting model sidecar, a feature of which is the luggage space in the bulbous back.

riding position is rendered possible despite the shallow back.

The bulbous rear portion of the body

is not wasted space, as in so many sporting bodies, but accommodates a very roomy locker in a similar manner to that provided in the large touring body illustrated some little time ago. This locker, even on the sporting body, provides sufficient room for quite a large bag, while on the heavy model there is sufficient room for still more luggage. The bodies of both models are very neat, and it would be difficult to notice that so much luggage-carrying room is provided. Locker space is an important detail which makes a great deal of difference when touring, for not only is the luggage perfectly protected from the weather and road vibration, but it also overcomes the necessity for such careful packing and strapping, which is necessary when luggage is carried on a grid or carrier, besides being a very much neater way of carrying it.

## Vaporisation of Heavy Fuels.

More Suggestions from Readers.

WE continue to receive suggestions from readers for the vaporisation of heavy fuels. Many of these have been published during the past few weeks, and in this issue we give a few more. Though the allowance of petrol is to be increased next month, thousands of riders will still continue to use heavy fuels, and this, together with the approach of cold weather, makes it all the

more imperative to arrange for the proper vaporisation of whatever petrol substitute is used.

### Simplicity Itself.

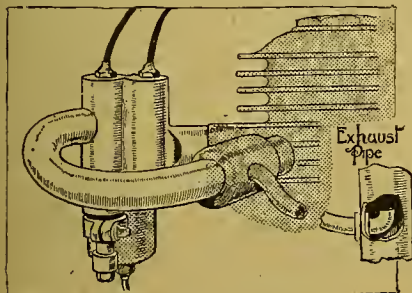
A reader (R. Baker Whittick), who owns a Triumph, sends us a sketch of a vaporiser he has fitted with satisfactory results. It consists, firstly, of a tube attached to the air intake of the carburettor, and bent round so as to catch the hot air coming off the cylinder fins. Round this pipe a tin cover was fitted, which brings additional heat direct from the exhaust. This was accomplished by fitting a small pipe from the cover to the exhaust outlet, as shown in the sketch on the left.

### From a Boot Polish Tin.

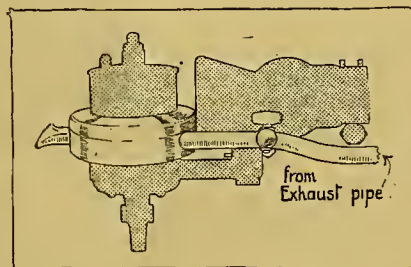
That a satisfactory vaporiser can be easily and cheaply made at home is proved by the device illustrated, and rigged up by a Coventry reader, J. Robert Reid. It consists of a Nugget boot polish box, which, after a large hole has been made in the centre, surrounds the float chamber. It is soldered top and

bottom. A pipe brings heat from the exhaust, and then, if desired, the outlet pipe can be taken to the air intake and so warm the air drawn over the jet, and assist in spraying the fuel.

This device is fitted to a Rudge-Multi, with Senspray carburettor, and Mr. Reid tells us he gets good results with a mixture of 75% paraffin and 25% petrol. He has to prime with petrol for starting from cold.

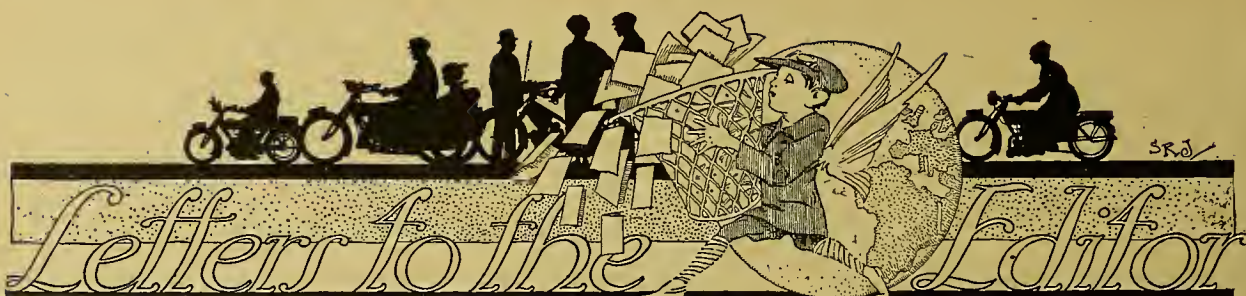


R. Baker Whittick's vaporising device for heavy fuels.



A vaporiser made from an empty boot polish tin.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### What Soldiers Like.

Sir,—I thought perhaps you might like to know how much your paper is appreciated out here in France. I was originally enlisted a gunner in the Motor Machine Gun Service, and, after a somewhat varied career, am still alive to look forward every week to my copy of *The Motor Cycle* that is sent out from "Blighty."

For my own part I very much enjoy the illustrated articles of trips through different parts of Great Britain. And I would suggest, now that there is rather a "close" season in motor cycling, that the large numbers of your Service readers at present abroad would thank you for a liberal supply of such articles.

A few photographs that recall to us pleasant visions of a sunlit road and the happy times we had (and hope to have again *après la guerre*) are, like "Fragments from France," a fine tonic to cure "fed-upness."

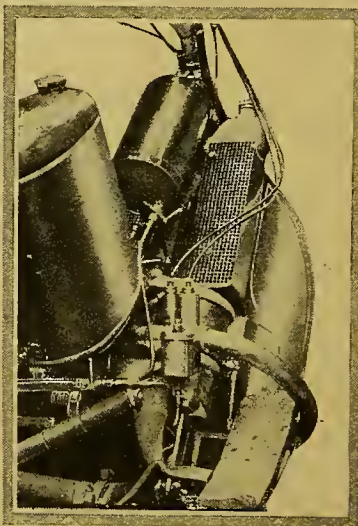
I may say that I was quite surprised at finding it was possible to buy current copies of your paper within a couple of miles of the firing line.

B.E.F.

W. H. LETHEREN, Sec.-Lt., R.E.

#### Economical Management of a Scott.

Sir,—I was much interested in the article which appeared in your issue of September 14th, as I, too, had been experimenting with a 1912 Scott, which had been brought up to date in much the same way as the machine of the writer of the article. Before the above-mentioned article was seen the two fittings shown in the accompanying illustration had already been completed. The auxiliary tank, holding about half a gallon of petrol for starting purposes, was made out of a Macfarlane water-biscuit tin, the length being reduced by about 3in. It was attached to the tube by ordinary iron "hooping," which is used to strengthen the ends of wooden cases, etc. A bracket was also soldered on to the bottom of the tin, as there was a tendency for the "tank" to vibrate at high speeds. The total cost of making this, with tubing, T piece, and filler cap was under half a crown.



Scott equipment for using heavy fuel.

For the hot air intake the same method was used as that mentioned by the writer of your article—the most obvious and perhaps only method for a Scott machine. In my case, however, ordinary copper tubing was used instead of flexible tubing, as being cheaper. It might seem as if the length of the piping would spoil its efficiency;

but, as a matter of fact, not only does the jet chamber and induction pipe become thoroughly warm after a few hundred yards, but also the float chamber and its contents.

The fuel used is a half-and-half mixture of petrol and paraffin. The Scott runs as well on this as on pure petrol, no difference in speed, hill-climbing, etc., being noticeable. Pure paraffin was tried, but the engine "choked." This, in my opinion, is partly due to the number of gauzes through which the mixture has to pass before it reaches the combustion chamber. Only one thickness of gauze is used now, instead of the usual two, and, possibly, if all the gauzes were dispensed with the machine would run on pure paraffin. With petrol one gets objectionable "blow-backs" if the full number of gauzes is not used, but these disappear when paraffin is used.

(REV.) V. B. YEARSLEY.

#### Electric Lighting for Motor Cycles.

Sir,—With reference to Lt. Nagel's criticism on the use of celluloid-cased accumulators mentioned in my article on the above subject, I have used this type of cell continuously on various motor cycles for the last three and a half years without the slightest damage taking place. On my latest two-stroke (a 1916 model) a C.A.V. celluloid type cell, mounted in precisely the same position as his own, has already seen considerably over 1,000 miles' use on rough roads, and it is practically impossible to distinguish it from new.

The advantage of celluloid is that it enables the condition of the plates and height and condition of the acid to be readily observed, which is a great factor in the successful use of accumulators for lighting purposes on motor cycles, especially when one is dependent on the local garage for charging facilities.

With the steel or ebonite-cased cell the internal condition is largely a matter of guesswork. Provided the celluloid cell is of a good make and is tightly packed in its box to prevent jolting, I fail to see why it should be more prone to damage than any other type. F. E. SCHOFIELD.

#### American Machines.

Sir,—I quite agree with "Rhodesian" in his tip for overhead valves on the Indian. I have also found it quite an improvement, and, with the addition of a small fibre cap over the small push rod it makes the valves as silent as side by side.

But I should like to make a few remarks regarding the wearing qualities of this machine in contradicting "Prospero's" statements. I uphold him in his points on other machinery, but would like to give my experience as regards two of the principal motor cycle productions.

(1.) The clutch and gear box of the Harley-Davidson and Indian will take a lot of beating. I have just examined and cleaned a 1913 7-9 h.p. Indian two-speed gear box and for all practical purposes it was in as good condition as the day the machine was put on the road.

(2.) Engines. Three weeks ago my pal in the workshop dismantled an 8 h.p. three-year-old Harley-Davidson engine. It had one cracked piston, and the rings were bad, otherwise nothing else required renewing. This machine had been run hard by one who did not know a piston from a big end, and had had a sidecar attached the whole of the time.

I have just assembled my 1915 5-6 h.p. engine after a complete inspection. This machine has run about 12,000 miles. All it required were two new top rings and a good internal



cleaning. I, of course, had the heads off for decarbonising purposes.

(3.) Wheels and frames. Where can anyone find wheels which will stand up any better than the American pattern? The frames also may bend in a smash, but very seldom crack or kink.

(4.) Brakes. How is it I notice some of the latest British machines of good makes are beginning to copy the American back drum brakes? MECHANIC M.T.

Sir,—“J.W.’s” letter requires an answer from me. To have it suggested that my opinion is the possible result of intolerable bias by a gentleman who naively admits his own bias is sarcasm run mad. He has “lately” taken delivery of so and so. Precisely my point. Mr. J. W. Walker’s point and “Ixion’s” concise summary of the question (*vide The Motor Cycle* of August 24th, page 154) are all summed up in the sentence in Mr. Walker’s letter: “Very fine for three, passable for six, and hopeless for a year’s hard riding.”

To answer question No. 2. Yes; American kick-starters are more crude than English. Where is there an American with a kick-starter as neat as the Sturmev-Archer, Sunbeam, or A.J.S.?

Point 3 would be a list of annoying troubles petty and otherwise—the natural result of having a collection of small nuts, bolts, studs, pipes, and flimsy levers placed on a vibratory piece of mechanism like a motor cycle engine. I would advise “J.W.” to cast his eyes around and not glue them to one machine.

Electrical troubles. To re-utilise an old phrase of my own, “Magnetos that are too proud to spark” hail in large quantities from across the herring pond. We have some here (France).

Point 4. A carburetter is not automatic if it requires a small extra air lever to be manipulated from the saddle by leaning down and feeling for it. My present Triumph carburetter is more automatic than any American I ever sat on, yet it is a two-lever.

Point 5. My list was not meant in any way to be authoritative or complete. As stated, it was a purely personal short list of really good things—the result of a fair amount of riding experience. I would point out that there are several English machines which will give him all the good points he enumerates, bar possibly 28in. wheels, and I would further point out that the home product will still be giving excellent service a year or so after the average American has rattled itself to the scrap heap.

B.E.F. A. LINDSAY, M.B. (CAPT.), R.A.M.C.

P.S.—Capt. R.G.A. was your error. *N’est ce pas?*

#### A Trial of Petrofin.

Sir,—Having run 400 miles on Petrofin, I give my experiences. No alterations have been made in any way. The machine is a 1914 2½ h.p. Douglas, Amac carburetter. I fill the carburetter with pure petrol, inject pure petrol into each cylinder, turn on Petrofin, and the engine starts at once.

I get over 84 m.p.g. The following differences are noted between petrol and Petrofin:

The engine takes little air until six miles have been run.

The engine is very sensitive on throttle and as to mixture, and slow in picking up after corners, when it is apt to “pink” or backfire in the carburetter. When picking up after corners it starts firing on the back cylinder, then on the front, and possibly backfires in the carburetter. This is doubtless due to air leaks, as the carburetter is old. On the level the pleasantest speed is 27 m.p.h., with the throttle nearly shut and a little air.

As the engine runs hotter than with petrol it takes a little more oil. On hills it is slow, necessitating more frequent use of the low gear; but if allowed to cool first it goes up anything on top, as with petrol.

In conclusion, Petrofin is more tricky to drive with, as “it is strongheaded,” and gets a set mixture of its own, which must not be altered, of 27 m.p.h. or so. At this speed the engine keeps fairly cool: it will do 50 m.p.h., but naturally overheats soon. All the taxis in Cambridge run on white paraffin at 1s. 1d. per gallon and one-third petrol. They mix a penny block of camphor with each gallon of paraffin (as in London). I find my Douglas runs better on Petrofin with a penny block of camphor per gallon.

J. H. LAWSON-WALTON (LIEUT.),

13th K.R.R., ATTACHED R.F.C.

#### Improved Mudguarding.

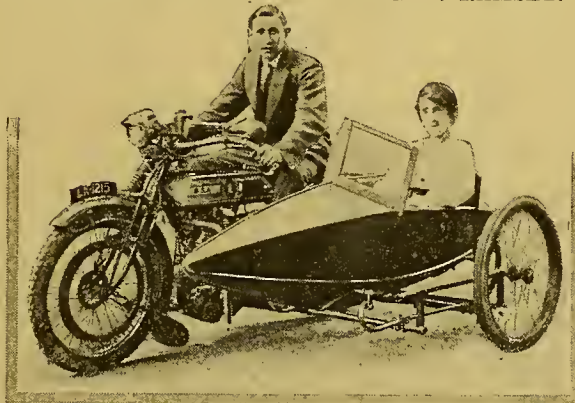
Sir,—I have no desire unduly to deprecate Mr. Macgill’s mudguard attachments, described and illustrated some little time ago, but what I would like to point out or suggest is that such attachments would not be necessary if the present practically standard method of mudguarding were redesigned. Several years ago I urged two leading makers, whose machines I used, to fashion the mudguards on what I would term car style, *i.e.*, broad nine or ten inch guards, slightly curved, with small ribs along the edge to prevent water and mud from scattering out sideways. Such guards to have an inch of clearance from the tread of the tyre, thus enabling them to be easily cleaned out, and clogging up with mud and snow, so often the case with the present closed in form of mudguards, rendered impossible. My suggestion was politely acknowledged by the makers in question, but was not adopted. Since then I note that the Enfield and A.J.S. firms have begun to fit their machines with broad open guards, and recent Norton models have the back wheel thus protected, though retaining the old style of guarding over the front wheel (which, by the way, is the principal offender, so far as mud, dust, and wet slinging is concerned). It may be urged that the style of mudguards I advocate would mean wind resistance and overheating by the engine being too well shielded; but my experience with Douglas machines fitted with outspread wings on the front guard is that ordinary wind resistance is not apparent, and a series of perforations through the right hand wing enables a draught of air to impinge on the front cylinder, thus checking any tendency for the engine to become unduly heated.

Supplementary fittings, such as shields made of tin or leather, roller blinds, etc., I regard as so much clumsy, unsightly extra stuff clamped and bolted on, and more or less a hindrance when certain adjustments are necessary. The majority of makers at present are probably too busy with Government work to think about mudguards, but I hope, when normal times return, that those very important and all necessary fittings will undergo such alterations as will make them really effective. R. G. LINDSAY.

#### A Home-made Sidecar.

Sir,—Noticing from time to time the interest you take in home-built sidecars, I am sending you a photograph of one I built in my spare time. It is made of three-ply wood, has a V-shaped windscreen, and is extremely light. It offers very little wind resistance. I have attached it to my 1916 B.S.A. machine, of which I cannot speak too highly. I have fitted a “drain pipe” exhaust and altered the handle-bars to my own taste. I have been running on half paraffin and half petrol without any alteration to the carburetter. With this mixture there seems to be no difference in running, except on hills, when a little more careful manipulation of air and spark levers is required. It is only necessary to inject petrol when starting from cold. I give the engine just a little more oil than when running on “pure” petrol. I have examined the residue in the crank case from time to time, and can see no signs of the paraffin getting past the rings, so I should imagine that the half and half mixture vaporises properly.

G. P. RAMSEY.



Another home-built sidecar body. (See letter from G. P. Ramsey.)

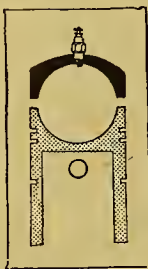


### The Scott Sociable.

Sir,—I have been following with great interest the correspondence about the new Scott Sociable in your excellent paper.

In reply to Sgt. Way's idea of placing the front wheel in the centre, I would suggest that Mr. Scott's original idea was better, for, even in peace time, the roads in this country leave much to be desired, and on rough roads surely two tracks are better than three.

A point with regard to piston head design. Why is it motor cycle manufacturers insist, I think without exception, on making their piston heads nearly flat? Surely if the combustion chamber were more nearly spherical (see sketch), with the plug in the centre, greater power and



efficiency would  
E. PLANE.

Sir,—I have been very interested the last few weeks in reading the letters in *The Motor Cycle* with reference to the Scott Sociable. Whether it is a "beauty" or not seems to me to be matterless if it will prove to be as satisfactory and efficient as a standard 5-6 h.p. twin and sidecar. The motor cycle and sidecar was by no means beautiful when it first made its appearance, but it has proved to be the passenger outfit so far.

Some months ago, before the description of the Scott Sociable was published in *The Motor Cycle*, I saw a sociable which, if it were not the Scott, was its double—at least it had a two-stroke Scott engine, and was very like the description and photographs in *The Motor Cycle*, and bore the registration numbers of the district where the Scott is built.

When first I saw the machine it was standing in the left-hand side of a main street, with the front and driving wheel about a foot or so off the crown of the road, the offset wheel, of course, being nearer the pavement. The engine was started up with both driver and passenger in their seats, but when the machine was put into gear and a start attempted the sociable refused to mount the camber.

The same thing was tried several times, but without success, and to get away the passenger and driver had to get out and push or drag the front wheel on to the crown of the road before a start could be made. I never saw a motor cycle and sidecar in the same predicament, and have seen dozens start away from exactly the same place.

Why the sociable refused to mount the camber of the road I cannot say, but it appeared to me at the time to be due to the fact that there was too much of the weight on the back wheels, and the uneven pull of the passenger's weight made the front wheel lean over a great deal, and, however the steering wheel was turned, the front wheel refused to right itself to allow the motor to start off. I may add the camber of the road was by no means out of the ordinary. Perhaps this trouble has been remedied, as, in my opinion, it was a very serious drawback to the sociable. I do not wish by any means to run down the machine in pointing this out, but as many of my friends who witnessed the incident have often mentioned it (and more so this last week or two after reading the letters in your paper) an explanation would be welcomed. Personally, I think it only fair the makers ought to have the chance of explaining through the medium of your paper as to whether this has been remedied or not.

F. GREENWOOD.

### Will the Single-cylinder Survive?

Sir,—The "entirely new class of motor cyclist" which "Engineer" assures us has come along must be very small in numbers and influence compared with the class which will arrive when the Army releases its millions of men, and only after the war will the question of the survival of the single-cylinder be answered.

Of late years the policy of the motor cycle trade has been that of over-development in the search for comfort and luxury; that which is essentially the "poor" man's motor should be as comfortable only as is consistent with cheapness of first cost, economy of upkeep, simplicity of construction and control, and absolute reliability.

The single-cylinder is the only type to satisfy all these requirements, whilst the favoured of "Engineer" and, of late, your tame weather-vane "Ixon," secure comfort at the expense of cheapness, simplicity, and economy, and

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maybe reduce absolute reliability to something a little less certain. The horizontal twin, gaining power only by abnormal r.p.m. and controllability by variation of gearing, cannot possibly equal the low fuel consumption of the single, which will do 90% of a day's work on top gear, thanks to the true engine flexibility and power which made possible the overwhelming success of the  $3\frac{1}{2}$  h.p. as a fixed geared solo.

Annually the cost of motor cycles has increased, simply because a certain class of motor cyclist has been in a position to pay for the increased comfort and luxury demanded; but such riders will eventually be in the minority, and it is but reasonable to suppose that as the price of an outfit equipped as they desire almost approaches that of a small car, the small car maker will eventually secure their custom.

After the war the small tradesman and the young artisan will form the backbone of the motor cycling public, and power with economy and reliability will be in most demand. This state of affairs has obtained for some time in the manufacturing districts of the North of England, and it is significant that here the single far outnumbers all other types for both sidecar and solo use.

D. H. SMITH.

Sir,—May I add a word for the twin? Mr. A. C. Huskinson, in his enthusiasm for his new single-cylinder mount, makes a most ridiculous statement in regard to the pulling power of the horizontal twin. What manner of twin has he in mind that requires a 9 to 1 gear to climb a hill that a 500 c.c. single can climb on a  $4\frac{1}{2}$  to 1 gear? Any decent 500 c.c. "flat" twin should climb the same hill as the single on a 5 to 1 gear.

May I relate a few instances of hill climbing by twins known to me? During the hill-climbing meeting at Nailsworth in February last George Brough made several ascents of the "Ladder" on a  $8\frac{1}{2}$  to 1 gear. This was on a standard  $3\frac{1}{2}$  h.p. Brough. This machine was not one of his "specials," but a standard machine belonging to a customer. In the 1914 Jarrott Cup trial Brough and I both rode  $3\frac{1}{2}$  h.p. Broughs. George Brough's gears were  $6\frac{1}{2}$  and 4 to 1, if I remember rightly, and my own  $7\frac{1}{2}$  to  $4\frac{3}{4}$ ; yet we had no difficulty in ascending all hills, and I was told afterwards that our machines were among the fastest on the hills, and some of them are pretty stiff. Another case of a good climb was made by a 1912 fixed gear  $2\frac{3}{4}$  h.p. Douglas that used to belong to my friend, G. L. Rossiter—well-known to Portsmouth Road habitués—which climbed Pebblecombe on a 6 to 1 gear; also on my Brough I have climbed Dashwood Hill with a  $4\frac{1}{2}$  to 1 gear at over 25 m.p.h.

Why does Mr. Huskinson imagine that a twin with worn out chains, sprockets, gear box, and with the engine getting "slack" will make more noise than a single in a like condition? I should say that the single, provided it is fitted with the same type of transmission, will make a much more horrible row, with its uneven power thrusts jerking the worn chains, etc.

Mr. Huskinson thinks that running an engine on lower gears will wear it out quicker than hanging on to high gears. My experience has always been that more wear takes place in an engine and transmission on a fixed gear machine, or where a high gear is used a great deal. It is the thumping at low engine speeds that wears out the bearings, transmission, etc.—not "revving." I have been running my own machine for over eighteen months, and have covered well over 8,000 miles, and the bearings—big and little ends—have not yet required taking up.

I have ridden most types of power units and the Brough horizontal twin for the last two and a half years, and my conclusion is that the horizontal twin is the finest type of unit for a motor cycle it is possible to have. The increasing number of famous motor cycle houses to take it up is a good argument for this. All credit to the pioneers, Douglas Bros.

I hold no brief for any motor cycle firm, but just state my experiences.

K. V. CHIDLEY.

### Treatment of Belts.

Sir,—Now that a lot of motor cycles have to be stored away, owing to "joining up" of the owners, it will be found a very wise plan to remove the rubber belt. If the belt is not taken off the machine it will be found (after a few months), with being kept stretched for so long, that the rubber covering will be cracked. This will follow with it peeling off, and end in buying a new one, whereas if it were put away in a cool, dry place it would remain as good as ever.

J.D.R.



**Why Does the Engine Carbonise?**

Sir,—I always find your journal most interesting, and feel compelled to extol the article by Mr. H. Webster Moss on "Why Does the Engine Carbonise?" in *The Motor Cycle* of October 12th.

The points raised and reasons given appeal to me as a chemist. I am inclined to think that the mischief arises more from the lubricating oil than from the petrol, and should imagine that petrol engines would show this defect more than petrol worked ones.

Why lead an exhaust heated pipe through the induction pipe? It seems to me that a larger exhaust as a jacket all round the induction pipe should be more effective, and could be made to improve the "silencing" in running.

I often think that the principle of a scent spray could be better adapted to the jet to relieve the trouble of flooding.

Why not fix a small metal piston near tank with a pipe leading to a small container of petrol near carburettor with an outlet inside jet chamber? This would give a vaporiser of much finer divided particles than ordinary jets. This should start up more easily with foot on pedal and hand on piston.

Had I time and tools I should be inclined to experiment in this direction.

W. PILKINGTON.

**Paraffin—A Suggestion to Manufacturers.**

Sir,—I should like to seize the opportune moment of communicating a very important suggestion, through the medium of your valuable and widely read paper, to motor manufacturers throughout the country, strongly urging them to adopt the "dual system of paraffin and petrol" for use on all their trade carrier machines, and also on their general runabout machines, and even, to extend my suggestion further, use this for all testing purposes, etc., since it has been proved and found that there is very little loss in general efficiency in running engines on paraffin. During these days of urgent necessity for economy in the use of petrol, I feel convinced that this suggestion would mean a great saving of petrol, since there is at the present time an enormous quantity of petrol being used for the above purposes which might, I think, be easily avoided.

There are various methods of carrying this suggestion into simple practice, the simplest, I think, being one in which a small compartment or a separate tank is used to carry the petrol for starting-up purposes only, and a two-way tap or the like employed, so that either petrol or the paraffin may be turned on to feed the engine through the carburettor at will of the operator, and this might simply be arranged if desired for handle-bar control.

A. S. BAYLIS.

**Magneto Details.**

Sir,—Regarding your contributor "Ixion's" statement in *The Motor Cycle* of October 12th about sticking rocker arms on British-made magnetos, I should like to know why the fibre bush is still fitted.

Is it another instance of the hypnotising effect of the name "Bosch"? Now the reason I ask this question is because I have a 1911 3½ h.p. machine which has done over 38,000 miles, and although the contact breaker is similar to the Bosch, I have never had a stick-up. The magneto is German make, but has a metal-to-metal bearing for the rocker.

The same make of magneto had a still further improved contact breaker fitted just before the war. In this case the rocker was discarded altogether, and the platinum contact attached direct to a spring.

Then again there are the novel American magnetos. Now why cannot English makers exercise their originality, and realise that even the Bosch was far from perfect in regard to the contact breaker?

D. E. JEWITT.

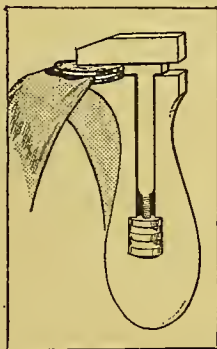
**An Appreciation.**

Sir,—Some months ago I wrote to you about my Douglas, saying I did not think I could manage it, as the saddle was too high and the machine appeared to be rather heavy for me. On receiving your reply to the effect that you were quite sure that if the seat were lowered I could manage it, I took your advice, and have had some glorious rides since; not far at a time, it is true, because I happen to be a postal official, and the hours will not admit of my going a long distance in one day.

I have bought two of your handbooks. I always take *The Motor Cycle*, and read the articles published therein with great interest.

You have brought a great deal of pleasure into my life, for which I heartily thank you.

(Miss) BERTHA I. STUBBINGS.

**Mending Punctures.**

Sir,—I send you herewith a sketch of an idea which I have found very useful to me a number of times.

Sometimes when you get a puncture on a country road, the patch is inclined to be awkward and will not stick to the tube, but by using an ordinary adjustable spanner as a cramp you can obtain a good mend. All that is needed are two pennies. The sketch will explain the idea.

J. D. ROBINSON.

**Engine Noises.**

Sir,—From time to time an outbreak of explanations of "konking" and other weird engine noises takes place in your columns. Most of the theories given have been palpably wide of the mark, betraying as they do a complete ignorance of the simplest chemistry and mechanics; others are possibilities, but I have never noticed mention of what in all probability is the true reason, viz., "rupture of the lubricating film at the moment of maximum pressure," most particularly at the gudgeon pin. The conditions of konking favour (1) a high instantaneous pressure on the piston; (2) extreme attenuation of the oil from high temperature; (3) a thin film, because of slow relative motion between the surface of the gudgeon pin and of its bearing in the connecting rod. Hence rupture of the film.

When the explosion occurs the film is driven away, broken through, and a momentary metallic blow of the "konk" kind is probable; a short semi-seizure is sure to follow from the increase of friction. This results in a greater or less retardation of all the moving parts, which opens up the way for an easy explanation of all the noises described by your readers.

From observations made on a cycle engine of my own, very liable to knocking, I came to the conclusion that the highest note was produced when the action took place in the gudgeon pin, the next when the connecting rod end momentarily broke through, and occasionally a kind of compound "chug" occurred in the main bearings. At any rate the idea is worth considering and testing by anyone with the requisite leisure and learning.

OLEOFIEND.

**Overheated Sparking Plugs.**

Sir,—I have read "Ixion's" remarks re overheated plugs in *The Motor Cycle* of September 7th with considerable interest. A short time back an appreciative comment on the A.B.C. machine appeared from the same writer. I had looked forward to this report, as I was anxious to know whether any plug trouble had been experienced with the engine under review, but apparently this make has not even one small fault.

My present mount is a T.T. Brough—a fast and reliable machine—but I find that plugs do not last long. At moderate speeds they are quite satisfactory, but when the "fifty" mark is passed misfiring soon begins, and on examination I find that oil is working out between the porcelain and metal body of the plug. The central electrode can also be moved about, but as soon as the engine gets cold it sets tight again and the firing is perfect for a few miles. On one occasion the centre of the plug blew right out when travelling at speed. The plugs used have been of best English make. My engine is perfectly clean and in good order, and the timing must be about right, as I can touch 60 m.p.h. by speedometer. The front cylinder is guilty as often as the back. Perhaps some of your readers have had similar bother, and have found the remedy, i.e., a plug which will stand up to the work.

ROBERT J. COSH.



# CURRENT CHAT

## Time to Light Lamps

Oct. 19th	...	...	5.29 p.m.
" 21st	...	...	5.25 "
" 23rd	...	...	5.20 "
" 25th	...	...	5.16 "

## Special Features

COLD WEATHER CLOTHING (illus.).

BEARING PRESSURES.

SIDECAR OR CYCLE CAR?

### Rather Late in the Day!

A new feature introduced into "Pell Mell," the revue at the Ambassadors' Theatre, is a satire on the Petrol Control Committee.

### Overseas Markets.

The Cleveland two-stroke—the American lightweight which follows so closely the design of the 2½ h.p. two-stroke Triumph and the single-cylinder F.N.—is the latest motor cycle to seek a footing in Holland, an Amsterdam agency having been opened.

### The Term "Flat Twin."

Under the heading "A few Spare Links," E. B. Holton, writing in an American contemporary, says: "Here's one from the other side, and, as it is good, I hope we adopt it into our own lingo. It is the English appellation for a double opposed motor, and is 'flat twin.' The beauty of it is that it fully describes the type, and at the same time is short."

### Police Trap at Aldershot.

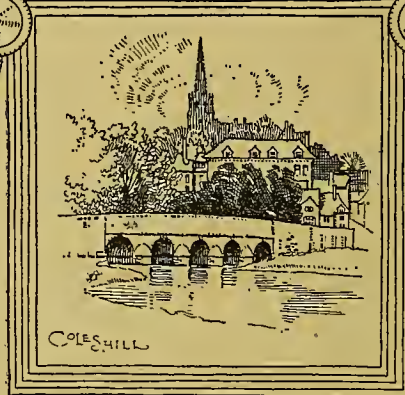
We are informed that there is a police trap working almost daily in Queen's Avenue, Aldershot, between the Canal Bridge and North Camp, in the twelve-mile limit. The military police summon all offenders, both civil and military, and the cases are dealt with at Aldershot Police Court. Fines are generally 15s. or £1. Numerous D.R.'s have been caught recently.

### More Cheap Cars.

The Autocar informs us that there are reports in France concerning the formation of a company, with a capital of £3,000,000, to manufacture cheap cars after the war capable of competing with the Ford. We frequently hear vague talk of an amalgamation of companies in England to turn out motor cycles in vast quantities, and at prices unheard of; but we do not think cheaply manufactured motor cycles would benefit motor cycling in England, though it might for a period popularise it.

### A Curious Coincidence.

On the very day previous to our leading article appearing in the last issue on the British magneto, in which it was stated that neither individually nor as a body have the British motor cycle manufacturers expressed their determination not to use foreign magnetos after the war, it was announced in the French official report that Adjutant Pilot Baron and Adjutant Chazard had bombed the Bosch magneto factory in Stuttgart. Dense smoke was seen rising from the factory as the result of the bombardment. The French are evidently in earnest about this matter, even if the British are not.



### A One-handed Motor Cyclist.

Mr. Nelson, of Shipley, who, unfortunately, has lost one hand, which is replaced by a hook, writes us in reference to the R.F.C. At present he rides a 4 h.p. Norton motor cycle, and can manage motor cars as well. He has offered his services for Motor Transport and been refused, and has also been rejected three times by the military.

### Obscured Number Plates.

A correspondent informs us that police are active in Regent's Park Road, North Finchley, and are especially keen on catching motor cyclists whose number plates are obscured. Two constables are employed on this important duty. Our informant was stopped for having his number plate partially obscured by a cloth he had wrapped round his spare petrol can to prevent it scratching the enamel on the carrier.

### Driving by Night in London.

No one drives a motor vehicle by night in London unless he is compelled, though sometimes it happens that one is overtaken by darkness, and the ordeal has to be faced. Then excessive caution has to be exercised. Foot passengers crossing the street are next to impossible to see, motor omnibuses and trams are hardly noticeable, so dimly are they lighted, and overtaking is risky and uncertain. The driver has to keep his eyes skinned the whole time and must drive very slowly.

### Three for Free.

From the small advertisements of a daily paper: "¾ h.p. motor cycle and sidecar for sale, 4-stroke, 3 engine, 2-speed, in going condition."

### A Natal Trial.

The Pietermaritzburg Club's annual trophy run, a matter of 157 miles over typical Overseas roads, was won by an A.B.C. rider, who lost eight marks out of one thousand. Thirteen of the twenty-three riders were mounted on big American twins.

### Latest Lighting.

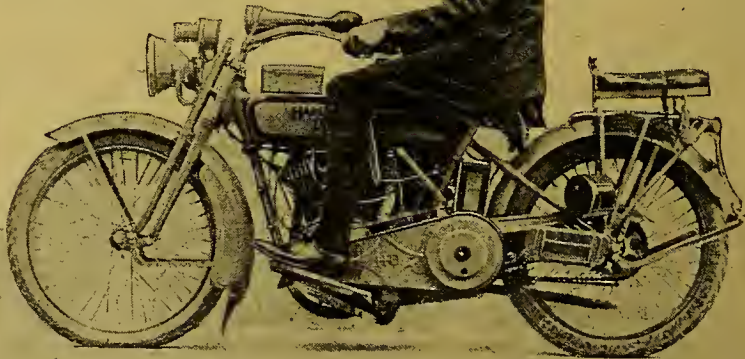
We are glad to see the official order that, commencing January 1st, all vehicles, except bicycles, push tricycles, and hand vehicles, will be required to show two front lights, one at each side. It is already compulsory in certain counties. The extension of restricted lighting on vehicles to the whole country is described elsewhere in this issue.

### Second-hand Machines.

Now that more petrol is obtainable and fewer new mounts are to be had the second-hand trade should be brisk. As it is more and more difficult to get repairs carried out, motor cyclists will have to rely still more on their own skill and resourcefulness, and we advise those who contemplate overhauls during the winter months to read all the books they can on the management of their mounts.



Prince Axel of Denmark is a keen motor cyclist, and scorns the lightweight, preferring the speed and power of the 10 h.p. Harley-Davidson, on which he is seated.





**The Motor Cyclists' Round Table.**

Our correspondence pages, which extend to four pages this week, are exceptionally interesting.

**The Admiral Arbuthnot Trophy Fund.**

A cheque for 5s. having been sent to *The Motor Cycle* by Lt. Frank May, R.N.A.S., for the Arbuthnot Trophy Fund, Mr. T. W. Loughborough, secretary of the A.C.U., has decided to accept it. This is the sixth amount received by this journal and handed over to the A.C.U.

**A Machine Stolen.**

Messrs. Maude's Motor Mart are anxious to trace a machine which was sold against a cheque which has been returned "no account," the purchaser of which cannot now be found. The machine is a 1915  $3\frac{1}{2}$  h.p. Zenith, engine No. 2,426, frame No. 3,400, fitted with Watford speedometer, P. and H. lamps, and Lucas horn. Information should be sent to Messrs. Maude's Motor Mart, 100, Great Portland Street, W.

**The Second-hand Show.**

Owing to unforeseen difficulties, Mr. Hugh H. Gregory, who had arranged to issue the certificates stating the mechanical condition of the entries at the forthcoming show of second-hand cars, has, with great reluctance, been compelled to withdraw from this appointment. Messrs. William Glass and Company, the organisers of the show, have, however, succeeded in securing the services of Mr. G. Foster Pedley, who is well-known in all branches of the motor industry.

**The Auto-Cycle Union's Recognition.**

The Auto-Cycle Union has shown its approval of the forthcoming show of second-hand cars and motor cycles by reserving space for an office at the Royal Agricultural Hall. The Union was formed for the protection of motor cyclists, and is pleased to recommend the show to such of its members as are desirous of disposing of their machines.

Prospectuses of the show may be obtained from the secretary, William Glass and Co., Lincoln House, 296, High Holborn, London, W.C.

**Franklin goes to America.**

C. B. Franklin, one of the best known competition riders in Ireland, and who has on many occasions taken part in classic events on this side of the Irish Channel and on the Continent, is going to America to take up an important position on the mechanical side at the Hendee Manufacturing Co.'s factory at Springfield (Mass.) Before he entered into the service of the makers of the Indian as manager of the Irish depot of the company, Franklin followed the profession of an electrical engineer, and his skill in electrical matters was a contributing factor of no small account in his success in competitive events. Franklin will remain in America for a period of six months at least. Meanwhile, the Hendee Co. is closing temporarily its depot in Dublin, this step being made necessary owing to the restrictions regarding the import of foreign-made motor cycles.

**The National War Funds.**

At the week-end the principal war funds stood as follow:

The National Relief Fund	£5,964,924	0	0
(£3,465,925 distributed)			
British Red Cross Fund	4,478,396	0	0
Tobacco Fund	115,645	0	0
The Queen's Work for Women Fund	170,780	13	6
Kitchener Memorial Fund	331,000	0	0

**The New Lighting Order—A Wrinkle.**

In view of the new Lighting Order, which specifies that all sidecar combinations must show two white lights to the front, showing the full width of the vehicle, a few notes on the subject will be of interest. As the extra side lamp need not be used for illuminating purposes, but merely to show the width, a simple solution of the difficulty is to use an ordinary small tail lamp, substituting a white glass for the red one. If this glass is painted over with whitewash mixed with size the light will be sufficiently obscured, and will serve the purpose quite satisfactorily.

**Obtaining More Petrol.**

In our issue of October 5th a correspondent described how, in his endeavours to obtain petrol, his original application bringing no reply from the committee, he sought the aid of the A.A., and finally received three permits within eight days.

Our Scottish contemporary, *The Motor World*, quotes a case in which a car owner, finding his allowance insufficient, sent in two further applications, one for each of his cars, and a few days ago got what he asked for, which was a deal more than in the original permit.

A trick, which is a punishable offence, and not to be confused with the cases just cited, is that given in a recent issue of *The Light Car*. According to a garage proprietor, after he had entered the figure 2 (2 gallons of petrol) on a petrol licence the holder simply converted the "2" into " $\frac{1}{2}$ "! Needless to say, we do not recommend such a practice.



A LADY MOTOR CYCLIST ON GOVERNMENT WORK.

The machine is a lightweight Calthorpe two-stroke, which our correspondent finds of great assistance in her work for the Forage Department of the A.S.C.

**Motor Cyclist Volunteer Major.**

Congratulations to Mr. T. W. Loughborough, secretary of the Auto Cycle Union, on being gazetted a Major, commanding the 12th Battalion Surrey Volunteer Regiment.

**Sporting Light Cars.**

In yesterday's issue of *The Light Car*, Miss Viola Meeking describes a sporting light car body modelled on the lines of an aeroplane fuselage. The finished drawing looks extremely attractive.

**J.A.P. Parts.**

J. A. Prestwich and Co. have just issued two excellent booklets of spare parts. One covers the 4 h.p. and 5 h.p. twin engines and the other the 6 h.p. and 8 h.p. engines. They are both well illustrated and arranged for quick reference.

**Larger Tanks All Round.**

Our leading article, "The Desirability of Larger Tanks," must not be confused with the armoured car tanks. We believe, however, that the remark would apply equally truthfully to both "tanks" for warfare and tanks for the storage of petrol on a motor bicycle. We shall see!

**American Magnetos.**

Are we to see American magnetos made under German patents in this country in large numbers after the war? It is an aspect of the magneto question which must receive careful consideration by the authorities. We note that the Bosch Magneto Co. of America announces an enormous increase in the size of its factory with the object of multiplying the output.

**A Strange Order.**

We are advised that an Inland Revenue inspector called at a garage in the London district the other day, and informed the proprietor that all petrol substitutes if poured direct into the tanks of motors must be entered on the petrol cards. This is a strange ruling, and one apparently which may be at once overcome by selling the substitute in tins, for the agent then has no knowledge as to whether it is for use as a motor fuel, or for lamps, cleaning purposes, etc. Why dictate rules so easy of circumvention? We cannot believe that it is a general ruling.

**Bowden Brake Report.**

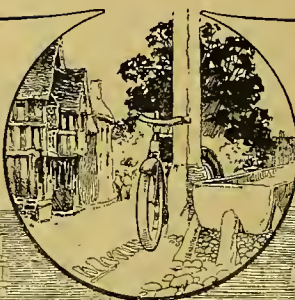
The report of the Bowden Brake Co., Ltd., after making allowance for depreciation, payment of directors' fees, etc., shows a net profit for the year ended August 31st, of £14,663 6s. 5d., as compared with £5,484 5s. 3d. for the previous year.

**Douglas Soldiers' Parcel Fund.**

We have received from Messrs. Douglas Brothers an interesting booklet dealing with the working of the Douglas Soldiers' Parcel Fund, the object of the fund being to co-operate in an endeavour to compensate in a small way their fellow workmen who are serving in the war. Seven hundred and thirty-four parcels have been despatched to one hundred and four soldiers with the British Forces. From January 8th to May 13th £197 was collected, which Mr. Douglas subsidised to the extent of £49.



## Birmingham to the Isle of Wight.



A Week's Tour on a  
2½ h.p. Lightweight Sidecar  
with Three Up.

**P**ERHAPS some would think it rather risky to go touring with three up on a 2¾ h.p. sidecar combination, but when I state that the power unit is a Peco, readers must realise that I had "some" engine, and indeed it performed its hard work admirably.

The Isle of Wight was our objective. I journeyed from Birmingham as far as Swindon alone, packing a little luggage securely in the sidecar to weight it and prevent it lifting on corners.

It was past midday before I started, and the weather was not very promising. Before reaching Evesham I ran into a heavy thunderstorm, and at Broadway I sheltered for an hour till the rain ceased.

Fish Hill, leading out of Broadway, is a nice little "pimple," but, using second gear, I easily ascended it. My way was then through Stow-on-the-Wold, Burford, Lechlade, Highworth, and Swindon, which I reached at 8 p.m., and found most comfortable quarters for myself and the machine at the Coventry Hotel in Newport Street.

### Two Passengers.

At about eleven o'clock next morning I met my good mother and a cousin who were to be my passengers. They had trained from Birmingham; so after rearranging the luggage and putting two cushions on the back carrier we made for Marlborough.

I proceeded slowly at first, as my cousin (on the carrier) had never travelled thus previously, and I wondered if she would be at all nervous, but I was soon at ease and we went merrily on.

I was curious to see how the little engine would tackle the steep hill at Marlborough (leading into Savernake Forest) with its load of about 26 stone, for I knew it would be the worst hill we should encounter this side of the Solent. There are two hairpin bends in the distance of about half a mile, and I fancy the gradient is somewhere about 1 in 8.

Owing to not dropping to bottom gear earlier, I did not get the best out of the engine. When nearing the second bend I decided to jump off and run about

twenty yards to ease the strain, and then, mounting again, we reached the summit feeling exceedingly proud of the performance. As we looked back, a lovely bird's-eye view of Marlborough was obtained, and the ride through the forest was enchanting. We passed through little hamlets with terribly long names, as, for instance, Collingbourne-Kingston and Collingbourne-Ducis. Here we turned right and then left by the church and on through Tidworth, Shipton Bellinger, Cholderton, Boscombe, to Salisbury. A good portion of this road Bartholomew calls "secondary," but it is decidedly picturesque, and that was why I chose it.

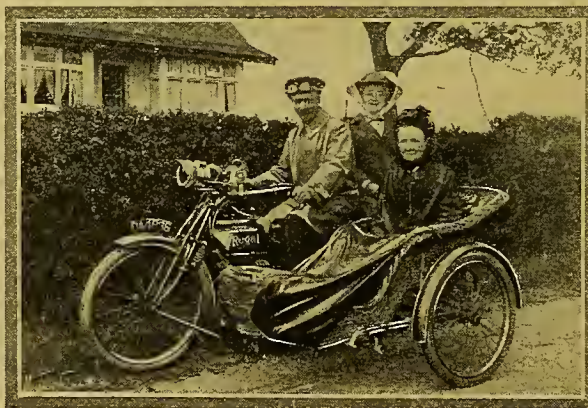
At Salisbury we stopped for replenishment, and after a peep at the cathedral sped away to Southampton, arriving at the pier at 4.30. Here the sidecar tyre went flat, and we had to wait till 6 p.m. for the boat. I mended the puncture on the pier; at least, I thought I had, but after getting the machine on the boat the tyre was down again. A rider of a Zenith very kindly gave me assistance, and by the time Cowes was reached we were ready to ride away. Another fifteen miles landed us with friends at Cranmore, near Yarmouth, very enthusiastic over our journey of about eighty miles.

While on the Island I had several runs, always "three up," and once with

four! One day we went to Totland Bay and Freshwater. On another we journeyed round Brook, at the foot of Mottistone Down, on the edge of which, and commanding a glorious view, is Brigadier-General Seely's fine stone mansion.

From here we got on the grass-grown military coast road, which proved exciting and novel, for we had to keep opening gates, and at one point we found ourselves in a field! However, we eventually got on to good roads again, and passed through Brightstone (pronounced Brigston), Shorwell, and on to Carisbrooke, inspected its grand old castle, then on into busy Newport, and back to Cranmore.

We visited Totland again, for it fascinated us. The views from the cliffs are glorious, and it was hard to leave the place—one of the Isle's fairest spots. I



The 2½ h.p. two-stroke Regal-Peco sidecar machine which was driven, with the load shown, by the writer, Mr. A. A. Smith, from Birmingham to the Isle of Wight.



**Birmingham to the Isle of Wight.—**

could have exposed many plates there if I had only dared, but owing to the war I had to keep my photography somewhat under restraint, for khaki was everywhere and cameras strictly prohibited.

**The Steepest Hill on the Tour.**

We also had a run to St. Catherine's Point—what delightful nooks there! Creeping at a snail's pace along the glorious Undercliff we arrived at Ventnor. It was, indeed, strange to see this lovely place so deserted.

Here we found the steepest hill of our tour—the one from the promenade up into the town; including two "hairpins" in its short length, it is indeed "a" hill. I shed my passengers at the foot and rode up with the sidecar empty. I didn't like the idea of perhaps having a stop half-way up. At the garage, where I procured petrol, amazement was expressed at my boldness in travelling "three up" on so small an outfit, but I put it down to their ignorance of the power of two-strokes. Many high-powered engines, they told me, had failed on that hill. The climb out of Ventnor to Bonchurch was very steep, and caused me to jump off and run a few yards.

We followed the delightful coast road to Shanklin and Sandown, then branched off inland to Brading and on to Ryde, and "home" *via* Newport—a run of fifty miles.

When we finally left the Isle of Wight for home, we crossed the Solent from Yarmouth to Lymington, a distance of only four miles, yet the charge for the motor cycle and sidecar was 3s.—is. more than the Southampton-Cowes route, which is treble the distance!

The run through the New Forest to Salisbury was delightful. We saw a great many soldiers, and many a joke passed between us.

**Two Polite Signs.**

By the way, how polite some of the motor signs are in the Forest. At one village we were requested to "Please drive slowly." We did; and then the next sign greeted us with "Thank you."

Owing to more tyre troubles we had to make two days of our journey back to Birmingham, for at 8.30 p.m. we found ourselves at Highworth, near Swindon, and stayed there for the night.

The week's run was 460 miles, and I used nine gallons of fuel, which works out at just over fifty miles to the gallon—not at all a bad average considering the load. I used a 30 jet in my Senspray. I also lowered my gear for the run, having ratios of  $5\frac{3}{4}$ ,  $9\frac{1}{2}$ , and 14 to 1.

Altogether the tour was very enjoyable, notwithstanding tyre trouble, and it proved also that it is *not* necessary to possess a high-powered engine to travel "three up."

A. A. SMITH.

ACTIVE NORTH-COUNTRY  
MOTOR CYCLISTS

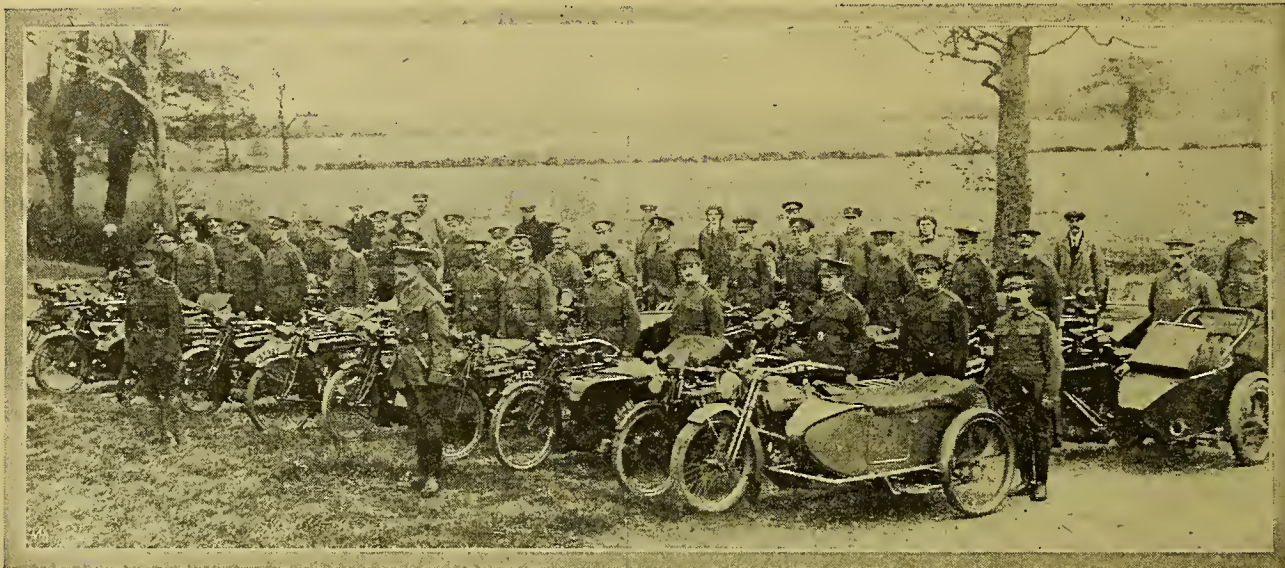


The motor cycle section of the Liverpool Heavy Car Battalion of the National Motor Volunteers on their weekly turnout last Saturday. The section is a growing and important one, and though on Saturday the weather was bad in the extreme, it will be seen that a good number gathered for training. (See next page.)



## North-country Motor Cyclist Volunteers.

### ACTIVITIES OF THE LIVERPOOL M.C. SECTION.



#### SATURDAYS INSPECTION OF THE MOTOR CYCLIST VOLUNTEERS.

The motor cycle section of the Liverpool Heavy Car Battalion of the National Motor Volunteers lined up for inspection on the outskirts of the city.

THE present strength of the Motor Cycle Section of the Liverpool Heavy Car Battalion of the National Motor Volunteers is approximately seventy. Manœuvres are held weekly, and great enthusiasm is evinced. The Section is separate from the squadrons, and forms a unit of the battalion. The Commandant is permitted to make his own arrangements for drill, lectures, etc. Quite recently there was an inspection by Col. Smith, the County Commandant, fifty men putting in an appearance. It was generally admitted that the men were extremely smart, which is understandable in view of the fact that they all own the machines they ride. Col. Smith complimented the Section and its

officers on their appearance and keenness. Sports and a gymkhana held recently to support the funds of the Section produced nearly £40.

All the men pay a nominal subscription (voluntarily) of 1s. per month, N.C.O.'s double, so that the Section is on a self-supporting basis. Some of the men who have businesses of their own are able to assist the Section in many ways; for instance, a building supplies contractor lent the unit, free of charge, a piece of ground 500 superficial yards in extent, and has promised to put up a small drill shed and mechanical quarters. H. W. Coopland is showing a lively interest in the unit, and has been appointed honorary motor cycle section

commander. The Area Commandant, E. H. W. Butterworth, has presented the Section with a fine silver rose bowl on a plinth as a challenge trophy to be allotted at the discretion of the Section officers.

Some idea of the varied character of the members may be gathered when it is mentioned that among the ranks are gas-fitters, electricians, joiners, solicitors, and business men. Also included in the ranks are the Liverpool amateur heavyweight boxing champion and the Liverpool City football goalkeeper. With S. W. Phillpott, whose energy is well known, at the head of affairs, the Liverpool Motor Cyclist Volunteers are among the most virile in the country.

#### MOTOR CYCLE RACING IN SPAIN.

WE have received an account of a motor cycle race which took place in the Paseodel Principe and Boulevard, Almeria, Spain. The course was 152 kilometres, and the competitors were sent off at intervals of five minutes. M. Herrera, mounted on a New Imperial motor cycle, was despatched first, and, finishing the course in 71 mins., easily proved to be the winner. Jose Martinez, on an Alcyon, came in second, and took 15 mins. longer to cover the ground.

We are always pleased to hear of such successes; it shows that the British makers are still endeavouring to hold the market abroad, and are putting good material in the goods they do send out. It is by superior workmanship and durability that we shall keep our Overseas trade, and nothing will be more beneficial

to us than to see a single British machine coming out on top against a crowd of foreign makes.

#### NEW PETROL LICENCES.

IT is stated that with reference to the new petrol licences no delay is likely to arise in their issue. We hope that will be the case, for we had numerous complaints of annoying delays in the early days of the issue of petrol licences. Mr. Runciman tells us 100,000 persons wrote complaining of inadequate allotment, but later stated that if the present rate of importation of motor spirit is maintained the supply will probably be sufficient to meet requirements for the purposes of the war and other essential needs. Most motor cyclists will be aware by now that they may have four gallons a month after the expiration of their original licences.

#### HARLEY-DAVIDSONS FOR RUSSIA.

THE Harley-Davidson Motor Co., Ltd., have just completed, through their London headquarters, an order for over 300 sidecar outfits, several thousand tyres, and a big stock of spare parts for the Russian Government. The whole consignment was shipped within three days from receipt of order, we are told.

The new charges decided upon by the Hull Corporation for the use of the new electric derrick for transporting motor vehicles to and from the Hull-New Holland ferry steamers are: Motor bicycles, 6d.; motor bicycles with sidecars, 1s.; light cars up to 10 cwt., 1s. 6d.; touring cars, 2s.; limousines, etc., 2s. 6d. All possible damage to vehicles and other risks have been covered by insurance by the association.



## MILITARY NOTES.

## "The Credit for the Tanks." How Many People does it Require to Invent a Tank?

IN the House of Commons on Thursday last week, Mr. Lloyd George gave the following explanation:

A great deal has been said in the press about the service of these extraordinary machines, and I do not think I could serviceably add anything to what has already appeared on the subject. We are very satisfied with our experience of these machines. There is no doubt they have been a very considerable success, and, as they improve with experience, I have no doubt they will render even greater service than they have done in the last few battles. I was asked to whom the credit is due for this invention. I have already expressed my opinion on that subject, and I have no reason to vary it in the least, but perhaps there are one or two whose names I should specifically have mentioned. There were the Admiralty experts, whose services were so invaluable in designing these machines. Mr. D'Eyncourt, chief naval constructor of the Admiralty, probably had the greatest share in the matter of designing this formidable weapon. I should perhaps also have mentioned Sir Maurice Hankey, secretary of the War Committee, to whom we are very considerably indebted for the first suggestion that something of this kind should be tried. I still say that these suggestions would never have fructified, had it not been for the fact that my right honourable friend the member for Dundee (Mr. Churchill), who was then First Lord of the Admiralty, gave practical effect to them by making the necessary experiments, setting up committees for carrying the suggestions into effect, and by putting the whole of his energy and strength towards materialising the hopes of those who had been looking forward to an attempt of this kind.

Col. Norton Griffiths: Had not Col. Swinton a good deal to do with them?

Mr. Lloyd George: Oh, yes. I mentioned him in the statement I made in the press. He had a good deal to do with



Lt. Frank May, R.N.A.S. (on the right in the upper picture), is still faithful to *The Motor Cycle* and the A.J.S. machines. In the pre-war days he was a very keen amateur rider, his favourite mount being a 2½ h.p. A.J.S. Apparently the latter has been replaced by a 4 h.p. twin of the same make.

the experiments at the start. He was a most enthusiastic promoter of the idea, and the fact that it was carried through with such zeal was largely due to the enthusiasm he threw into the work. The same applies to Major (now Colonel) Stern, whose practical business ability was invaluable in securing the manufacture on a large scale of these engines of war.

## The Censor in the Nursery.

The secrecy about the "Tanks" is very disturbing to a certain section of

our trading community. A toy manufacturer in a large way of business tells me that he has had scores of applications from retail toyshops for working models of a "Tank." The British boy of today has no use for peace-time toys. He is all for aeroplanes, and airships, and machine guns, and now, too, he wants a "Tank"—and won't be happy till he gets it.—*The People*.

## What about the Men Inside?

And now that Mr. Lloyd George has made an attempt to relegate the tanks to their proper place in the scheme of war, may we be allowed a surcease of exploitation in this particular area? Let us remember that it is the men who are winning us this war. Tanks would not win it in ten centuries.

## Motor Cyclists manning the Tanks.

Another batch of men originally recruited for the Motor Machine Gun Service and examined by Mr. Geoffrey Smith, editor of *The Motor Cycle*, have volunteered for service in the Heavy Section, M.G.C. — the section which handles the heavy armoured cars now commonly known as "tanks."

## NEWS OF OVERSEAS MOTOR CYCLISTS.

MR. ALEC ROSS has received a card from Cpl. A. J. Sproston, who, as we have already announced, is recuperating in a hospital in Southern India from the effects of the Mesopotamian climate. Under the date of September 7th he writes that he is almost his old self again and in a beautiful district 6,000 feet above sea level, where there are good roads and many motor cycles. The latter, Sproston says, are mostly two-strokes.

Mr. H. R. W. Moss, A.S.C., has been good enough to send us a copy of *On Service*, for September, of which he has been editor since its inception.

We congratulate J. Chater Lea, jun., on his promotion to the rank of captain in the A.S.C. He has been doing excellent work in this corps in France since almost the very beginning of the war.

## MOTOR CYCLIST VOLUNTEERS AND THE WAR OFFICE.

Members of the National Motor Volunteers, London Section, with an A.J.S. sidecar and Zenith motor cycle respectively. The good work of the Volunteers is likely to lead to official recognition by the War Office in the near future.





## A NEW GRADO VAPORISER.

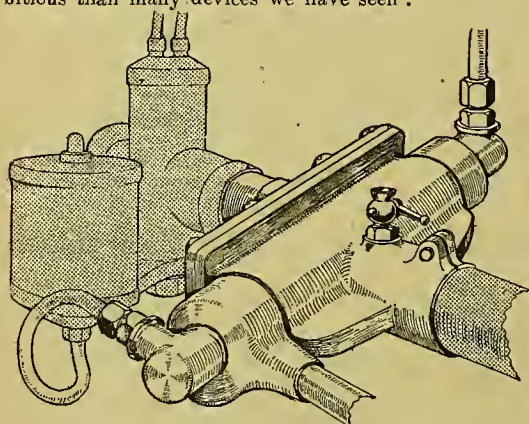
A Simple Method of Heating both the Fuel and the Mixture.

THE use of paraffin as a fuel to replace petrol necessitates the use of some extra device to facilitate its vaporisation, and the past three months has seen the introduction of a small army of inventions and suggestions, all, more or less, successful.

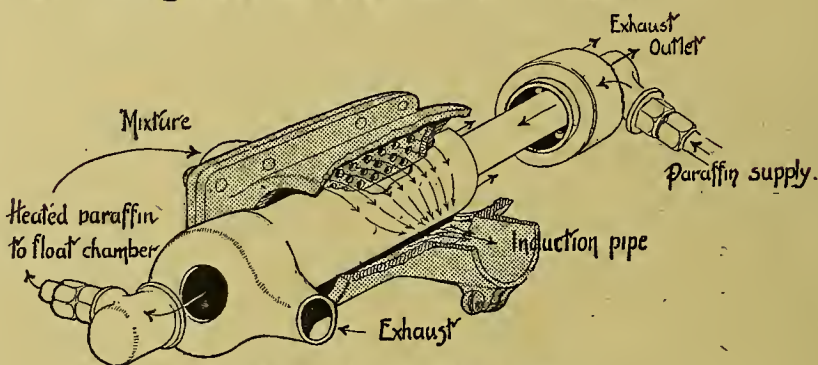
Practically all of them follow the idea of heating the fuel on its way to the carburetter, or between the carburetter and the engine.

### Double Heating.

The latest attachment is the Grado, made by the Grado Manufacturing Co., Pershore Street, Birmingham, already well-known as the makers of the "Grado" Multi-pulley. It is more ambitious than many devices we have seen :



Grado vaporiser, between carburetter and inlet valve.



Sectional view of the Grado vaporiser.

not only does it heat the fuel on its way to the float chamber, but the mixture is reheated in its passage to the engine.

From our illustrations it will be seen to consist of a brass tube conveying the fluid fuel, around which is a second tube for the passage of a portion of the exhaust, thus effectively warming up the paraffin. After passing through the carburetter, the mixture returns through a screen of small holes, and, impinging on the outside of the exhaust jacket, passes on into the induction pipe. This method of double heating, combined with the usual partial vaporisation by

the carburetter, should transform the liquid paraffin into a perfect vapour. The construction is good, the outer case being an aluminium casting, and the whole is readily detachable for cleaning purposes.

### Easy to Fit.

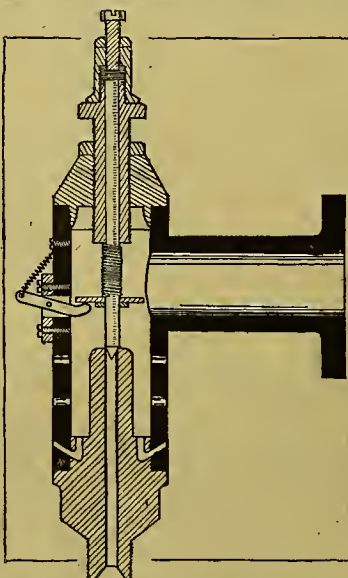
All the fitting that is necessary is a small pipe from the exhaust and the connections to tank and carburetter. A petrol injection is needed to start the engine, and a small tap is provided for this purpose over the induction pipe manifold. We have had no opportunity of testing this arrangement, but we understand it has given very good results, and it should prove an effective aid to the use of paraffin and the many heavy fuels which are now sold under different names.

## METROPOLITAN POLICE TRAPS.

THE police in that extensive district known as the Metropolitan area are more active than ever against motorists. We have received information of a police trap in Barnet towards the end of the ten-mile limit, on the Elstree Road (a road of secondary importance), beginning a few yards west of the church. The situation of the trap is in a wide highway where there is little traffic. Two traps are worked in the Cromwell Road, South Kensington, one near the Brompton Oratory and the other beginning about 100 yards west of the Gloucester Road crossing. Then there are other traps, one in the village of Roehampton and one on Surbiton Parade, situated by the gardens leading down to the riverside. A favourite control is often working near the Albert Hall, in Kensington Gore, in which many victims are caught. The first three of these traps were working on Saturday last.

All these are placed where there is no apparent danger and there is a temptation to exceed the limit slightly, especially when there is little traffic. Special constables who are motor cyclists or car owners should remember that by joining the Special Constabulary they release officers of the regular police force for this un-English practice. If there were

no specials there would probably be no traps. A page of *The Motor Cycle* would hardly suffice to deal adequately with the police traps in the Metropolitan area, and many and varied would be the tales of woe revealed.



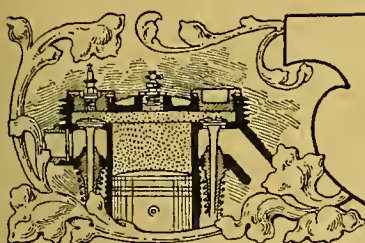
Section of the Barry floatless carburetter.

## A FLOATLESS CARBURETTER.

THE carburetter we are about to describe is not on the market at present; it is none the less interesting. Mr. Barry, of Rathmines, the inventor, tells us that it has improved the consumption of his car from 32 to 45 miles per gallon, and, that being the case, there is no reason why it should not give equally satisfactory results on a motor cycle.

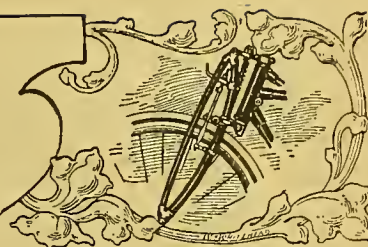
As there is no float chamber, the supply of petrol is controlled by a needle pressed by a spring on to the jet, which has a conical seating. A disc is attached to the needle to enable the suction of the engine to lift the needle from the jet, and as the motion increases with the speed the needle is lifted higher and more petrol is supplied. The extreme lift of the needle is controlled by the screw at the top of the carburetter. At starting the needle is raised by the lever on the left, which allows petrol to flow over the jet and mix with the air admitted through a series of holes. A butterfly throttle (not shown) is fitted also a Bowden extra air valve, if desired. With the addition of a hot air box around the air port good results are obtained from a 50% mixture of petrol and paraffin. It is stated that the carburetter will work equally well in any position.





## SINGLE v. TWIN.

"Ixion's" Opinions on the above Controversy.



IT is perfectly evident that the influx of big American twins, caused by the transference of our industry to munition work, has caused many riders to revise their opinions as to the merits of the single-cylinder engine. The opinions of many correspondents and of more than one of my colleagues might be summed up in this quotation from a letter just to hand, "The big twin scores easily on account of its superb manners." Of this the British manufacturer is, of course, perfectly aware. He realises as thoroughly as his most experienced customers that the 500 c.c. single in point of racket and vibration is comprehensively worsted by any first-class high-powered twin. But he also knows what few amateur owners recognise, that it is a very difficult job to construct a V twin of which the crankshaft and connecting rod bushes will last as well as those of the 500 c.c. single, and this especially applies to the big end bushes of the connecting rods. These bushes are the weak point of all motor cycle engines, the available area being strictly limited where internal flywheels are retained, and being generally restricted by the narrow belt or chain line practicable with a motor cycle frame.

### My Trials Experiences.

It so happens that, as a motor journalist, I frequently subjected motor cycle engines to very serious tests before the war. I normally accompanied both the big Six Days trials, and in this work I gave the engines I employed a worse gruelling than any competitor, in that I usually watched all the hill-climbs, and then maintained a highly illegal average speed to overhaul the trial before the next hill. Other journalists profess to do this, but in practice I have usually noticed that most of the scribes take the latter half of the day's run very easily, whereas I have usually "scrapped" the whole distance. I find that the engine bearings of the  $3\frac{1}{2}$  h.p. single require attention after six days of such work, and that the corresponding bearings of a V twin-cylinder will not last out the week unless, indeed, the engine is one of very high power, and is consequently never fully opened out. Some while ago I made a resolution never again to trust a V twin for such jobs. Manufacturers have acquired similar information; hence their apparently inexplicable devotion to the comparatively coarse and vibratory single-cylinder.

### The Dilemma.

We may find that the increase of knowledge which the last two years have brought will enable our manufacturers to give us V engines which will wear reasonably well, besides extending the durability factor of the single-cylinder. But the position when war broke out was that the bearings of the highly efficient single-cylinder did not wear satisfactorily, and that those

of the medium-powered V twin wore very unsatisfactorily indeed. It was not by accident, nor yet by reason of a special 1,000 c.c. demand that the Yankees plunged on the 7-9 h.p. engines; the earnest maker had to choose between a single-cylinder, which was coarse, reliable, durable, and cheap, or a high-powered twin, which was heavy, expensive, smooth-running, and tolerably durable. The English makers made one choice, the Yankee makers preferred the alternative. The medium-powered twin of 1914 was a failure as a compromise; it was run at high revolutions with a minimum of big end bearing area, and its durability factor was too low. It would be very interesting if some engineer would set out for us pictorially the comparative bearing areas of a  $3\frac{1}{2}$  h.p. single-cylinder, 4-5 h.p. V twin, and 7-9 h.p. V twin.

### Reaching a Decision.

I am not at all sure that either solution is really sound. Heaven forbid that we should produce nothing better mannered than the  $3\frac{1}{2}$  h.p. single, which I frankly find rather intolerable after a prolonged dose of horizontal twins, Scott twin two-strokes, and various V engines. Heaven forbid equally that every motor cyclist who wants a pleasant mount should be burdened with a machine scaling some 3 cwt., costing up towards £100, if its specification is luxurious and its workmanship good, and demanding that its cumbrous engine shall be taken out of the frame whenever carbon accumulates. The one solution is cowardly, the other is clumsy. These are early days to don the prophet's mantle, for we are only just realising that we must work for superb manners in association with a durability as yet never attained. But there are hints to be assimilated. How does the Scott compare with the older types in respect of engine durability? How does the  $3\frac{1}{2}$  h.p. horizontal twin compare in the same line?

### Credit where Credit is Due.

I did not start this controversy, and I assume no responsibility of a speculative kind. But I do assert that if my choice in future were to be limited to the British single or the Yankee 7-9 h.p. twin, I would bluntly remark "a plague o' both your houses," and give up motor cycling to-morrow. If the inventors of the world can offer me no better alternative I will seek pleasanter travel on a pushbicycle or a light car, according to my purse. I refuse, on the one hand, to be shaken and rattled by the one-lung slugger; I refuse, on the other hand, to consider £100 and 3 cwt. as essential to solo riding. But if I can get reasonable bearing durability, combined with the delicious running and comparatively low weight of such machines as  $2\frac{3}{4}$ - $3\frac{1}{2}$  h.p. horizontal twins or V multi cylinder two-strokes, I shall remain a motor cyclist; and my present impressions are that both these types are superior solutions to the two outstanding patterns—our own



## Single v. Twin.—

3½ h.p. single and the 7-9 h.p. Yank—which most disputants persist in regarding as the only combatants in the arena. The good old crusted Tory wing of our industry clings to the 1907 types, burnished up a little to suit the times. The mediocre copyist admires foreign institutions, and produces slightly variegated editions of the big Yankee twins. The extreme Radical wing comes out with disturbing novelties, such as those I have indicated. When the war ends there will be a general election. I shall be surprised if the old Tory, or the follower of the Stars and Stripes, command the bulk of our suffrages.

## Handling the Heavyweights.

As some of the correspondents on the heavyweight question have grumbled about the awkwardness of manipulating these machines when their engines are not working I print an ancient tip. Always manoeuvre them from the saddle. Do not seize them by the handle-bars and lead them about as you would a baby two-stroke. Immediately on entering the garage, seat yourself in the saddle, and paddle them about with your feet; all sense of effort is thus eliminated, for the balance is in this manner easily preserved, and they become as lamblike as Holroyd's ancient Moto-sacoche.

## AUTOMATIC CARBURETTERS.

## The Difficulty of Attaining Petrol Economy.

SEVERAL readers, some of whom are inventors or experimenters, evince great interest in the question of fuel economy with automatic carburetters. The writer has no wish to assert that the automatic types are inevitably more extravagant of petrol than the two-lever types, but it is his opinion that existing automatic patterns are mostly rather thirsty. There is every reason to hope that we shall eventually get better single-lever carburetters. One of our correspondents remarks quite accurately that the ideal automatic carburetter must give a perfect mixture for all the engine speeds and throttle openings, coupled with a slight temporary enrichment of the mixture under all accelerations. He adds with equal truth that many vaporisers are spoilt by one of two weaknesses. Either there is a weakness at a certain throttle opening, which compels the mixture to be unduly enriched over the whole range, or the petrol vapour and air are insufficiently mingled, weak zones of mixture are formed, and enrichment over the whole range is employed as a corrective. This particular reader is getting 90 m.p.g. from his own experimental automatic carburetter on a 650 c.c. sidecar outfit, and the figure indicates that he is working on very sound lines. In the past the evolution of motor cycle carburetters has

to some extent been hampered by an exaggerated demand for simplicity. The manufacturers have plumped for a carburetter which is cheap to buy, *i.e.*, one constructed of a few simple parts; a carburetter which is easy for its testers to set, *i.e.*, simple in its internal mechanism; and a carburetter which cannot easily be deranged by a tinkering duffer, *i.e.*, one with a plain single jet and choke tube. It is the writer's opinion that as soon as we get an alliance between a first-rate inventor and a scientific manufacturer, which will offer the trade a first-class automatic at the price now paid for comparatively crude semi-automatic, the situation will alter. At present inventors are hampered by the fact that assemblers are accustomed to pay a certain price for carburetters, and will not pay more, while this standard price does not offer the inventor a profit on a carburetter of complex construction. In other words, automaticity and fuel economy are not mutually exclusive in essence, and we may hope to get 100 m.p.g. single-lever carburetters for 3½ h.p. sidecar outfits and 5 h.p. solo machines before very long. The main trouble may be that they will be expensive to buy, and that the motor cycle manufacturers will be averse to standardising them.

ROAD RIDER.

## LIGHT ON PETROL LICENCES.

VARIOUS questions have been raised by correspondents in connection with the new petrol allowances, and we give below a few specimen questions and their answers for the benefit of readers in general:

**Question.**—I am not desirous of sending for a licence to cover a period of five months at the moment, as I may have to give up my business and join the Army in the course of the next six weeks or so. May I therefore postpone sending for the licence and still be sure of getting it?

**Answer.**—Yes. It is open for any motorist to apply for a licence at any future time. Probably, supposing that you apply in December, you will get a January-May licence; but this is not quite settled.

**Question.**—Supposing I send for my five months' allowance now, and in two or three months, say, join up: must I lose the money I pay on the licence?

**Answer.**—No. You can claim a refund for the unpurchased spirit at the end of the licence period.

**Question.**—We are told that we must apply for petrol licences after October 9th in cases where the licences expire at the end of this month. At the moment I have no motor vehicle, but I am on the look-out for a second-hand machine,

and if I purchase one shall then, of course, desire a licence. Is it important that I apply for the licence before the end of the month?

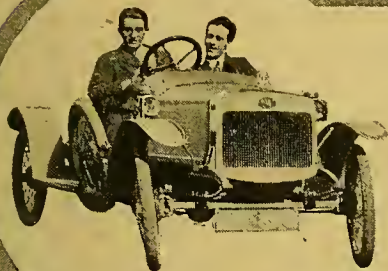
**Answer.**—See answer to Question 1. It is not compulsory for you to apply for the licence renewal before the end of this month.

## AN AIR-COOLING DEVICE FOR SPARKING PLUGS.

THE ingenious little air-cooling device which we illustrate consists of a ribbed terminal made of an alloy which has special radiating properties. Since the terminal is composed of a metal which is a good conductor of heat, and is screwed firmly down on to the upper end of the central electrode, it serves to conduct away the heat therefrom, and so is bound to be an advantage on any sparking plug. It is sold by Messrs. Gordon's Motor Works, Royston, Herts.

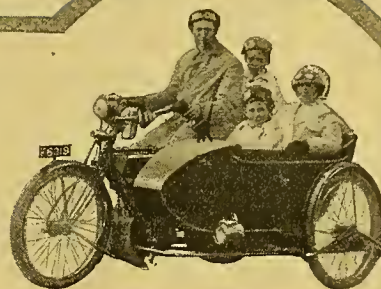






## SIDECAR OR CYCLE CAR?

A Comparison  
from the Point of View of a  
Family Man.



By FRANCIS E. COOKE.

A  $3\frac{1}{2}$  H.P. motor cycle and sidecar make on the whole a very satisfactory conveyance for a man and his wife, and at a pinch will accommodate a small child in addition. Indeed, for a couple of years or so I contrived to pack my wife and two children in a Canoelet sidecar, and my  $3\frac{1}{2}$  h.p. Premier pulled the load for hundreds of miles without failing us. But that was in Essex, where the country is for the most part flat, and weight does not tax an engine so much on level roads as one would think. I found it necessary, however, to maintain the machine in a high state of efficiency, cleaning the engine every six or seven hundred miles, which, during the summer, meant taking it down about once a month. After the novelty had worn off this constant cleaning became rather irksome, and I began to wish for a greater margin of power.

After a time what had been merely a desire became an urgent necessity, for the children had grown to such an extent that it was a physical impossibility to cram them into the Canoelet any longer. At the best it had always been a tight fit, and it had been necessary to stop every twenty miles or so in order that they might stretch their legs. Moreover, I was about to move into Surrey, and it was evident that more power would be required to carry four people up the Surrey hills than had sufficed on the flat roads of Essex. And so the fate of the  $3\frac{1}{2}$  h.p. machine was sealed, and I had to consider with what I would replace it.

A cycle car seemed the natural solution of the problem, and when I moved into my new house I had a garage put up that would accommodate a small car. I could not afford to pay much over £100 for a cycle car, and the selection available at that figure is not a large one. When I came to look into the matter I found to my dismay that the accommodation of such cycle cars as I looked at was quite inadequate for my purpose. In some cases there was not overmuch room for two, whilst in the widest there was only room for two adults and one child with a good deal of squeezing. This knocked the bottom out of the cycle car scheme, and I consequently found myself in something of a dilemma.

### More Power and Room.

I found the solution to the problem in the Premier Co.'s showroom in the shape of a very long tandem-seated sidecar. On measuring it up I found there

would be ample room for my young child to sit on a hassock between the two seats without unduly crowding the others. It had a fine strong-looking chassis with five-point connection and laminated springs. As the company agreed to make me a satisfactory allowance for my old combination I decided to buy this tandem-seater and mate it to one of the big 7-9 h.p. Premier twins with three-speed countershaft gear.

### Improving the Springing.

The sidecar at the outset was not an unqualified success, proving most uncomfortable, so much so, indeed, that my wife, when I took her for a short trial spin, begged me to let her walk home. There seemed to be no give in the springs at all, and, as I subsequently found from personal experience, it bumped one about like an unsprung farm cart. When I complained to the makers they replied that it was sprung for a load of twenty stone, and would be most uncomfortable with any less weight. As the total weight of the passengers I proposed to carry did not exceed fourteen stone, I set about rectifying the fault. Taking down the back springs I removed two leaves from each, and this modification, with the addition of a spring seat supplied by the makers, made the sidecar passably comfortable. When only one passenger is carried the load is made up with ballast in the form of a 56 lb. weight. This is enclosed in a wooden frame which fits exactly the toe of the sidecar so that it cannot shift about, the weight being borne by the front springs. When driving with an empty sidecar I find this weight is quite sufficient to prevent bouncing, and at the same time it helps to steady the combination. I have now a vehicle that will accommodate the whole family in comfort without undue crowding, and have still room to take another passenger on the carrier should I want to. No cycle car that I have seen would yield the same accommodation nor be likely to give such satisfactory results.

### Economy in Petrol and Tyres.

The power and speed of this big Premier twin are really astonishing. It will pull the four of us up practically any main road hill on top gear (5-1), and maintain a steady 30 to 35 m.p.h. all day long on give and take roads. Gradients such as that from West Clandon up to Newlands Corner; Bury Hill, on the Arundel Road; and Fish Hill, Broadway, the



## Sidecar or Cycle Car?—

machine simply plays with, and the only hill I have yet changed down to second on was the Wyche, near Malvern, and then only to round the hairpin.

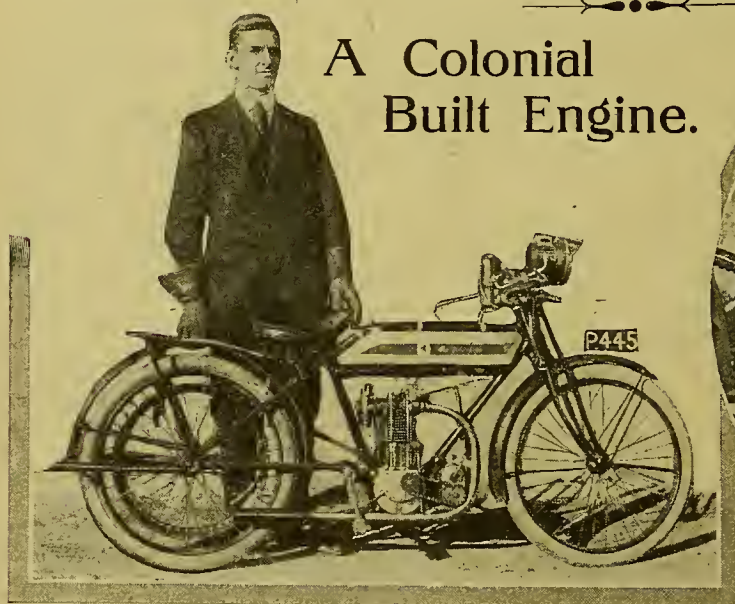
I have no practical experience of cycle cars, but should say that my combination is a good deal more economical. The petrol consumption, carefully checked over some 1,700 miles, works out at sixty-four miles per gallon of No. 2 Pratt's, not taking into account what I have wasted and used for cleaning purposes. The tyres, extra heavy rubber-studded Dunlops, 650 x 65 mm. on back wheel and 2½ in. on front, seem to be wearing very well, and have not been cut or punctured. That on the driving wheel, I should say, will run another fifteen hundred miles, whilst that on the front wheel shows no appreciable signs of wear. The original tyre on the sidecar, a light Michelin, I scrapped after 1,000 miles, as it then punctured three times in quick succession. It was by no means worn out, but I do not care to use tyres that are not reliable, and it was not strong enough for the work to which it was put. To put a light sixteen shilling tyre on a sidecar sprung to carry 20 stone and costing nearly £20 strikes one as being unwise, and it speaks well for Michelin tyres that this one yielded such good results as it did.

The machine has chain-cum-belt drive, and the 1½ in. Dunlop belt shows no signs of wear at all and has only been shortened once, and, thanks to the large

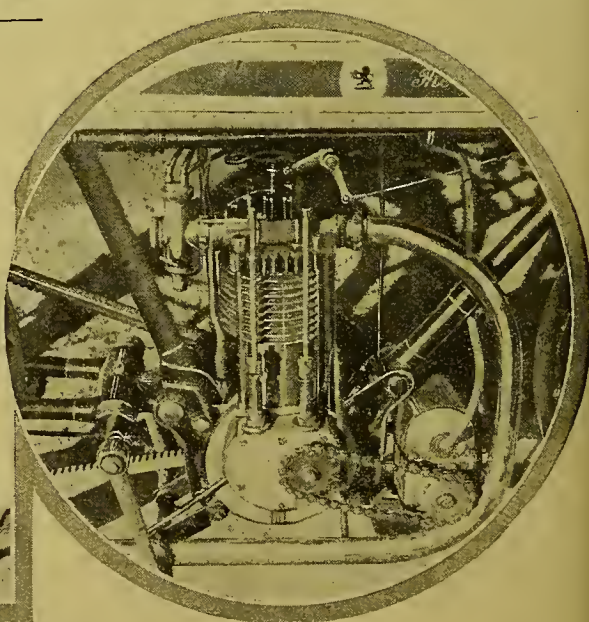
pulley, never slips. The three-speed countershaft gear is most efficient, and can be changed as easily as a hub gear without declutching. The gear box has a large filler cap, and can be lubricated very expeditiously with the aid of a small funnel. The clutch, composed of exceptionally large plates, is mounted on the pulley and very accessible. It is, moreover, extremely sweet in action, rendering the machine delightful to handle in traffic.

Although the three Premier motor cycles I had previously owned had given every satisfaction and afforded me no end of enjoyment, I do not think I knew what real comfort on a motor cycle was until I bought this big twin. Thanks to the great weight which enables the machine to hold the road, the even torque of the twin engine, sprung footboards, the large tyres, and a Brooks B170 saddle, it is the acme of comfort, and bad roads that used almost to shake me to pieces on a 3½ h.p. are now hardly noticeable. And what is more, it is the most tractable machine in traffic that I have ever driven.

There must be many motor cyclists who, like myself, do not care to leave their children at home in the charge of a maid, and yet it is something of a problem how to carry them. I would strongly advise anyone in that position to try a big twin and two-seater sidecar, as I am sure it is a sounder proposition than a cycle car, being more economical and, I should say, more efficient.



## A Colonial Built Engine.



F. D. Johnston, of Perth, W.A., and his machine, the engine of which he built himself.

**W**E recently had a visit from Mr. F. D. Johnston, formerly foreman at the garage of Messrs. Gettys, Ltd., West Perth, Western Australia. Mr. Johnston, who is at present engaged in an important munitions factory "somewhere in England," shortly before leaving Western Australia completed the first motor cycle engine ever built in that State of the Commonwealth.

The engine, it will be seen, is fitted with large overhead valves; has the usual aluminium crank case, while cast iron is used for the cylinder, piston, detachable

head, and flywheel. The capacity of the engine is 350 c.c., giving a horse-power of 2¾. The crankshaft and connecting rod are turned from solid bar nickel steel, and run in phosphor-bronze bearings. In the piston there are two rings, while the piston is drilled to assist lubrication. The cams are made detachable, and are screwed and pinned to the timing wheels, thus allowing a range of cams to be used for various types of work. The magneto is driven by a sprocket and chain. From the photographs the engine appears to be particularly well made.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Finding the Cubic Capacity.

**?** (a.) Is it possible to calculate the cubic capacity of an engine from the bore and stroke? (b.) If not, what other data would be required, and what would be the method?—J.K.K.

(a.) It is quite possible to calculate the cubical capacity of an engine from the bore and stroke. (b.) The formula is as follows:  $D^2 \times .7854 \times S \times N$ . D, diameter of cylinder; S, stroke; N, number of cylinders.

### Heating the Inlet Pipe.

**?** Would you kindly tell me the best way of heating the inlet pipe on a G.P. Morgan? The inlet pipe is long, and in consequence becomes very cold and frosted. I have trouble with the engine stopping when running slowly, and I would be glad to know if you think heating the inlet would cure the trouble.—S.I.F.

The trouble appears to be mainly a badly adjusted carburetter. Evidently too much air is admitted at slow speeds. If you take the air in warm, we think you will find a general improvement all round. The inlet pipe can be enclosed in a jacket through which water heated by the engine can pass on its way to the radiator, or a tube can be brought from one of the exhaust pipes to a jacket surrounding the pipe, as on the flat twin Humber described in our last issue.

### A Question of Alignment.

**?** While left on the stand in the street my motor cycle has twice been knocked over, and each time it has fallen on the same side. After the second fall I found a great tendency to wobble, and on greasy roads the back wheel lurches badly. I presume the frame has been bent slightly, causing the two wheels to be out of track. I may say the wobble is worse on slack tyres than on hard tyres. (1.) How can I test the wheels for being out of alignment? (2.) How can I get a true alignment without having the frame straightened?—J.F.H.

(1.) On a level wood, stone, or cement floor wheel your machine first through a pool of water and then on to a dry part of the floor, taking care to see that the front wheel is pointed dead straight ahead. If the tracks of the wheels absolutely coincide you will then know that the machine is in alignment. (2.) You must have the frame straightened, and this must be done by an expert repairer, otherwise you will never get the wheels into line.

### Irregular Firing at Slow Speeds.

**?** I should be very much obliged if you will inform me what is the cause and the remedy of the following: (1.) I have a 1915 7 h.p. twin, which runs all right with the throttle half open, but when I close it down it seems there is only one cylinder firing. (2.) If I raise the exhaust lever, the one cylinder will keep on firing until all the fuel in the carburetter is used up.—E.H.J.

(1.) There is evidently an air leak between the carburetter and the faulty cylinder; this may be difficult to find, but it must be stopped. (2.) Adjust your exhaust lever so that it operates equally on both valves. Apparently it does not raise one of them.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD

### Timing.

**?** My machine is a 1913  $3\frac{1}{2}$  h.p. three-speed single-cylinder. (1.) How should the engine be timed, both as regards valves and magneto, for speed? (2.) Why does advancing the magneto lever cause the engine to increase in speed? (3.) Can a magneto be timed "advanced" for speed and retarded for "non-speed," apart from what one can alter by means of the little advance and retard lever?—R.L.H.

(1.) The engine should be timed in the following manner: Valves: Set the exhaust valve to close just after the completion of the exhaust stroke. It will then commence to open when the piston is about one-seventh of the length of the stroke from the bottom of the firing stroke. The inlet should commence to open as the exhaust closes, and remain open for one complete stroke of the piston or a little more, that is, while the flywheels turn through  $180^\circ$  to  $200^\circ$ . Magneto: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break and the ignition lever two-thirds to fully retarded. (2.) Because it causes the spark to take place earlier

in the stroke, and consequently when the compression is at its highest point, and the explosion is then more powerful. (3.) Certainly, this is the best method to adopt.

### Carburetter Choking.

**?** I shall be greatly obliged if you will kindly answer the following queries with regard to my 1913 7.9 h.p. rear sprung Indian.

(1.) It has a coachbuilt sidecar fitted (three-point suspension). Can you suggest a scheme for altering it to four or five-point suspension, to obviate the present whip of the sidecar due to spring movements? (2.) On opening out on hills or on the level choking occurs, the engine splutters, and the power dies away. The extra air has to be closed part of the way up hill, when immediate increase of power is noticeable, which, however, dies away rapidly. No overheating is noticeable. The valves and timing are apparently in order (although hints as to the exact setting would be acceptable). Is this likely to be due to the apparent heaviness of the petrol now obtainable, as petrol now appears to smell badly of paraffin, and does not evaporate quickly? Will the weighting of the float improve matters? I have also noticed stoppages on hills, as lately described in your pages, and have been unable to discover the cause. (3.) I have recorded 70-72 m.p.g. over a considerable mileage, but this was until about two months ago, and the consumption has apparently deteriorated with the quality of the fuel.—E.T.

(1.) If the machine is fitted with an Indian sidecar you can get the necessary fittings to equip it with four-point suspension by writing to the Hendee Manufacturing Co., Ltd., 366-368, Euston Road, London, N.W. (2.) As regards the valve setting. If you set the exhaust to close on the top of the stroke, since a double cam is fitted the inlet opening will be simultaneously made correct. There should be  $\frac{7}{16}$  in. advance on the ignition. The trouble of which you complain is possibly due to the level of the petrol being incorrect. The petrol should come to within  $\frac{1}{16}$  in. of the top of the jet; the level may be reduced by bending down the arms on which the float is suspended. (3.) Seventy miles to the gallon is quite good, but if you get an increase in the consumption it is possibly due to periodic flooding of the needle valve, which may be caused by impurities in the petrol. The needle valve need not be ground in, but should be merely tapped occasionally, and sometimes turned round on its seating, when the grit will be displaced.



**The Lighting of Sidecars.**

I should be glad if you would inform me whether it is obligatory for me to have a lamp on my sidecar. At present I have only a standard head lamp and tail lamp on my machine, and I do not wish to go to the expense of a lamp and generator if it is not compulsory.—J.E.B.

Yes; you must have a lamp on your sidecar showing the full width of the vehicle, but a powerful light is unnecessary. In some districts a light is not compulsory, but it is always desirable.

**Starting with a Single Gear.**

(1.) What would cause knocking in an engine on a single-gear machine when starting with the clutch? (2.) Can the effects of knocking be seen, and what is knocking? (3.) How are the valve guides removed on a 1911 Triumph? (4.) What is the best method to remove and replace the piston rings?—F.W.

(1.) The absence of a two-speed gear. This means that you must start on a gear high enough for ordinary purposes, and unless you let the clutch in very, very gently, and retard the spark sufficiently, and also have a clean engine, knocking is quite possible. (2.) The ultimate effects of knocking are badly worn bearings. The cause of knocking, also called konking, has never been properly explained, but it is thought by some to be side rock of the piston against the cylinder walls, caused by the explosion occurring before the piston reaches the top of the stroke. (3.) These are screwed into the cylinder casting. (4.) The best plan is to use an expanding tool, which is like a pair of pliers reversed. You insert the ends in the slot in the piston ring, and gently force them apart. When there is a gap you slip a thin piece of tin between the piston and ring, and gradually work it round. When it is free, then equally space three similar pieces of tin round the piston and lift the ring off. The difficulty is to remove these rings without breaking them, especially if they are carbonised badly.

**Cleaning by the Oxygen Process.**

I should be very much obliged if you would give me any information as to how cylinders can be decarbonised by the oxygen process. I believe this is quite possible for an amateur to do, and I should be glad if you would give me a short account of the operation.—E.M.F.

The process is one which an amateur can carry out quite well; but, of course, it is expensive, as considerable outlay is required for the cylinder of oxygen. A special burner or torch is used, and also a reducing valve so that the supply can be comfortably controlled. A lighted gas jet is first inserted, or even a wax taper, into the cylinder head, after the valve caps have been removed, the piston placed on the top of the stroke, and the carburettor emptied. On the oxygen being turned on to play upon the cylinder head the carbon will catch fire and be rapidly burnt, and will continue burning until no carbon is left. Care must be taken to move the flame about so as to clean the whole cylinder.

**Refusal to take Air.**

Will you be good enough to inform me regarding my 2½ h.p. Sun-Villiers? It suddenly started one evening to misfire and back-fire, and has lost all power and will not take any air without continuing to blow back all along the road, and only ceases when I close down the air. I have, since this started, taken the engine down and thoroughly cleaned all carbon deposit out. I have also thoroughly cleaned out the carburettor, but I did not fit new piston rings, as I thought the compression was still good; the magneto seems O.K., and gives a good spark. I have just fitted a new Lodge two-stroke plug, but I cannot put things right. I do not think the release valve leaks, as I tested this.—B.S.

We take it that you mean popping in the carburettor not back-firing. Popping and blowing back through the carburettor is practically invariably an indication of too weak a mixture. This may be due to a choked jet, caused by either water in the petrol, which may be difficult to

trace, owing to its being transparent, or to foreign matter in the jet or carburettor passages. Air leaks between the carburettor and engine are also likely causes, or an air leak in any portion of the crank case, owing to faulty cylinder joint. You might check the magneto timing. The spark should occur when the piston is on top dead centre, while the ignition is fully retarded.

**The Tax on Petrol.**

I ride a 1916 Rover and sidecar. I recently received my licence to buy petrol. Now this licence costs me 6d. per gallon for an allowance of six gallons of petrol per three months. Now petrol costs me 2s. 9d. per gallon, so that with the 6d. per gallon re tax I am paying really 3s. 3d. per gallon. In a recent issue of *The Motor Cycle* I noticed a letter by Lt. Hyndman, R.G.A., re prices of substitutes. He says the 6d. per gallon tax is included in the 2s. 9d. per gallon, so that I am being done out of 6d. every time I purchase a gallon.—H.B.

Lt. Hyndman is quite right, but you are not being defrauded, for there is, and has been for some time, a tax of 6d. per gallon on petrol, which is included in the price. The 6d. per gallon paid to the Petrol Committee is an extra war tax, making a total tax of 1s. per gallon. It is not proposed to continue the war tax after the termination of the war.

**RECOMMENDED ROUTES.**

**GLOUCESTER TO EASTBOURNE.**—L.R.C.S. Gloucester, Cirencester, Cricklade, Stratton, Aldbourn, Hungerford, Newbury, Basingstoke, Odiham, Farnham, Elstead, Milford, Highdown Ball, Horsesham, Cowfold, Hurstpierpoint, Ditchling, Lewes, Polegate, Eastbourne.

**KING'S LYNN TO DUDLEY.**—R.W.T.

King's Lynn, Wisbech, Guyhirne, Thorney, Peterborough, Oundle, Market Harborough, Husbands Bosworth, Lutterworth, High Cross, Smockington, Coventry, Birmingham, Dudley. Approximately 120 miles.

**BRISTOL TO BEDFORD.**—W.J.M.

Bristol, Downend, Acton Thrville, Malmesbury, Cricklade, Faringdon, Oxford, Bicester, Buckingham, Stony Stratford, Newport Pagnell, Bedford.

**BARRY TO EXMOUTH.**—T.A.W.

Barry, Cardiff, Newport, Severn Tunnel Junction, train to Pilning, Bristol, Bridgwater, Taunton, Cullompton, Exeter, Exmouth. If you wish to avoid the tunnel (no petrol is supplied there now), you can go to Newnham and cross by ferry, or to Gloucester and do the whole trip by road.

**ABERDEEN TO BARNSELY.**—W.S.

Aberdeen, Stonehaven, Laurencekirk, Brechin, Forfar, Glamis, Coupar Angus, Perth, Kinross, Cowdenbeath, Burntisland, ferry to Granton, Edinburgh, Dalkeith, Lauder, Coldstream, Wooler, Morpeth, Newcastle, Neville's Cross, Ferryhill, Darlington, Scotch Corner, Leeming, Boroughbridge, Wetherby, Aberford, Ferrybridge, Pontefract, Barnsley.



Blackberry pickers taking lunch at Hinton Roughs (Worcestershire), a spot where both blackberries and sloes are prolific. The motor cycles are an Ariel and A.J.S.

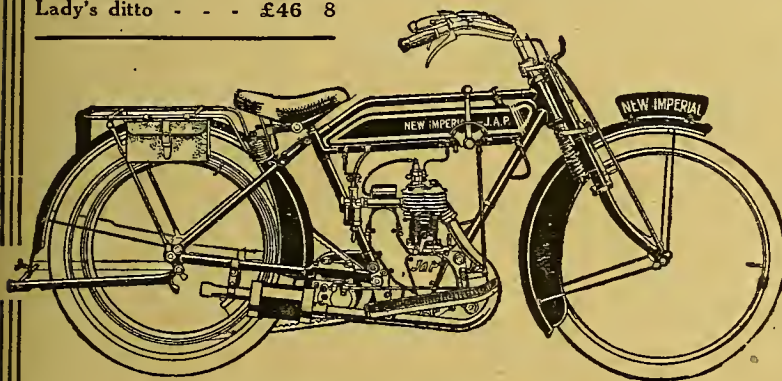


# Perfect Dependability

Two-speed Model	-	£38	0
Ditto, with clutch & kick starter	-	£44	8
Lady's ditto	-	£46	8

—is the common and regular experience of all riders of the - - -

## New Imperial "Light Tourist"



Send for Catalogue and Booklet  
"Don't take Risks—and Why!"

Read the following, which speaks for itself.

Sheffield, 22nd June, 1916.

"I have been riding on one of your 2½ h.p. New Imperial 'Light Tourists' for nearly 12 months and I must say it is a 'Grand-un.' I have done **OVER 9,000 MILES** on the machine, travelling in connection with my business, with **not the slightest bit of trouble**. The condition of some of the roads about here is simply awful, but the strength of the frame withstands all bumps in great pot holes and I weigh 10½ stone. Only last week some well-known motor cyclists here were discussing the merits of different machines, and one made the remark that your 'humble' had the **best lightweight in the town**, and I have. I am more than satisfied in every detail."

L. E. WILKINSON.

— Established 1887. —

NEW IMPERIAL CYCLES, LTD., BIRMINGHAM

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**HAS SOLVED THE PETROL TROUBLE. IT MAKES  
PARAFFIN EQUAL TO PETROL.**

This is why: The Paraffin is twice heated before entering the engine—once in liquid form, and again after it has left the carburetter jet.

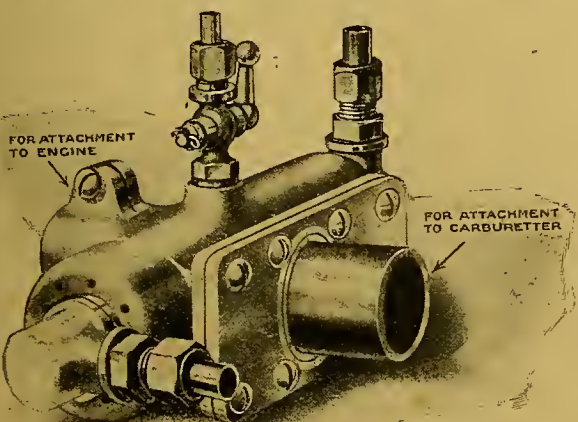
What, then, the "GRADO" VAPORIZER guarantees, is a superheated mixture, perfect combustion, high power, and clean engine.

It is very light and strong, and can be easily taken to pieces.

The Price of the attachment is **£2 - 15**, and it will save its cost in a month.

Write for full particulars showing internal construction. Manufactured only by

**The Grado Manufacturing Co.,  
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**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application. Postal Orders sent in payment for advertisements should be made payable to **LIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Liffe & Sons Limited. At the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C., 1915, T.T., cano sidecar, full equipment; £65. —Alfred White, Hompton Court Palace, Middlesex. [3351]

### A.J.S.

2 1/2 h.p. A.J.S. in stock; £55.—Cross, Agent, Rotherham. [X9610]

**RARE Opportunity**—1916 A.J.S., 4 h.p., and sidecar, just delivered; first cheque £96.—Taylor's Garage, Falmouth. [3267]

A.J.S. 4 h.p. Combination, just delivered from works.—Prices and particulars, W. Brandish, Triumph Garage, Coventry. [X9653]

A.J.S. Combination, 1913-14, 6 h.p., recently overhauled, thoroughly reliable; £50.—Cassels, Westfield, Drunchapel. [X9476]

A.J.S. 1915 1/2 h.p. Combination, splendid condition, all accessories, speedometer; £75.—Naylor, Oldnall Rd., Kidderminster. [X9417]

A.J.S. 6 h.p. Combination, late 1914, just overhauled, all accessories; owner joined army; £72/10.—Evans, Garage, Newport, Salop. [2983]

A.J.S. 4 h.p. Combination, complete with spare wheel, in stock; also A.J.S. 2 1/2 h.p. 2-speed, 1914 model, £33.—Marston, 26 and 31, Bridge St., Chester. [X9595]

A.J.S., 2 1/2 h.p., 1911, chain drive, 2-speed, hand controlled clutch, climbs anything, new Clinobar Dreadnought back; £20.—37, Richmond St., Hull. [X9313]



## MOTOR CYCLES NEW MODELS IN STOCK.

INDIANS, ROYAL ENFIELD, B.S.A., ALLDAYS ALLON, ZENITH, JAMES, LEVIS, CALTHORPE—J.A.P., NEW IMPERIAL, &c.

### Second-hand Guaranteed Machines.

- £17. 1914 2 1/2 h.p. TORPEDO, 2-stroke.
- £17. 1914 2 1/2 h.p. ALLDAYS MATCHLESS, 2-str.
- £28. 1915 2 1/2 h.p. VELOCETTE, 2-stroke, 2-speed, chain drive.
- £28. 1915 2 1/2 h.p. NEW IMPERIAL, 2-sp., lamp, generator, and Stewart horn.
- £28. 1915 3 1/2 h.p. OVERSEAS, adjustable pulley, semi-T.T. bars.
- £31. 1916 2 1/2 h.p. NEW HUDSON, 2-stroke, 2-sp. countershaft, lamps, and horn.
- £35. 1914 2 1/2 h.p. CLYNO Lightweight, 2-stroke, 2-speed, clutch, and sporting coach-built Sidecar.
- £38. 1913 7 h.p. INDIAN, 2-speed, spring frame.
- £44. 1915 3 1/2 h.p. HUMBER, 3-sp., kick starter (or with Sidecar £52).
- £45. 1914 7 h.p. INDIAN Road Racer, with speedometer.
- £49. 1915 7 h.p. INDIAN Road Racer.
- £52. \*1914 7 h.p. INDIAN, 2-speed, electrically equipped, with Sidecar.
- £57. 1915 5 h.p. INDIAN, 3-sp., lamps, and horn.
- £57. 1916 4 5/8 h.p. ZENITH, standard C, Gradua gear, done 250 miles only.
- £60. 1915 3 1/2 h.p. SUNBEAM, 3-speed, T.T. bars, kick starter, and accessories.
- £75. \*1915 7 h.p. INDIAN, 3-speed, spring frame, kick starter, electrically equipped, with coach-built Sidecar, hood and screen.
- £78. \*1915 7 h.p. INDIAN, 3-speed, spring frame, kick starter, electrically equipped, with coach-built Sidecar.

WRITE FOR OUR FULL LIST OF BOTH NEW & SECOND-HAND MACHINES & LIGHT CARS.

**GODFREY'S LTD**  
208, Gt PORTLAND ST.  
LONDON, W.  
The Home of all  
Leading Makes  
& best Second-  
Hand Machines.  
EXCHANGES &  
EASY TERMS.

## MOTOR CYCLES FOR SALE.

### A.J.S.

1916 A.J.S. Combination, latest 4 h.p., brand new, with spare wheel, tyre, and wind screen; in stock for immediate delivery.—Prices and particulars, Robinson's Garage, Green St., Cambridge. [3368]

1916 4 h.p. A.J.S. Combination, 800 miles, electric light (Lucas), spare wheel, hood, every possible refinement, better than new; an absolute bargain, £90, no offers.—Smith, Richmond Cottage, Wistaston Green, Nantwich. [X9611]

1916 4 h.p. A.J.S., latest model, specification as list, with Lucas horn, ridden about 500 miles, soiled only, genuinely and really indistinguishable from new, condition guaranteed; £70.—Robinson's Garage, Green St., Cambridge. [3369]

### Alldays.

ALLON, 1916, like new, perfect; £27; part exchange.—18, Gowllett Rd., Peckham. [3357]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

ALLDAYS 2-stroke, only run few miles; great sacrifice, £20.—Thorpe, Whitehorse Rd., Thornton Heath. [3407]

ALLDAYS Matchless, 3 1/2 h.p., 2-speed, enamelling and plating excellent; £35.—Parker and Son, St. Ives, Hunts. [3437]

PETROL Free with 1915 Alldays Matchless, 4 h.p., clutch, kick start; 26 gas.—Troward, 78, High St., Hampstead. [3204]

1915 Allon, 2-stroke, 2-speed, good condition; must sell; first reasonable offer.—Baker, 146, Heaton Moor Rd., Stockport. [X9586]

ALLON, 2 1/2 h.p., almost new, 2-speed, clutch, lamps; cost £50, nearest £39.—40, Summerfield Crescent, Edgbaston, Birmingham. [X9614]

ALLDAYS 2-stroke, forced feed lubrication, all complete, practically 1916 engine; £18, bargain.—Grey, 37, Whitehall Rd., Smethwick. [X9617]

ALLON, 1915 1/2, 2 1/2 h.p., 2 speeds, 2-stroke, not done 2,500 miles, all accessories, splendid condition; £30.—Webb, 5, Globe Rd., Dagenham, Essex. [X9509]

### Antoine.

PETROL Free with 1911-12 Antoine 6 h.p. (win, clutch, kick start, new tyres, belt; 14 gas.—Troward, 78, High St., Hampstead. [3198]

### Ariel.

ARIEL, 1913, 7 h.p., chain drive, countershaft gear, sidecar, and accessories; £42/10.—Collier, Deal St., Halifax. [3487]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

### A.S.L.

A.S.L., 3 1/2 h.p., spring frame, footboards, etc.; £22/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X9373]

### Auto-Wheels.

AUTO-WHEEL of Luxe and Enfield Cycle, special built; £12.—97, Letchmere Rd., Battersen. [3327]

AUTO-WHEELS of Luxe, two, 1916, 4 months old, £12 each, or nearest offers.—Arnold, Candie Rd., Guernsey. [X9416]

GENUINE Wall Auto-Wheel, not used since overhauled and tested by makers; £7.—Geer, Gas Works, Goring, Oxon. [3318]

B.S.A. Auto-Wheel, in good condition, 1914; £10, or will exchange in part payment for 2 1/2 h.p. light weight.—Phillips, Motories, Glyn, Chirk. [X9312]

THREE Genuine Wall Auto-wheels, 1914 models, little used; £7/10, £8/10, and £9/10.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X9517]

AUTO-WHEEL (May, 1915), in excellent condition, absolutely reliable, attached New Hudson cycle; absolute bargain, £9.—Groves, 27, Tyson Rd., Forest Hill, S.E. [3403]

### Bat.

1915 Bat Combination, 8 h.p., splendid condition; £70.—Manger, Florist, Halifax. [X9507]

BAT, 1914, 6 h.p., 3-speed countershaft, and Bramble sidecar; £48/10.—Collier, Deal St., Halifax. [3486]

BATS.—P. J. Evans, Birmingham agent.—Immediate delivery 4 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X9554]

3 1/2 h.p. Bat, Grado Multi gear, Bosch, nearly new tyres, 32 lamp set, re-bushed throughout; £20, carriage paid anywhere; must sell.—Bat, 15, Thornton St., West Hartlepool. [3255]

1916 6 h.p. Bat Combination, petrol, spring frame, 3-speed, countershaft, Milford coachbuilt sidecar, accessories, spares; cost £104; everything new; £73.—Lieutenant, 18, Pinfold Rd., Streatham. [3292]



## MOTOR CYCLES FOR SALE.

Bat.

**BAT-J.A.P.** Combination, 1913, 6h.p., 2-speed counter-shift, lamps, mechanical horn, good tyres, Canelet C.B. sidecar, hood, wind screen, £245, or exchange solo machine.—Laurel House, Newchurch, Warrington. [X9545]

**1914 6h.p. Twin T.T. Bat-Jap.** special overhead valve J.A.P. engine, heavy Kempshall tyres as new, plate and enamel as new, extra large 3-speed and free engine hub, with kick starter, round tank, finished grey very smart and fast machine, in perfect order; to be sold a bargain, £35.—Wallis, 49, High St., Seaford, Walsden, Essex. Phone: 45. [X9461]

Bradbury.

**1912 3½h.p. Bradbury** Combination, 2-speed, and free, good order; £220.—Wright, Wabberthwaite, Cumbria. [X3444]

**BRADBURY** 4h.p., 2-speed, kick starter, sidecar, lamps, and horn, good condition; £21.—Clark, 67, Waterloo Terrace, Preston. [X9472]

**BRADBURY 1913** Combination, 2-speed, kick start, lamps, horn, good condition; £25.—180, Finchley Rd., N.W. Phone: 2161 Hampstead. [X3448]

**BRADBURY 1915** Twin 3½h.p. Motor Cycle, Burbury sidecar, 1916, coachbuilt, very little used.—Richardson, Horace St., Boston, Lincs. [X3098]

**4h.p. Bradbury**, free engine, Mahon clutch, complete with lamps, horn, speedometer, in perfect running order; £16.—Southgate, 1, Quex Rd., Westgate-on-Sea. [X3235]

**BRADBURY** 1913, 4b.p., Sturmer-Archer 3-speed gear, 1916 B. and B. carburettor, extra heavy tyres, Montgomery coachbuilt sidecar, with child's seat, all excellent condition, spare cover, luggage carrier, 3 lamps, etc.; £39.—Mills, Lordswood, Southampton. [X281]

B.S.A.

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [X0798]

**NEW B.S.A.**, with lamps, etc., and almost new coach sidecar; £70.—28, Westminster Bridge Rd. [X3474]

**1913 B.S.A.**, 2-speed, pedal starting, and sidecar lamps; £32.—29, St. Leonard's St., Bow. [X3382]

**1916 B.S.A.**, model K, ridden 500 miles, as new; £50.—Lieut. Frost, A.S.C. Mess, Bulford. [X3212]

**1916 B.S.A.**, T.T. model, demonstration machine; first cheque £42/10 secures.—Plastow, Grimsby. [X9607]

**B.S.A.**, 1916½, chain drive, Klaxon, speedometer, horn, lamps, nearly new; £55.—307, Green St., Upton Park. [X3352]

**1913 B.S.A.** Combination, 2-speed, Millford cane sidecar, splendid condition; £32.—5, Warwick Court, Holborn. [X3314]

**B.S.A.**, 1915, model K, 3-speed, with C.B. sidecar and complete equipment; accept £50 for quick deal.—Tollady, Bicester, Oxon. [X9649]

**LATE 1913 3½h.p. B.S.A.**, 2-speed, clutch, special machine, nice condition; £32.—Baveno, Farnborough Rd., Farnborough, Hants. [X3300]

**B.S.A.**, 4½h.p., 1916 model K, £62, brand new; free delivery, free tuition.—James Grose, Ltd., 8, New Bridge St., Ludgate Circus, London. [X3228]

**1914 T.T. B.S.A.**, lamps, good tyres and belt, etc., a really fine machine; price £33.—Sanders' Motor Cycle Depot, Bridge St., Hitchin, Herts. [X9388]

**B.S.A.**, 1915, perfect, climb anything, with 15/15 Comby sidecar, all accessories, canopy, 3 new tyres; any test; £55 lowest cash.—Seen at 47, Curtain Rd., E.C. [X3513]

**B.S.A.**, 1915 model K, countershaft combination, splendid order, wind screen, luggage grid, Mechorn, paraffin device, spare tank; £60; garaged Holbrow's, Norbury.—Spencer, Clonette, Kilmarlin Av., Norbury, Gerard 4405. [X3131]

**1916 B.S.A.**, 4½h.p. model H, with No. 2 sidecar, new last June, done 500 miles, perfect condition, with lamps, speedometer, all accessories and overalls; £70; seen by appointment.—2, Elms Rd., Clapham Common, S.W. [X3317]

**B.S.A. 1915** Model H 3-speed Countershaft Combination, Dunhill's underslung S.C., Lucas lamp set, mechanical horn, Watford speedometer, hot spares, petrol, tyre, tubes, etc., total mileage 3,500; called up; £52/10.—Lee, 30, Cholemeley Rd., Reading. [X3293]

**B.S.A.**, 1916, 3-speed, chain drive, and Canelet coachbuilt sidecar, complete, good condition, very fast, 45-50 with sidecar, 60 m.p.h. solo, engine tuned by B.S.A. Co. for high speed; price £67/10; any trial.—Apply, No. 361, c/o The Motor Cycle. [X9579]

**B.S.A.**, 1915, model K, 3-speed countershaft, with B.S.A. sidecar, and usual accessories, quite the best one year old combination we have seen, price £56; B.S.A., 1914, model H, 3-speed, chain drive, with light coachbuilt sidecar, complete, a very fine and well cared for combination; price £46; approval.—Laytons' Garage, Bicester, Oxon. [X9640]

**B.S.A.**—Three 1917 models with their newest fittings just arrived from works, £64 each; also a model H at £66; as single-cyl. mount these 1917 models are simply perfect. B.S.A. Canelet cars with hood and wind screen actually in stock, from 13 gns. Exchanges, E.P. suggestions invited.—Lamb's, 151, High St., Walthamstow (Tel.: Walthamstow 169), also at 50, High Rd., Wood Green (Tel.: Hornsey 1956). [X3305]

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1916 lady's CALTHORPE, 2-speed, new, unused; cancelled order; cost £35 14s. Price ..... **£33**  
1916 2½ h.p. CALTHORPE-J.A.P., 2-sp., new. Price ..... **£37 16**  
1913 3½ h.p. ARIEL, 3-speed, and Sidecar. Price ..... **£40**  
1912 2½ h.p. A.J.S., 2-speed, and Sidecar. Price ..... **£26**  
1914 6 h.p. A.J.S. Combination ... Price **£65**  
1915 2½ h.p. DOUGLAS, War Office model. Price ..... **£45**  
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## MOTOR CYCLES FOR SALE.

B.S.A.

**B.S.A.**, late 1913, clutch model, fully equipped, beautiful condition; compelled to sell; sacrifice £25.—436, Whitehorse Rd., Thornton Heath. [X3405]

Calthorpe

**CALTHORPE-J.A.P.**, 2½h.p., 2-speed, 1915; £22.—Sawyer, Garage, Wrentham, Suffolk. [X3265]

**CALTHORPE Junior**, 1914, 2-speed, lamp and horn, good condition; £13/10.—Meadow View, Dymchurch, Kent. [X3362]

**CALTHORPE Junior**, 1914, 2-speed, Precision engine, splendid condition; £15/10.—McMahon, 3, County View Terrace, Limerick. [X9558]

**1915 Calthorpe-Jap.**, 2½h.p., 2-speed, lamps, horn, variable ignition; £26, or reasonable offer.—Parker, Preston Gubbals, near Shrewsbury. [X9475]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [X0799]

**CALTHORPE-J.A.P.'s** and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester [X0815]

Chater-Lea.

**CHATER-LEA** Combination, 8h.p., 5-speed and free engine, in fine condition; £40.—Grandex Motors, 349, Euston Rd., London. [X3237]

Chater-Lea-Jap.

**CHATER-LEA-J.A.P.**, 4h.p., 1914 combination, 3-speed gear, perfect running order; sacrifice £25.—Apply, 41, Wyndham Rd., Kingston-on-Thames. [X3295]

**CHATER-LEA-J.A.P.**, 8h.p., handle starter, drip and hand lubrication, 3-speed countershaft, multiple-disc clutch, foot control, 2-seater cane sidecar; a war bargain; first cheque, £30.—Martin, 16, Regent St., Cambridge. [X3580]

Clyno.

**CLYNO**, 1913-14, 6h.p., 3-speed, chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [X3488]

**PETROL** Free with 1912 Clyno, 6h.p., 2-speed, sidecar; 28 gns.—Troward, 78, High St., Hampstead. [X3205]

**1914 6h.p. Clyno** Combination, in new condition.—Full particulars on application to No. 359, c/o The Motor Cycle. [X9536]

**CLYNO** 6h.p. Combination, brand new, now in stock; first cheque for £105 secures.—Embryo Motor Co., Charlott's St., Hull. [X3275]

**CLYNO** and Sidecar, 1914, Cape hood and wind screen, speedometer; £60, or nearest offer.—Box L2, c/o The Motor Cycle. [X2992]

**1914 6h.p. Clyno** and cane sidecar, 3-speed, clutch, kick start, good condition, first-class running order, complete, all accessories; £40, or best offer.—Hall, Norton, Letchworth. [X9556]

**1915 6h.p. Clyno** Combination, with spare wheel, latest B. and B. carburettor, overhead feed, lamps, horn, 2 spare chains, tools, spring seat, and all the latest improvements, little used; £68.—Box 352, c/o The Motor Cycle. [X9412]

**5-6h.p. Clyno**, 2-speed, and coach sidecar, wind screen, waterproof cover, mat, 3 lamps, Low generator, speedometer, mirror, tools, spare chain, several spare covers, Sengpar (takes paraffin), in splendid condition, well up to any hard work; £35.—156, Westbourne Grove, W. [X3220]

Connaught.

**P. J. EVANS**, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6; one shop-soiled miniature model, with horn and numbers, £23.—87-91, John Bright St., Birmingham. [X9550]

Coventry Eagle.

**COVENTRY** Eagle, 1916, 3-speed twin, and coach sidecar, little used; £69/10.—Motor Exchange, Horton St., Halifax. [X3490]

**COVENTRY** Eagle, 2½h.p., 2-speed, 2-stroke; £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [X0841]

**COVENTRY** Eagle, 1916, 2-speed, 2-stroke model, actually in stock, finish and fittings to these machines are infinitely superior to many well-known makes; special price £39/10 for cash.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X3302]

De Dion.

**DE DION**, 3½h.p., low, fast, powerful, ready to ride away; £8/15.—Blackburn, 86, Salisbury St., Liverpool. [X9470]

Despatch Rider.

**DESPATCH** Rider, 1915, 2-stroke, 2½h.p., low frame; £20.—Write, 18, Beechwood Av., Thornton Heath. [X3446]

Douglas.

**LATE 1914** Douglas, T.T., 2 speeds, perfect condition; £34.—Earl, 5, Heath St., Hampstead. [X3422]

**1911** Douglas, new engine and tyres, lamp; £18, bargain.—Robinson, Bristol, Melton Co stable. [X9458]

**DOUGLAS**, 2½h.p., first to view will purchase; £15, no offers.—14, Dodbrooke Rd., West Norwood. [X541]



## MOTOR CYCLES FOR SALE.

Douglas.

1915 2½ h.p. 3-speed Douglas, T.T. footboards, perfect, lamps; 40 gns.—Stocks, Thimblestone, SL9530 (1)

DOUGLAS, 2½ h.p., £15/10; 1913 2-speed, £34/10; 1914 single gear, £27/10.—Collier, Deal St., Halifax. [3489]

DOUGLAS, 2½ h.p., splendid condition, new tyres; bargain, £14/10, offer.—35, Colwell Rd., E. Dulwich. [3420]

DOUGLAS, 1914, 2½ h.p., 2-speed, clutch, accessories, good condition; 35 gns.—17, Upton Lane, Forest Gate. [3349]

DOUGLAS, 1915, 3-speed, splendid condition; £45, or near offer.—35, Richmond Rd., Kingston-on-Thames. [3439]

DOUGLAS, 1914, 2-speed, little used, large Brooks saddle; £36, with petrol.—Jackson, 89, Oak Lane, Bradford. [3286]

LATE 1914 2-speed T.T. Douglas, fully guaranteed, very fast; £34 secures this bargain.—Millard, Chesterfield. [X9562]

2½ h.p. Douglas, 3-speed, just overhauled; bargain, £43.—East Putney Garage, 118, Disraeli Rd., East Putney. [3381]

1914 2½ h.p. 2-speed Douglas, lamps, horn, and speedometer; £33.—Wilkin and Co., Hunters Bar, Sheffield. [X9526]

LATE 1915 Douglas, 2½ h.p., 2-speed, clutch, lamps, and spares; £30.—Bavens, Farnborough Rd., Farnborough, Hants. [3301]

LATE 1915 2½ h.p. T.T. 2-speed Douglas, in splendid condition, guaranteed; £42/10.—Simister, Jordan Gate, Macclesfield. [X9171]

1911 2½ h.p. Douglas, good running order, Voltalite lighting set; £15.—Tarr, Aspley Cottage, Guildford Rd., Ash, Surrey. [X9566]

1914 2-speed T.T. Douglas, perfect condition, £36; 1913 2-speed kick start Douglas, £33.—H.T. Wright, Alresley, Beds. [3417]

1915 2½ h.p. 2-speed Douglas, Colonial model, engine just been thoroughly overhauled; £37.—Wilkin and Co., Hunters Bar, Sheffield. [X9527]

DOUGLAS, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 1914, 2 speeds, kick starter, new tyre, exceptional condition; £38.—Lock, c/o Clayton and Co., Melbourne Rd., Wallington, Surrey. [3446]

1914 T.T. 2½ h.p. 2-speed Douglas and accessories, in perfect condition; seen any time; £37/10.—Bounds' Garage, 223, High Rd., Kilburn. [3271]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

1912 Douglas, single speed, footboards, lamps, etc., in exceptional condition, everything perfect.—Sanders' Motor Cycle Depot, Bridge St., Hitchin, Herts. [X9390]

1914 W Douglas, 2-speed, kick-start, touring or T.T. bars, footboards, 2 lamps, horn, engine guaranteed perfect; £36.—Robinson's Garage, Green St., Cambridge. [3366]

DOUGLAS (Nov., 1914), 2½ h.p., kick start, clutch, 2 speeds, just overhauled, belt and tyres practically new; £37, or near offer.—Ingo, Redwood, Kenley, Surrey. [3335]

DOUGLAS, late 1915, Colonial model, 4 h.p., 3-speed, lamps, mechanical horn, etc.; any trial; 57 gns.; seen by appointment.—Leslie Compton, 9, Edith Grove, Chelsea. [3425]

DOUGLAS, 1913 model, purchased 1914, 2 speeds, kick starter, in absolutely new condition, and very little used; £38.—McVoy, Grocer, opposite G.C. Station, Wembley. [3408]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

DOUGLAS, late 1913, 2½ h.p., 2 speeds, clutch, kick start, speedometer, mechanical horn, tools, lamps, new back tyre, excellent condition; £36.—4, Sportbank St., Catford, S.E. [3404]

DOUGLAS, 1913, 2½ h.p., 2-speed, clutch and kick start, complete, not used since outbreak of war, fully equal to the average 1915 machine; accept £36, worth fully £45.—Tollady, Bicester, Oxon. [X9648]

DOUGLAS, 2½ h.p., 2-speed, new October, 1914, perfect condition, just overhauled, tyres equal new, Brooks saddle, F.R.S. lamp, mechanical horn; £35/10.—Nixon, Boxgrove, Carshalton Park Rd., Carshalton. [3443]

1915 2½ h.p. Douglas, 2-speed, in excellent condition, very fast machine, complete with lamp, speedometer, horn, tools; £45 cash, rock bottom; any trial.—Car Mart, 297, Euston Rd., N.W. 'Phone: Museum 2000. [3214]

1916 4 h.p. Douglas Sidecar Combination, War Office model, run about 1,500 miles only, perfect condition, well sprung sidecar, fitted with Dunhill wind screen, complete with Lucas horn, tools, and spares; can be seen and tried in London; £85; no dealers.—Box L2,270, c/o The Motor Cycle. [2903]

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JAMES 1914 4½ h.p. 3-speed Combination, all access.	£50
REX 1914 6 h.p., 2-speed, modele de luxe	£40
TRIUMPH, 3½ h.p., 2-speed countershaft, Sidecar	£32
INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame	£42
ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar	£60
REX, 1913, 6 h.p., 2-speed, cane Sidecar	£28
RUDGE, 1913, 5-6 h.p. Multi, with Rudge Sidecar	£50
INDIAN 1916 5 h.p. Combination, 3-speed	£65
MATCHLESS 1914 8 h.p. 3-speed Combination	£60
ZENITH, 1914, 8 h.p., clutch, and Sidecar, all access.	£68
ENFIELD, 1912, 6 h.p., 2-speed twin, Enfield Sidecar	£30
INDIAN 1915 (late) 5 h.p. 3-speed Combination	£63
RUDGE 1913 3½ h.p. Multi, coach-built Sidecar	£33
B.S.A., 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidecar, only done 500 miles	£70

## SOLO MODELS.

NEW IMPERIAL J.A.P., 1915, 2½ h.p., 2-speed	£26
DOUGLAS, 1911, 2½ h.p., 2-speed, spring forks	£20
CALTHORPE, 1914, 2 h.p., 2-speed	£19
RUDGE 1913 3½ h.p. Multi, T.T. bars	£33
IVY, 1915, 2-stroke, single speed	£18
NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine	£34
REX, 1913, 3½ h.p., 2-speed, and clutch	£29
RUDGE, 3½ h.p., Philipson pulley, 1915 improvements	£42
SUN-VILLIERS, 2½ h.p., 1915, 2-stroke	£18
ENFIELD, 1915, 2½ h.p., 2-speed, 2-stroke	£32
BROWN, 3½ h.p. model, Bosch magneto	£14
INDIAN, 1915, 3½ h.p., 3-speed twin	£43
INDIAN, 1915, 5 h.p., 3-speed twin	£53
HARLEY-DAVIDSON, 1914, 9 h.p., 2-speed twin	£37
ENFIELD, 1911, 2½ h.p., 2-speed twin, as new	£21
TRIUMPH, 1913, 3½ h.p., 3-speed, excellent order	£33
ROVER, 1912, 3½ h.p., T.T. clutch model	£20
ZENITH, 1912, 3½ h.p., Gradua gear, J.A.P. engine	£20
DOUGLAS, 1912 2½ h.p., single-speed	£16
ALLDAYS ALLON, 1915, 2-stroke, 2-stroke	£32
DOUGLAS, 1915, 2½ h.p., colonial, 3-speed	£53
NEW HUDSON, 1915, 2-stroke, as new	£24
TRIUMPH, 1913, 3½ h.p., 3-speed	£33
TRIUMPH, 1914, 2 h.p., 2-speed, 2-stroke	£35
DAYTON, 1914, 1½ h.p., 2-stroke, lightweight	£15
ALLON, 1915, 2½ h.p., 2-speed, 2-stroke	£32
INDIAN, 1914, 7-9 h.p., 2-speed, electric equip.	£60
INDIAN, 1914 7-9 h.p., T.T., clutch model	£38

## CARS AND LIGHT CARS.

N.A.G., 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set	£300
SUNBEAM, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled	£295
KNIGHT JUNIOR, 1914, 12 h.p., 2-seater, sporting body	£155
MINERVA, 26 h.p., 5-seater, make an excellent 25 cwt. van. Perfect mechanical order	£80
G.W.K., 1914, 9 h.p., just re-painted and new hood fitted	£100
G.W.K., 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn	£160
DEEMSTER, 1914, 9.5 h.p., 2-seater, all accessories; a bargain at	£100
OVERLAND, 1916, 12 h.p., 5-seater, dynamo and self-starter equip., as new	£185

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## MOTOR CYCLES FOR SALE.

Douglas.

4 h.p. Douglas Combination, May, 1915, new unpunctured tyres, horn, lamps, 1916 cylinders, extra oiling to front, coachbuilt attachment and screen, special backed pillow sent, overhauled Kingswood February spare belt, chain, sprockets, etc., perfect condition; cost £90, accept £70; trying higher power.—Rowall, 39, Ashover Rd., Leicester. [3233]

Edmund.

EDMUND, 2½ h.p., 2-speed, spring frame; £46/4; in stock.—Marston, 26 and 31, Bridge St., Chester. [X9603]

Enfield.

COLMOORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ROYAL Enfield 2½ h.p. Twin, just been overhauled, R. perfect; any trial; £19/10.—71, Vespan Rd., Shepherd's Bush. [3402]

ENFIELD, 1916, 3 h.p., hardly soiled, fine mount; £50, cheap.—Colmore Depot, 31, Colmore Row, Birmingham. [X9379]

1916 6 h.p. Enfield Combination, same as new, only done 50 miles; £85.—Seen Bounds' Garage, 223, High Rd., Kilburn. [3270]

ENFIELD, 3 h.p., kick start, new August, 1916, run 196 miles only; £45.—Adams, Bargreann, Newton-Stewart, Scotland. [X9447]

ENFIELD, 6 h.p., 1916, done 2,000, hood, wind screen, 3 lamps, trip speedometer, ready for anywhere; £70.—Lesand, 237, Ilford Lane, Ilford. [X9587]

ENFIELD 1913 3 h.p., excellent condition, lamp, horn, speedometer, new Dunlops; £32, or near offer; bargain.—Dr. Hough, County Asylum, Gloucester. [X9478]

ENFIELD Combination, late 1916, mileage 400, also Enfield commercial carrier, perfect pleasure and business outfit; £90.—C., 122, Craven Rd., Rugby. [X9519]

ENFIELD Combination, 1913, speedometer, lamps, spare tyres, valves, and chain, splendid condition throughout; trial; £46.—Hodgson, 15, Wilson St., Derby. [3460]

1915 Enfield 3 h.p. Twin, in splendid condition after little and careful riding, with speedometer, etc.; £45, no offers.—Hanbury Francis, Pharmacist, Clifton, Bristol. [X9022]

1915 6 h.p. Enfield Combination, splendid condition, tyres good all round, 3 lamps, spare tube and tyre, usual accessories; £65.—Seen Bounds' Garage, 223, High Rd., Kilburn. [3269]

ENFIELD Combination, 90 gns.; 3 h.p. twin, 55 gns.; 2½ h.p. 2-stroke model, 45 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0858]

ENFIELD, late 1913, 6 h.p. combination, Lucas K.B. lamp set, Jones speedometer, spare cover, tube, jet, sprocket, etc., no 1913 in better condition; £50, no offers.—Smith, 23, Richmond Rd., London, N. [X9422]

ENFIELD 3 h.p., 1915, in splendid condition, new Dunlop tyres, engine just overhauled, all complete, speedometer, lamps, etc.; £36, or nearest offer; must sell.—Turnbull, 6, Ordinance Rd., Southampton. [X9466]

1916 Enfield, 6 h.p., and sidecar, 2-speed gear, hand clutch, handle starter, tyres perfect, Stewart horn, Miller lamp, machine in lovely running order, and absolutely as new; 70 gns.—Julian, Broad St., Reading. [0856]

ENFIELD Combinations, latest models. We have them in stock, and desire your enquiries concerning either exchange or extended payment propositions; very high prices allowed for good machines.—Livons' Garage, Bicester. [X9641]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X9547]

LATE 1914 6 h.p. Enfield, fitted hood, screen, Low generator, lamps, tools, speedometer, only done 20 miles since been overhauled at Enfield works, fast, and most reliable, perfect order; £67, or will sell 8 h.p. 1916 dynamo lighting model, hood and screen; do not want two.—Butler, Butcher, Treorky. [X9425]

ENFIELD, 1917 models, just arrived from works; 8 h.p. combination, hood and screen, £102/2; 6 h.p. standard combination, £94/10; both fitted with the latest type sidecar, hood, screen, and luggage grid; terms one quarter down and balance in 12 or less instalments; liberal concession for short term payments; exchanges.—Lamb's, Enfield Specialists, 151, High St., Walthamstow ('Phone: 169 Walthamstow), also at 50, High Rd., Wood Green ('Phone: Hornsey 1956). [3303]

ENFIELD 3 h.p. Touring Model actually in stock, kick starter, £57/15; also 3 h.p. with T.T. bars, no kick starter, £57/15; also 1915 6 h.p. electrically equipped combination, 3 Lucas lamps and horn, speedometer, hood and screen, great war bargain, £79/10; also 1913 6 h.p. coach combination, £47/10; also 1916 6 h.p. commercial combination, ridden 1,700 miles, heap accessories; £84; and 1916 3 h.p. model, ridden 400 miles, £49/10; also another 1916 6 h.p. standard combination, very little used, £80; all in really fine condition, reasonable suggestion invited and liberal exchanges.—Lamb's, 151, High St., Walthamstow (Tel.: Walthamstow 169), also at 50, High Rd., Wood Green ('Phone: Hornsey 1956). [3304]



## MOTOR CYCLES FOR SALE.

## Excelsior.

AMERICAN Excelsior, 8 h.p., and racing sidecar; bargain, £45.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3391]

EXCELSIOR, new 1916 standard, 7 h.p., £75; new 1915 electrically equipped, £71/10; new sidecar, £13/10.—Motor Exchange, Horton St., Halifax. [3491]

EXCELSIOR, English, 5-6 h.p., 3-speed, 1915 double-seater C.B. sidecar, speedometer, mirror, wets, lamps, decompressor, etc.; £42.—59, Fifth Rd., Leyton, E. [3285]

1915 American Excelsior Combination, 7-9 h.p. twin, hardly any wear, coachbuilt double-seater sidecar, speedometer, horn, lamps, tools, etc.; £65, or near offer.—Apply, Manager, Tilbury Laundry Co., Tilbury Docks. May be seen any day. [X9454]

A REAL Bargain.—We have purchased a large consignment of brand new 1916 model American Excelsior motor cycles, 7 h.p., 3-speed, with all latest improvements, including new type mechanical lubricator, hand and foot controlled clutch, grey finish, etc., exactly as listed at £75, which we can offer for a short time only at £65 spot cash, sidecars to match from £14 to £20. Why buy a doubtful second-hand when you can get immediate delivery of the good old X brand new at this price?—To be obtained only from The Premier Motor Co., Aston Rd., Birmingham. [3339]

## F.N.

F.N., excellent condition, accessories; £8/10.—159, Victoria Park Rd., Tidal Basin, E. [3334]

## Grandex.

GRANDEX-PRECISION, 1916, 2½ h.p., shop-sold only; to clear, £23/10.—Grandex Motors, 349, Euston Rd., London. [3241]

GRANDEX-PRECISION, 1915, 2½ h.p., 4-stroke, in splendid order, as new; a bargain to clear, £17/10.—Grandex Motors, 349, Euston Rd., London. [3240]

## Harley-Davidson.

HARLEY-DAVIDSON, 1916 models, immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

11 F 3-speed Harley-Davidson Combination, practically new, with coachbuilt underlugs sidecar, the whole outfit perfect; £72.—Anderson, 260, Fishponds Rd., Bristol. [X9302]

HARLEY-DAVIDSON, 7-9 h.p., 1915, with H.D. sidecar; no reasonable offer refused; trial by appointment.—Trotman, 10, Bowell Rd., Fulham Palace Rd., Hammersmith. [3278]

1915 Harley-Davidson, 7-9 h.p., and coachbuilt sidecar, 3-speed, clutch, excellent condition; bargain, £55/10; exchanges.—Newham, 225, Hammersmith Rd., W. Phone: Hammersmith 80. [3396]

HARLEY-DAVIDSON, new models in stock; 7-9 h.p., 3-speed, model 16F, and special Montgomery sidecar to match, £102/1/6; your present machine taken as part payment.—Ede and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

HARLEY-DAVIDSON, 7-9 h.p., 1915, Phoenix coachbuilt sidecar, ridden 3,000 miles, lamps, horn, tools, etc., new tyres sidecar and driving wheel, excellent condition, and fast; a real bargain, £60, or near offer.—Lieut. Kilner, 1, Camp Fovant, Wilts. [X9307]

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Beasshaw St., Liverpool. [0817]

1915 Model 11F 7-9 h.p. Harley-Davidson, 3-speed, 28×3 in. Goodyear tyres, Gloria coachbuilt sidecar, chassis and body enamelled to match, with pleasure and commercial bodies, in perfect condition throughout; £75; an ideal tradesman's combination.—The Premier Motor Co., Aston Rd., Birmingham. [3340]

## Hazlewood.

HAZLEWOOD Combination, 5-6 h.p. J.A.P., 3 speeds and clutch, tyres almost new, new belt, fitted with auxiliary tank complete for running on substitutes, coachbuilt 4-point suspension sidecar, perfect; £60, or near offer, or would consider part exchange with 1914-15 T.T. Douglas.—Apply, Box 363, c/o The Motor Cycle. [X9616]

## Henderson.

HENDERSON, 4-cyl., 2-speed, chain drive; £46/10.—Motor Exchange, Horton St., Halifax. [3492]

FOR Sale, Henderson, late 1915, with Millford coachbuilt sidecar, little used, fine turnout; £75.—Box 350, c/o The Motor Cycle. [X9398]

## Hobart.

HOBART Single-speed £31/10, Hobart 2-speed £37/16, in stock.—Marston, 26 and 31, Bridge St., Chester. [X9597]

## Horley.

1911 2½ h.p. Horley, Simma mag., B. and B., variable pulley, tyres and belt excellent; £12/10.—Whitehead, 83, Chelmsford St., Oldham. [X9169]

## Humber.

HUMBER, 2½ h.p., new belt, perfect order; bargain, £12.—H. V. Locke, Draper, Fenge. [3316]



## NEW MODELS FROM STOCK.

## MOTOR CYCLES.

ALLON, 2-stroke, 2-speed .....	£42 0
B.S.A., 4½ h.p., 3-speed, chain drive .....	£54 0
B.S.A., 4½ h.p., 3-speed, Model K .....	£62 0
BROUGH, 3½ h.p., twin, 3-speed .....	£83 gns.
BROUGH, 3½ h.p., twin, 2-sp., T.T. .....	£83 0
CALTHORPE, 2-stroke, 2-speed .....	31 gns.
CALTHORPE-J.A.P., 2½ h.p., 2-speed .....	36 gns.
ENFIELD, 3 h.p., twin, 2-speed .....	55 gns.
ENFIELD 6 h.p. Combination .....	90 gns.
JAMES, 2-stroke, 2-speed .....	£38 0
JAMES, 3½ h.p., twin, 3-speed .....	63 gns.
JAMES 4½ h.p. Combination .....	£80 0
NEW IMPERIAL, 2½ h.p., 2-speed .....	£38 0
NEW IMPERIAL, 2½ h.p., 2-speed, clutch, and kick starter .....	£44 0
NORTON, 3½ h.p., B.R.S. model .....	£63 0
ZENITH-GRADUA, 3½ h.p., twin .....	£62 0

## EXCHANGES.

We specialise in exchange transactions, and will allow full value for your old motor cycle or light car in part payment for any new one.

## SECOND-HANDS.

The following is a selection from our large stock of machines of all types:

CLYNO 1914 6 h.p. Combination, Lucas electric lighting set, speedometer, etc.	£68
ZENITH, 1913, 3½ h.p., clutch model, with Gradua gear, speedometer, head lamp, back lamp, horn, and coachbuilt Sidecar .....	£40
JAMES, 1915, 2½ h.p., 2-stroke, 2-speed, Lucas lamp set, rear lamp, and horn .....	£33
ALLON, 1915, 2½ h.p., 2-stroke, 2-speed .....	£33
CALTHORPE-J.A.P., 1915, 2½ h.p., 2-sp., head lamp, back lamp, and horn .....	£30
MATCHLESS, 1913, 8 h.p., 2-speed, clutch, and kick starter, all access. ....	£38
ZENITH, 1913, 3½ h.p., Gradua gear. ....	£30
PREMIER, 1915, 3½ h.p., countershaft 3-speed gear, lamps, and horn .....	£45
INDIAN, 1914, 7 h.p., T.T., clutch model, head light set, rear lamp, horn, and speedometer .....	£33
CALTHORPE, 1915, 2½ h.p., 2-stroke, 2-speed, head light, rear lamp, horn, and speedometer .....	£28
ZENITH, 1915, 4 h.p. twin, countershaft model, lamps and horn .....	£48
VINDEC, 1911, 5 h.p., 2-speed, head light, rear lamp, horn, and coachbuilt Sidecar .....	£22
CHATER-J.A.P., 1912, 8 h.p., countershaft 3-speed gear, all-chain drive, and coachbuilt Sidecar .....	£45
CLYNO, 1915, 6 h.p., coachbuilt Combination, hood, screen, luggage carrier, interchangeable wheels (spare wheel and tyre), Lucas lamps, horn, and speedometer .....	£78
ROYAL ENFIELD, 1916, 6 h.p. Combination, as new .....	£80
DOUGLAS, 1915, 2½ h.p., War Office Model .....	£50
ALLDAYS-MATCHLESS, 1915, 3½ h.p., coach-built combination, 3-speed, lamps and horn .....	£45
TRIUMPH, 1914, 4 h.p., 3 speeds, Cowey speedometer and horn .....	£45

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## MOTOR CYCLES FOR SALE.

## Humber.

1913 Humber, 4 h.p., 2-speed, handle start, speedometer, and sidecar; £50.—29, St. Leonard's St., Bow. [3383]

HUMBER 2½ h.p. Twin, 3-speed, clutch, speedometer, accessories; £25.—Hawley, Fort Cumberland, Portsmouth. [3216]

HUMBER, 1912, 3½ h.p., 2-speed, fine solo or sidecar machine; £24/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X9378]

HUMBER, 3½ h.p., B. and B., well tyre, can be ridden away; £10 net, bargain; before 7.—21, Brailford Rd., Brixton. [3425]

HUMBER, 3½ h.p., 3-speed, 1915, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

1910 3½ h.p. Humber, m.o.i.v., B.B. carburettor, Drums, 26×2½ wheels, good covers and belt, new adjustable pulley, complete, less mag.; £7 cash.—Pudney, Walton-on-Naze, Essex. [X9404]

HUMBER, 3½ h.p., 2-speed, Dec., 1912, Harcourt radiators, Aston Sunstone belt, B.S.A. carburettor, good condition, horn, lamp, etc., Canoelet sidecar; £35 net.—Cox, Preston Close, Yeovil. [3258]

HUMBER, 3½ h.p., 2-speed, free engine, handle start, in very good condition; price £30, or exchange with cash for higher power machine and sidecar.—Apply, Meeks, 55, Dolling Rd., Hammersmith. [3273]

## Indian

7-9 h.p. Indian, clutch, speedometer, etc., as new; £45.—6, Fields Rd., Newport, Mon. [X9500]

7-9 h.p. Indian, 1915, coachbuilt sidecar, complete, as new; £63.—Tompsett, Moors, Marden, Kent. [1954]

INDIAN, 1915, 5 h.p., 3 speeds, sporting sidecar; £56.—Clayton, Melbourne Rd., Wallington, Surrey. [3447]

5-6 h.p. Indian, in good running condition; £25.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3388]

INDIAN, 1914, 7-9 h.p., 2-speed, spring frame, coach sidecar; £53/10.—Motor Exchange, Horton St., Halifax. [3493]

1914 Indian Combination, splendid condition, recently overhauled by us; £55.—Robb and Co., 14, Woodstock Rd., Poplar. [3414]

1915 Indian and Sidecar, 7 h.p., excellent condition, only done 1,500 miles; £60.—Apply, 93, Grove Lane, Handsworth. [X9012]

1914 7 h.p. Indian and coachbuilt sidecar, fitted first-class, splendid order throughout; offers.—Rowley, 35, Lumley Rd., Skegness. [3289]

7 h.p. Indian Outfit, new March, 1915; sell at low figure, or exchange lightweight and cash.—33, Radnor Drive, Liscard, Cheshire. [3324]

INDIAN Powerplus, June, 1916, sidecar de luxe, speedometer, lamps, horn, 2,000 miles; £75.—17, Dennington Park Rd., West Hampstead. [X9420]

7-9 h.p. Indian, 2-speed, spring frame, electric equipment, Montgomery sidecar, hood, screen, spares; £48, lowest.—Langan, 292, Kingsland Rd., London. [X9459]

INDIAN Powerplus, T.T. model, 3-speed, kick start, including special Millford sidecar; £85; slightly used, all accessories.—Marston, Bridge St., Chester. [X9604]

1916 Powerplus Indian, 7-9 h.p., electric lighting and horn, speedometer, Millford sidecar, 3,500 miles, excellent condition; £88.—Duan, Cross Keys, Mon. [3440]

INDIANS, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £73.—P. J. Evans, John Bright St., Birmingham. [X9549]

POWERPLUS Indian, slightly used only, lamps, speedometer, and Klaxon horn; first cheque £68 secures; 3½ h.p. model, all accessories, £47.—Humberstone, 7, Bolton Lane, Ipswich. [X9156]

INDIAN Powerplus, 7 h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X9591]

BIRMINGHAM Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5 h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X9590]

INDIAN 1915 (November) 5 h.p. Combination, all accessories, perfect mechanical condition, enamelling, plating, and tyres as new, not used December to May; £62, or near offer, appointment.—Hunt, 12, Hanworth Rd., Feltham, Middlesex. [3277]

BARGAIN.—1913 7-9 h.p. Indian, 2-speed, hand clutch, new gears and chains, thoroughly overhauled, absolutely perfect condition throughout; £33/10, or with all-metal torpedo sidecar, £40; photo.—Bell, 88, Broadway, Northampton. [3463]

INDIAN, 7-9 h.p., late model, 2 speeds, clutch, spring frame, speedometer, horn, 2 electric lamps, tools, spares, has not been used for 12 months, small mileage, very silent; owner called up; £46.—Indian, 56, Hampstead Rd., N.W. Phone: Museum 2756. [3297]

BARGAIN.—Indian, 7-9 h.p., T.T. model, in new condition, lamps, speedometer, etc., £40; 1915 7-9 h.p. combination, in perfect mechanical condition, electrically equipped, speedometer, De Luxe sidecar, with apron, etc.; £72/10.—Oram, 20, Caddington Rd., London. [3078]



## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN**, 7-9h.p., new Aug., 1915, spring frame, 3-speed, clutch, electric lighting set, electric horn, speedometer, with handsome sporting sidcar, 3 Dunlop tyres, interchangeable, all in perfect condition, unscratched; £75; North of Scotland; owner going in for car.—Box L2359, *elo The Motor Cycle*. [3469]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5h.p. 3-speed model, £70; 7h.p. T.T. Powerplus, £75; 7h.p. 3-speed, spring frame, and electric light, £78; special de luxe 7h.p. Powerplus, with spring frame, £83; sidcars from 11 gns.—87-91, John Bright St., Birmingham. [X9553]

## Ixon.

**IXION**, 2-stroke, 2-speed, T.T. long exhaust, large head light, rear light, perfect condition throughout, fast, climbs well, sporting machine; buying Carden; no callers.—East, Rendalls, Harrow. [3227]

## James.

**1916 James** Combination, good as new; £65.—Parker and Son, St. Ives, Hunts. [3432]

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES**, 4½h.p., 3-speed countershaft, coach sidcar; £43/10, bargain.—Motor Exchange, Horton St., Halifax. [3494]

**1913 3½h.p. James**, coachbuilt sidcar, free engine; £25; appointment.—Phelps, 68, Morton Rd., Ilkington. [X9531]

**JAMES**, 3½h.p., 3-speed Armstrong, Lucas lamps, horn, good tyres, full tool kit, fine order; £24.—Grover and Smith, Basingstoke. [X9636]

**JAMES**, 2-stroke, 2½h.p., 2 speeds, tyres not soiled, guarantee as new; £28, genuine bargain.—Hallam, Rosedale, Dove Holes, Stockport. [X9589]

**JAMES**—P. J. Evans, John Bright St., Birmingham.—Immediate delivery all models, including 2-stroke, 3½h.p. twin, and 4½h.p. big single. [X9551]

**JAMES** 1915½ 4½h.p. Combination, 3-speed countershaft, lamps, speedometer, wind screen, good tyres, splendid condition; £57.—Lient. Buckle, Naval Camp, Blandford, Dorset. [X9463]

## J.E.S.

**J.E.S. Auxiliary**, in Triumph cycle, very little used; £12.—Whitlock, Holsworthy. [X9465]

## Kerry.

**3½h.p. Kerry-Abingdon** and sidcar, just overhauled; any trial; £18/10.—F. Sburman, 77a, Exton St., Waterloo Rd., S.E. [3526]

**3½h.p. Kerry-Abingdon M.C.**, fixed gear, new Dunlop, 2nd condition splendid; any trial; £18.—Card, 24, The Parade, Upper Tooting Rd., S.W. [3455]

## Lea-Francis.

**LEA-FRANCIS**, 1914, in first-class running order, nearly new tyres; owner on active service; £44.—C/o 31a, Broomfield Rd., Chelmsford. [X9486]

## Levis.

**LEVIS**, Baby, 1915, perfect; £20.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3392]

**LEVIS**, 2-speed Enfield gear; £47/10; in stock.—Marston, 26 and 31, Bridge St., Chester. [X9602]

**1916 Popular Levis**, lamps, horn, etc., little used; £24 cash.—Taylor's Garage, Falmouth. [3268]

**1915 2½h.p. 2-speed Levis**, perfect order; £22.—Wilkin and Co., Hunters Bar, Sheffield. [X9524]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**LEVIS**, 2-stroke, in good condition; a bargain to clear, £14.—Grandex Motors, 349, Euston Rd., London. [3239]

**LEVIS**, 2½h.p., splendid order in every detail; £20, complete.—Colmore Depot, 31, Colmore Row, Birmingham. [X9375]

**LEVIS**, 1915, 2 speeds, splendid machine, extra fast; must sell at once; £24.—436, Whitehorse Rd., Thornton Heath. [3406]

**LEVIS** 1916 Latest Lightweight, one special sample in stock; also a few bargains in shop-soiled.—Laytons' Garage, Bicester, Oxon. [X9642]

**1916 Popular** and model E Levis, delivery from stock; cash, exchange, or easy terms.—O. W. Wilkin and Co., Hunters Bar, Sheffield. [X9523]

**LEVIS**, 1915, just overhauled, new complete piston, new Clincher de Luxe tyre, 2 belts, splendid running order; £23/10.—R.A., 171, High Rd., Balham. [3298]

## Lincoln-Elk.

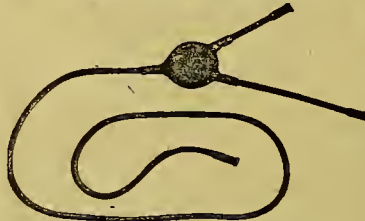
**LINCOLN-ELK**, 4½h.p., 2 speeds, K.S., speedometer, sidcar, £25, or exchange lightweight.—Bezzant, 14, Shaftesbury Rd., Holloway. [3330]

## L.M.C.

**PETROL** Free with 1912 L.M.C., 3½h.p., T.T., excellent order; 17 gns.—Troward, 78, High St., Hampstead. [3201]

## SURRIDGE'S PATENTS.

COMBINED HEAD AND REAR  
LAMP CONNECTORS  
with Gas Bag ensures a steady  
light to both lamps.



Price 4/- Each.

Without the Gas Bag, 2/6 each.  
Length overall 70 inches.

GAS BAG LAMP  
CONNECTORS FOR  
HEAD LAMP ONLY

A Perfect Steady Flame  
at all times.

6", 1/-; 9", 1/2; 12", 1/4;  
15", 1/6; 18", 1/8; 24", 2/-  
each.



The Repair Outfit you should use.

2/6 Each.

**HOLDTITE PATCHES and OUTFITS**  
have been supplied to H.M. Government  
in their thousands and are still demanded

Surely this should prove that the  
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conditions. Send for the new list.

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with any other Patches, REFUSE and  
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him to stock HOLDTITE PATCHES etc.

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give name of your agent.

58, LOMOND GROVE,  
CAMBERWELL, LONDON.

## MOTOR CYCLES FOR SALE.

## M.A.G.

**PETROL** Free with 1913 M.A.G. 3½h.p. twin, De  
Lissa valves, Enfield gear; 25 gns.—Troward, 78,  
High St., Hampstead. [3203]

## Matchless.

**1913 3½h.p. Twin Matchless**, 3 speeds, lamps, horn,  
etc.; £32.—Simister, Jordangate, Macclesfield. [X9174]

**MATCHLESS J.A.P.**, 6h.p., fine engine, in good  
order; £45.—Grandex Motors, 349, Euston Rd.,  
London. [3238]

**MATCHLESS**, 1913, 8h.p., 2-speed, coachbuilt S.C.,  
good condition; trial given; nearest £35.—J. Bull,  
423, East India Dock Rd., Poplar, E. [X9170]

**1915 Matchless**, 7-9h.p., all chain drive, 3-speed gear,  
and 2-seater sidcar.—Julians, 84, Broad St.,  
Reading. Biggest motor cycle dealer in the South. [0853]

**MATCHLESS** Combination, 1915, 3 speeds, M.A.G.  
engine, mileage under 5,000, under condition, many  
extras; £75 cash.—Tarry, 102, High St., Boreley,  
Kent. [3428]

**1915 8h.p. Matchless-Jap** Combination, 3 speeds, ex-  
cellent condition, new tyres, Lucas lamps, speed-  
ometer; £78.—Paymaster Morris, Blandford Camp,  
Dorset. [X9399]

## Minerva.

**MINERVA**, 4-5h.p. twin, Rothardt mag., Mabon  
clutch, good tyres, low frame; £12.—Massey,  
Rounton Rd., Weltham Abbey. [X9480]

**MINERVA**, 3½h.p., Bosch, B. and B., new Dunlop  
belt, recently re-bushed, 45 m.p.h., trial, £12;  
also Minerva carburettor, 5/-; Bowden controls, 5/-;  
Jessop, Kilton, Boston, Lincs. [X9405]

**MINERVA**, 3½h.p., m.o.i.v., B.B. carburettor, new  
Druids, 26x2½ wheels, good covers and belt, ad-  
justable pulley, in good condition throughout; £6/10  
cash.—Pudney, Welton-on-Naze, Essex. [X9403]

**MOTOR** Cycle, twin Minerva, 4½h.p., Bosch, new  
frame, belt, tyres, spring forks, good running  
order; any trial; £16/10, with sidcar; called up.—  
Estate Office, 94, Heath Rd., Twickenham. [3465]

## Moto-Reve.

**MOTO-REVE**, 2h.p., single-cyl., mag., ready drive  
away; £9.—Buthin, Bangalow, Galleymood, Chelms-  
ford. [3248]

## Motosacoché.

**MOTOSACOCHE**, 3½h.p. twin, 2-speed gear, all  
chain drive, footboards.—Colmore Depot, 31, Col-  
more Row, Birmingham. [X9380]

**MOTOSACOCHE**, 2½h.p., Bosch, Druid forks, sound  
tyres, tubes, engine perfect; bargain, £14, or near  
offer.—W., 79, St. Stephen's Rd., Hounslow. [3251]

## New Hudson.

**1916 2½h.p. New Hudson**, 2-stroke, model C, new;  
accept £30.—Thos. Booth, Frodsham. [3221]

£38, or offer.—1913 3½h.p. 3-speed New Hudson and  
coach sidcar, accessories, done 1,400.—Mrs. Arthur,  
Bracklenae, Claygate, Surrey. [3347]

**NEW** Hudson, model C, 2-stroke; £38; delivery from  
stock.—Exeter Motor Cycle Co., Ltd., Bath Rd.,  
Exeter, and Tavistock Rd., Plymouth. [0840]

**NEW** Hudson, 2½h.p. J.A.P. engine, 3-speed, clutch,  
Armstrong gears, in perfect condition; £24.—  
Mitchellmore, 13, Poplars Av., Willesden Green. [X9511]

**1913-1914 3½h.p. 3-speed** New Hudson, complete  
with lamps, horn, etc., not run 1,000 miles, as  
new; £40.—Simister, Jordangate, Macclesfield. [X9172]

**NEW** Hudson Big Six Combination, C.B., counter-  
shaft, clutch, 3-speed, speedometer, lamps, etc.;  
trial arranged; perfect condition.—17, High St., Wir-  
chester. [X9659]

**NEW** Hudson, model C, £38; New Hudson, model  
C, slightly soiled, £35; New Hudson model 6B  
combination, £78/15; all in stock.—Marston, 26 and  
31, Bridge St., Chester. [X9596]

**NEW** Hudson 1914½ Big Six Combination, 3 speeds  
and kick starter, all accessories, very smart and  
powerful; bought car; £52/10; good condition.—J.  
Yates, 683, Leytonstone Rd., Essex. [3320]

**1915 2½h.p. New Hudson** 2-stroke Lightweight,  
countershaft 2-speed gear, Dunlop rubber studded  
tyres, accessories, in perfect condition throughout; £29.  
—The Premier Motor Co., Aston Rd., Birmingham. [3341]

## New Imperial.

**NEW** Imperial, latest 2½h.p. and 6h.p. models in  
stock.—Crow Bros., Guildford. [3427]

**NEW** Imperial, 1917, new, 2½h.p., 2-speed model;  
£38.—Motor Exchange, Horton St., Halifax. [3495]

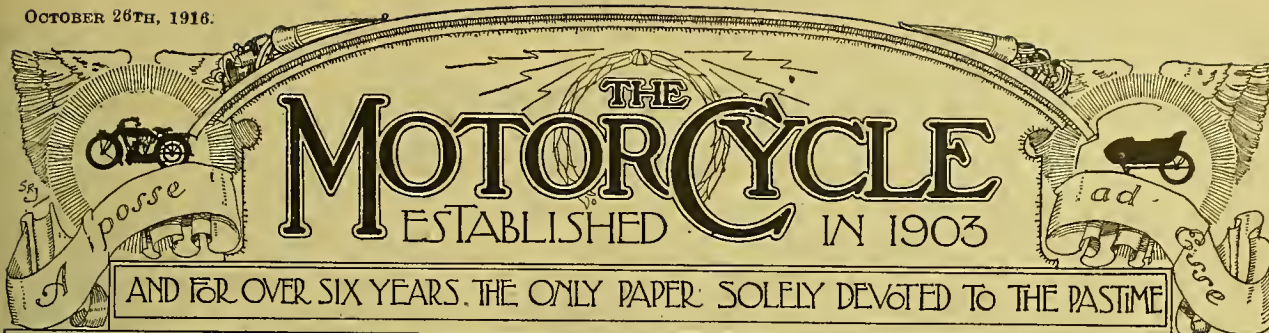
**COLMORE** Depots, Manchester and Leicester, for im-  
mediate delivery of New Imperial motor cycles. [0805]

**1915 New Imperial-Jap**, go anywhere, perfect condi-  
tion; £25.—Stobbs, Grocers, Walsingham, Co.  
Durham. [X9816]

**NEW** Imperial 1916 Current Models in stock, also  
one or two bargains, shop-soiled.—Laytons' Garage,  
Bicester, Oxon. [X9643]

**1915 New Imperial-Jap**, 2-speed, new condition; price  
£27/10.—Sanders' Motor Cycle Depot, Bridge  
St., Hitchin, Herts. [X9389]





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## The Danger of Cattle at Night.

**A**N Order demanding lights to be carried by persons in charge of cattle on the road at night has been issued at last, but it has taken years of propaganda to bring about such a desirable state of affairs.

It is eight years ago since the Coventry Motor Club obtained over 5,000 signatures to a petition to the Warwickshire County Council, urging them to adopt such a byelaw. When the petition was presented there was great hilarity among the farmer members of the Council, yet all over the country one reads of accidents which have occurred owing to cattle being driven on the road at night without any warning light. In some cases accidents have proved fatal, and we have still in our mind two cases of motor cyclists colliding with horses on the road at night with serious results. At various times this question has been taken up by different bodies, but all, particularly those who were earliest to recognise the desirability of such a byelaw, were laughed to scorn for their pains. The danger is surely obvious. As a matter of fact, a still more glaring instance of Government laxity is to permit tree trunks to be transported on the road at night with a large portion of the trunk projecting rearwards, and without a light to show the danger. It is only comparatively lately that certain counties put a stop to such a practice, not before there had been fatal accidents due to collisions. The Order, under the Defence of the Realm Act, has been made, no doubt, as a result of reduced lighting generally, but it should never be allowed to lapse in the public interest. In the case of a herd or drove of cattle the Order stipulates that there must be two persons in charge, each carrying a light. We notice that a white light is mentioned. In the past we have urged that a distinctive light, such as a blue or green light, should be shown, so that motorists would know what to expect, and accordingly be on the alert. There may be a difficulty at present in obtaining coloured lights,

but we imagine that white lights swinging all over the road are bound to cause confusion. However, one can rejoice that at last the authorities have deemed it desirable to protect the life and limb of road users by introducing such an obviously fair ruling. At the risk of repetition we reiterate that it is slow-moving objects that particularly need warning lights, especially in the rear. Up to the last year or so the reverse view seems to have been taken, for until lately it has been imperative that fast-moving vehicles only should exhibit distinctive rear lights.

## Position of Shock Absorbers.

**T**HE other day we overheard a conversation among a group of motor cycle engineers as to the relative merits of a transmission shock absorber placed (1) on the engine shaft, or (2) in the rear wheel. Advocates of the engine shaft position used as their argument that engine snatch should be nipped in the bud, i.e., on the engine shaft itself, and so ease the strain on the gear box and transmission, and further urged that to spread the transmission units over three distinct parts of the machine was bad, and, *inter alia*, meant a "loose" sprocket or belt pulley on the back wheel if the latter position were chosen. Such criticisms seemed sound enough, but the other side scored equal points by asserting (a) that a slipping medium on the engine shaft had to be adjusted so delicately to be really efficient at slow speeds that it refused to drive at high speeds; (b) there was no more snatch noticeable in the transmission when the shock absorber was placed at the rear than when it was in front; and (c) that when placed in the rear wheel it performed the dual purpose of damping out road shocks.

After all, practice constantly upsets theory, but the pros and cons are not without interest now that the question of improving the comfort of single-cylinder machines is in the air.



## A V-TYPE TWO-STROKE.

The Latest Production of the Vitesse Co.

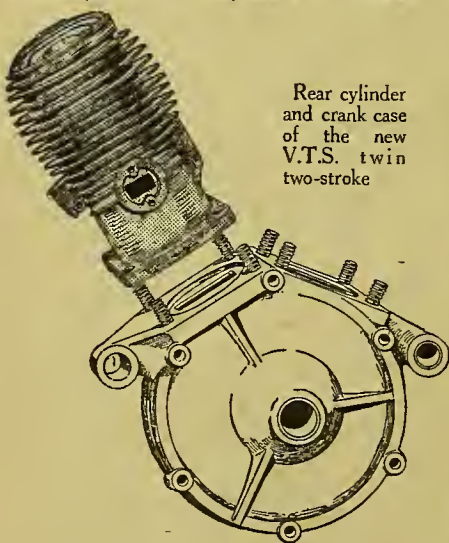
WE are enabled to give our readers a description of a remarkable design of two-stroke twin-cylinder engine, which is at present in its experimental stages, but bids fair to be a complete success. Such an engine has often been referred to by correspondents, and several attempts to satisfy the demand for such an engine have already been made.

The Valveless Two-stroke Engine Co., of 303, Broad Street, Birmingham, are the makers of engine units for light-weights, notably those incorporated in the Sun-Vitesse models and other makes, and it is to be expected that their experience with this type of engine will greatly influence the latest development.

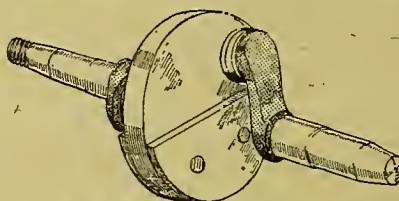
The cylinders of this V type twin are set at 60°, with crank throws at 120° to give even firing. Each cylinder is practically identical with the ordinary V.T.S. 2½ h.p. two-stroke engine, 70 × 70 mm., giving a capacity of 538 c.c., or approximately 5½ h.p.

### Staggered Cylinders.

The cylinders are staggered, being about 1½ in. out of line, set with transfer



Rear cylinder and crank case of the new V.T.S. twin two-stroke

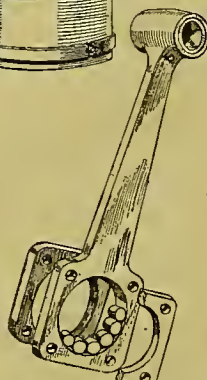


Special design of crankshaft showing bob weights.

ports inside the angle, and the exhaust ports at front and back. The inlet ports are arranged on the sides and connected



by a specially-shaped induction pipe. The usual V.T.S. type pistons have been adopted, as also the design of small ends to the connecting rods. It is in the crank case that the principal variations from the usual designs occur.

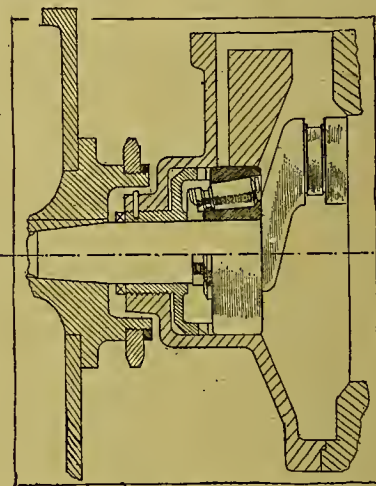


The crank case is made of aluminium in three pieces, which bolt together to form two separate chambers, with a particularly ingenious form of gland between them; but for the present we are not permitted to describe this part of the engine.

### Adjustable Roller Bearings.

The crankshaft is an excellent piece of work, running in Timken taper roller bearings capable of adjustment. The big ends are quite an unusual feature. As will be seen from our illustration they are of

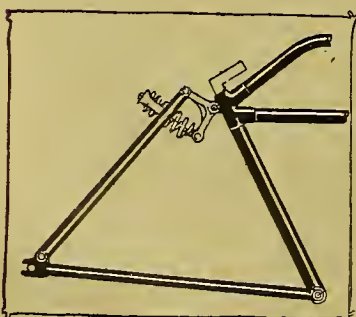
large diameter, but of narrow section, with plates riveted on either side, the bearing being taken on Timken parallel roller bearings. The whole engine forms a very successful combination of two single engines, in which the compact, and at the same time simple, method of constructing the double crank case is the most notable feature. The separation of the cylinders effectively eliminates the principal trouble in twin two-strokes, namely, unequal overheating and consequent distortion of cylinders. Lubrica-



Section of flywheel end of shaft, showing main roller bearing.

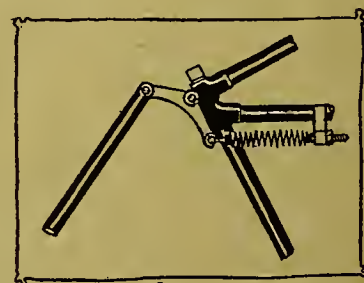
tion is effected in exactly the same way as in the single engine. An outside flywheel is fitted, with driving cog on the inner side. The inlet pipe is not decided upon yet, but it will probably take the form of a two-arm tube casting, with a third arm for attaching the carburetter. The exhaust pipe and silencers will be of orthodox type. So far the engine is at a purely experimental stage, and as to its behaviour when running on the road we are unable to speak, but its development will be followed with great interest.

## Another Spring Frame.



Another system of rear frame springing.

A VERY simple type of rear spring frame has been patented by C. W. Pidcock, of Hampstead. The accompanying sketches make the action of the device perfectly clear, but it seems to us to have an unnecessarily large number of hinged parts, all of which would be subject to wear, and when worn would cause rattling. The rear triangle of the frame is hinged at the bottom bracket and at the axle, the rear stays being supported below the saddle by a bell crank, to which a spring or springs can be attached in a variety of ways, two of which we show. Patent No. 15,332, 1915.



The Pidcock spring frame, showing the hinges.





### Flat Twins on the Bummel

Before I plunge again into the vortex of controversy let me fortify my natural modesty by a small chortle over the conversion of the Humber and Indian companies to the flat twin. They may induce readers to regard my irresponsible vapourings more seriously. I see Mr. Huskinson invites me to take away the gear box from the flat twin, and I shall find it as dead as mutton. He might as well challenge me to box him with my right hand strapped behind me. The flat twin may be, probably is, a trifle less dogged uphill on a high gear than a vertical single would be on the same ratio, though no  $2\frac{3}{4}$  h.p. single ever made can beat the flat twin 350 c.c. Douglas under these conditions, which suggests that the bigger flat twins are not quite as well designed as the original pioneer of their type. But the flat twin gets its own back, and more, in acceleration. I won't try to rob Mr. Huskinson of his gear box. But let a  $3\frac{1}{2}$  h.p. single and a  $3\frac{1}{2}$  h.p. flat twin, with similar gear ratios, round a corner together and discover a fierce hill. Both will have to change gear; but the flat twin will steal yards from the single. As hinted above, I doubt whether it is true that the flat twin is necessarily and eternally an inferior hill-climber on high gears, though some recent examples are guilty under this head. If it is true, it is equally true that all engines have to be revved pretty hard on occasions; that the average vertical single is the last word in discomfort when it is turning over at a really fast pace. Noise, unlike vibration, is a question of taste; some like noise, others hate it; some adore one sort of noise, and detest another sort; Mr. Huskinson thrills to the thwack-thwack-thwack of a well-tuned single on the tug; give me the b-r-r-r of a flat twin on the bummel.

### What about Wear?

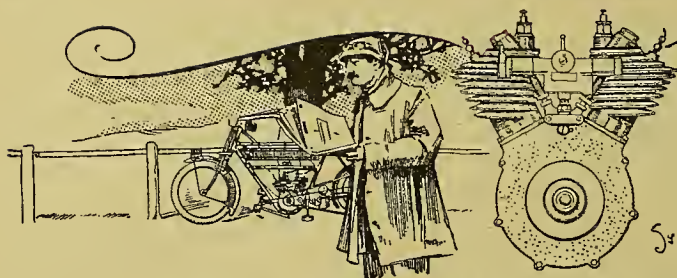
Mr. Huskinson next tries to push me into deep waters. Have I ever tried a flat twin after 6,000 miles, when a myriad little demons of wear have developed illegitimate clearances in bearings and sprocket teeth and chain rollers and such like. The racket, he opines, is absolutely appalling. I shrewdly suspect he is writing from a brief trip on a solitary machine which has been cruelly man-handled in its younger days, for I do not rush into print without a few comparative experiences behind me, and my fortune has been the exact opposite of his. After 6,000 miles of hard work my chain-driven singles and V twins have certainly sounded like a drunken binder on cobble stones; and if a hard-worked flat twin can do with a little attention after an equal spell, it is not so badly worn, and the increase in noise is distinctly less marked. If one compared a  $3\frac{1}{2}$  h.p. single driven by a timid and elderly gentleman in the Fens with a flat twin man-handled by a somewhat carousy nut, his conclusion might almost hold good. But on a fair basis, the boot should be on the other leg. Revolutions, as such, and within reason, do no particular

harm. The heavy power strokes of the capacious single-cylinder, occurring at long intervals, are far harder on rigid and semi-rigid transmissions than the lighter and more even torque of a flat twin. To quote a rough parallel, would the bevel of an 8 h.p. one-lung De Dion voiturette really keep silent as long as that of the same firm's 10 h.p. four-cylinder? My experience of chain and bearing life on the vertical single does not drive me into silent ecstasies of reminiscence. *Ceteris paribus*, the durability factor of the flat twin should show a vantage over that of singles and V twins.

### The Running of Two-strokes.

I venture to suggest that the correspondents who send us such variegated testimony to the merits of various two-strokes fail to appreciate the true point at issue, namely, the combination of all the virtues in one and the same engine. Eliminating such accidental factors as the design or adjustment of carburetters and lubrication systems, the real problem is the design of the ports. One maker adopts a certain area, location, and relative position for his ports, and gets far more power than most of his rivals; but, very probably, his engine runs hot, and four-strokes at low speeds. Another maker employs an alternative port design, and gets a cool engine, steady two-stroking at all speeds, and so forth; but his engine is sadly deficient in kick, and is a weakling compared with the hotter and less regular engine. A third embodies yet another port design, and obtains marvellous petrol economy, but sacrifices in return some other feature of at least equal importance. Readers will appreciate the fact that every modification of port area and port location is tantamount to a change in valve timing or valve lift or valve area, or even all three; and just as the four-stroke engineers have spent years in developing a satisfactory combination of valve area, lift, and timing, so the two-stroke engineers have a long furrow to hoe. I have sampled innumerable baby two-stroke engines, and I think I may dare to say that we are still waiting for a baby two-stroke engine which will (a) be really economical of petrol; (b) and two-stroke over a genuinely wide range of road or engine speeds; (c) and develop plenty of life and power; (d) and keep cool under hard work. You may get any of these qualities singly in several existing engines; you may get two, or possibly even three, of them combined in one or two specially good engines. But you will not find the quartette in combination on one and the same engine, because no designer has yet evolved a port design which meets all our needs. I hope I am not a cynic, but whenever I read a panegyric of a two-stroke engine with which I am familiar, my experience supplies a "Yes, but . . . ." [here insert the contradictory of (a), (b), (c), or (d), as above]; and if I read a glowing tribute to one of the few baby two-strokes which I have yet to test, I feel in my bones that a five-mile trip on it would suggest a similar reservation.





## OVERHEATING AND SPARKING PLUG DESIGN.

### AND ITS RELATION TO THE USE OF HEAVY FUELS.

**A**S a light car owner I am agreeably satisfied with the modern British sparking plug, but as a motor cyclist I realise that it has many shortcomings. That is to say, that though the modern plug is quite satisfactory when used in a comparatively cool-running car engine, it falls short of actual requirements when contained in the cylinders of an air-cooled motor cycle engine.

In these days, when two-stroke engines are popular and heavy fuels are necessary, something extra special in the way of a sparking plug is seriously required if constantly good results are to be obtained on a long ride. A two-stroke air-cooled engine (and many four-strokes for that matter) is a very hot bit of stuff, and the explosion of a heavy fuel is generally a good deal hotter than that of petrol. The conditions, therefore, are such as to bring motor cyclists to the realisation that the present design of sparking plug is not quite what it might be.

It is not my intention to attempt to advise the manufacturers of sparking plugs how they should go about their business; but it is fairly obvious to any practical rider that the demands of the air-cooled engine have been neglected; and it is quite conceivable that if some genius of the sparking plug world were to lay himself out to design a special air-cooled plug, he would find a ready market—even though the price were in proportion with the novelty.

#### Pre-ignition and Heavy Fuels.

Since the general use of heavy fuels began, a large number of riders have discovered that, though their machines run well for a mile or two on the heavy fuel, strange troubles begin at the end of that distance. If it be a small air-cooled twin, one cylinder cuts out, and if it be a two-stroke, pre-ignition, which seldom has the same effect on two machines, is the result. Pre-ignition is one of the most curious and tantalising problems with which the motor cyclist has to deal. It may stop one's engine dead as though the fuel were suddenly turned off; it may simply cause misfiring and irregular running, or its only result may be an irritating loss of power. Pre-ignition may affect the running of the engine in just the same way as bad carburation, but with this difference—that, while bad carburation can, by dint of perseverance, be set right, pre-ignition, when the sparking plug is at fault, is almost impossible to cure.

Regarding the numerous troubles experienced with heavy fuels, I believe that the majority have their root at the sparking plug. The rider, however, naturally expects bad carburation, and so he attacks his carburettor time after time, probably aggravating the defect. After careful observation for some months

past I have come to the decision that 90% of the troubles experienced with heavy fuels (and one finds them everywhere) are not due to bad carburation at all, but to defects in the ignition system.

#### An Obvious Fact.

This, indeed, is obvious on the face of things. If carburation is satisfactory when the engine is cool, it should naturally improve as the hot air intake and induction pipe become warmed up. Carburation defects, therefore, must be expected before the engine is properly warmed, not after. Sparking plug troubles, on the other hand, do not begin until the engine has reached its maximum temperature, and from that point onward they are likely to continue.

Now a heavy fuel, say white oil or paraffin, while giving a slightly hotter explosion than petrol, will explode at a lower temperature than petrol. In using these fuels, therefore, we are up against two difficult propositions; the first is that the gas in the cylinder will, with the slightest encouragement, explode on compression; the second is that the hot explosion overheats the engine, and consequently any fine protruding point in the combustion head is exceedingly likely to cause pre-ignition.

We have long suspected glowing flakes of carbon deposit of causing pre-ignition, but my engine has no carbon deposit, no rough edges—nothing to cause pre-ignition excepting the fine wire points of the sparking plug. I am convinced that the carburation is perfect, yet when using too heavy a fuel this engine runs abominably after 100 yards on bottom gear. All the symptoms indicate that at irregular intervals the charge ignites before the spark actually occurs—a backfire, or a wasted charge.

#### A Suggested Design.

Obviously, the fine points of the sparking plugs are to blame, hence the foregoing statement that 90% of the troubles experienced with heavy fuels are ignition troubles.

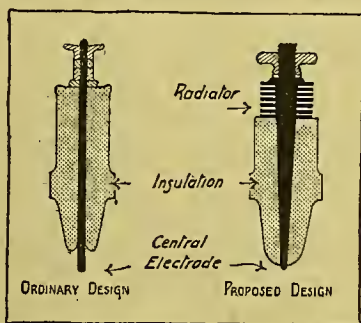
Now there are two things which affect the temperature of the plug points: the first is the amount of metal exposed to the hot gases, and the second is the provision made for conducting this heat away. The heat from the base of the plug is absorbed by the cylinder; if we can keep the base cool so much the better, but the base is not the real offender, because pre-ignition occurs just the same with the Scott engine, and in this case the base of the plug seats in a water-cooled jacket. *It is the central electrode, bedded in a material which is a poor conductor of heat, that is at the root of our troubles.*



**Overheating and Sparking Plug Design.—**

The first sketch shows how inefficient the modern sparking plug is as regards the pre-ignition question. It is a veritable pre-igniter in itself. Surrounded by an insulator, the thin stem of metal has nothing to do but to accumulate heat, and there is absolutely no provision made for conducting such heat away.

The second, while not intended as a proposed design, represents an



A comparison of sparking plugs, showing how the heat could be carried from the point of the central electrode.

idea which naturally occurs to the practical rider. We desire air-cooled plugs. We find that the central electrode is the offending part. The obvious course is to design the aforesaid central electrode so that it will be exposed to as little heat as possible, with ample provision for instantly conducting that heat away and dissipating it.

In this design the plug is so arranged that a very small portion of the central electrode is exposed to the hot gases, while all possible provision is made for conducting such heat as it accumulates towards the head of the plug. I believe that a plug, designed on these lines, would not cause pre-ignition, even on an A.B.C. or Scott engine, and that its use would remove half the difficulties of the heavy fuel question. My experience is that, with a heavy fuel, the modern carburetter, fitted with an efficient hot air intake, fills the bill; all we want is a sparking plug, the central electrode of which will keep reasonably cool. H.M.B.

## AN OVERSEAS CLUB.



A gathering of Australian motor cyclists in the National Park, Adelaide, on the occasion of the first outing of a newly formed motor cycle club.

**A** NEW club, which will develop the social side of the pastime, has been formed among motor cyclists resident in Adelaide, South Australia. Notwithstanding the fact that the members ride various makes of machines, ranging from lightweights to powerful twin-cylinder sidecar outfits, they have adopted the name of the "Social Harley-Davidson Club." Why the Milwaukee firm should be so favoured we must confess to ignorance, particularly as prominent in the photograph reproduced may be recognised an American Excelsior and several British machines, among them Humber, Douglas, and Triumph. There may be some latent reason for this, and Britishers will be curious to hear the explanation.

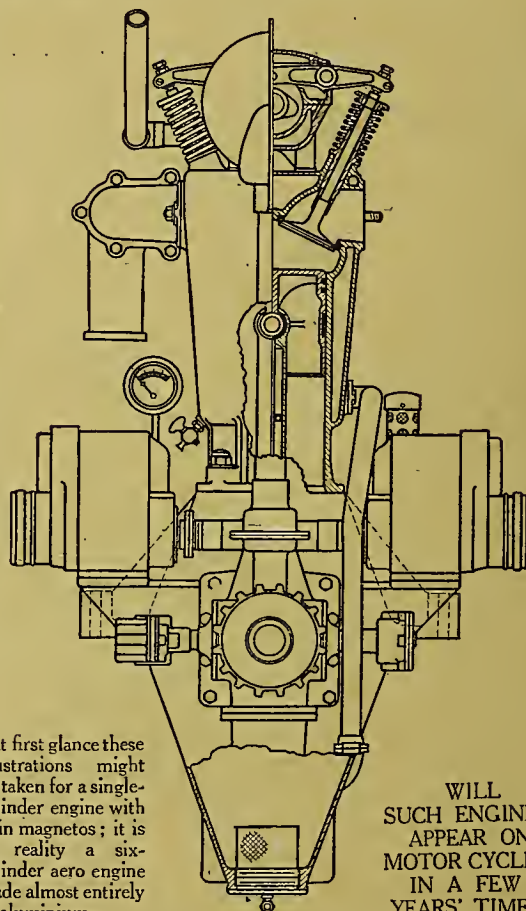
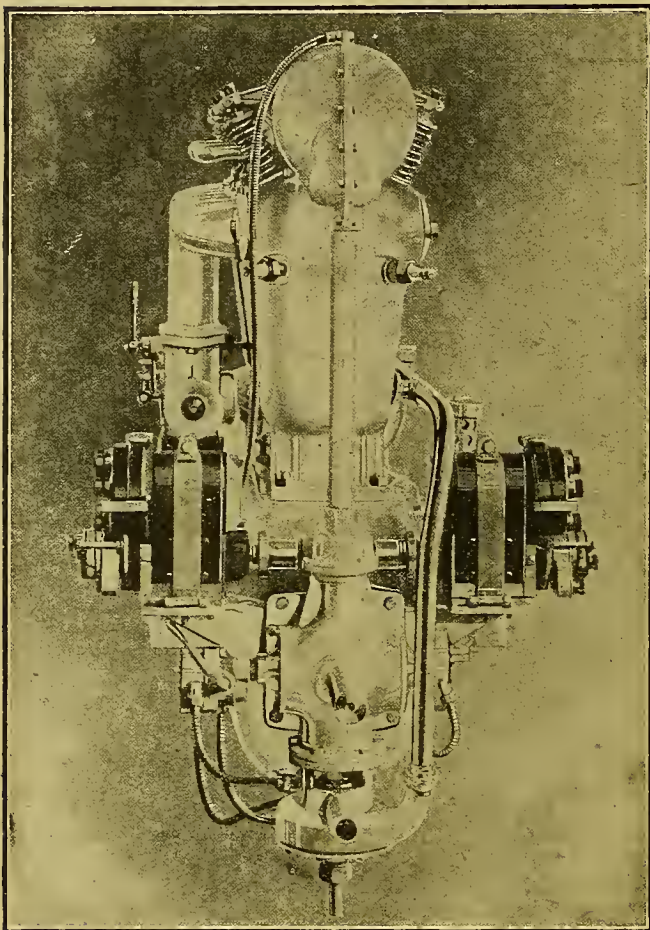
The formation of the club has for its object the holding of summer outings and social evenings once a month in the winter, when lectures will be given on subjects of particular interest to motor cyclists. Outings for wounded soldiers, too, have been arranged.

Our Overseas mail brought us particulars of the opening run held on the 2nd ult., when the destination was the National Park. There were no fewer than sixty motor vehicles of all shapes and sizes employed to transport a party of 200, and a highly successful day resulted. The membership roll is already over forty, and it is considered a good omen for the future prospects of the club that so many should have enrolled and such enthusiasm have been exhibited on the occasion of the first outing.



## AN ALUMINIUM ENGINE.

A System of Aero Engine Construction having Possibilities for the Motor Cycle.



At first glance these illustrations might be taken for a single-cylinder engine with twin magnetos; it is in reality a six-cylinder aero engine made almost entirely of aluminium.

WILL  
SUCH ENGINES  
APPEAR ON  
MOTOR CYCLES  
IN A FEW  
YEARS' TIME?

**W**E have previously laid considerable stress upon the effect which aeroplane engine design is likely to have upon motor cycle engines in the future, for the ideals are largely similar in both cases, and the methods of construction might also be much the same, although the designs must differ.

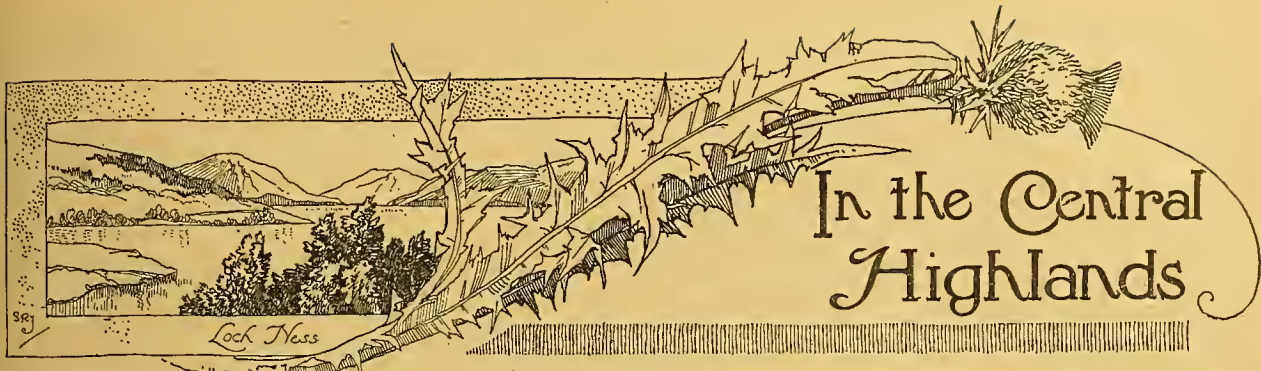
An aluminium aircraft engine known as the Wisconsin is a case in point, and end views showing the general construction accompany these observations. Its constructional details should be most interesting to motor cyclists, though there are many points which could not very well be embodied in a motor cycle, e.g., six cylinders and overhead camshaft. For the sake of lightness the engine is largely constructed of an aluminium alloy, the crank case, the pistons, and even the cylinders being of this metal. The cylinders are cast in pairs and lined with hardened steel, the heads being cast integral with the cylinders themselves. The tops of the pistons are well ribbed for the sake of strength, and yet they are light in weight; two rings are fitted, and the gudgeon pins take their bearings in the aluminium alloy itself, and this has proved highly satisfactory. The connecting rods are chrome-vanadium steel forgings machined all over, terminating in big lugs of the four-bolt type.

The crankshaft is of heat-treated nickel-chrome steel, having hollow crank pins to reduce the weight, and the camshaft is of the same material. This is placed above the cylinders, and contained in an aluminium casting attached to the cylinder heads, in which are oil troughs for the purpose of lubricating the cams, which are integral with the shaft, and the operating mechanism; the excess oil is returned to the crank case through ducts. The camshaft runs in bronze bearings.

There are many other interesting features, for which we must refer our readers to our contemporary, *The Automobile Engineer*.

The weight of the engine is 600 lb., and at 1,200 r.p.m. it is capable of exerting 130 h.p., while at 1,400 r.p.m. the horse-power rises to 145. This means that at the latter speed—quite a moderate one for a motor cycle engine—the weight comes out at nearly 4.14 lb. per h.p., or less than 15 lb. for a 3½ h.p. engine. Of course, it is not to be expected that this proportion would hold good for the lower powers, or that a 3½ h.p. engine could be less than 20 lb. in weight, but yet it is evident that a motor cycle engine constructed on these lines would effect a great saving in weight.





### A Sidecarist's Account of a Trip in Perthshire and Inverness.

**A**CCORDING to the sworn testimony of the motor cyclists, the driver of the Napier car in the party was only persuaded to accompany them on the assurance of help in any emergency. At 12.30 one Saturday morning a 6 h.p. Sparkbrook and a 6 h.p. Enfield, carefully loaded up with petrol, provisions, and the necessary implements for catching fish, set forth from Dundee for Tummel Bridge Hotel.

The Napier, with its load of five, probably to ensure arrival before the dinner had entirely disappeared, had set out an hour before, and our object was to overtake it in the neighbourhood of Dunkeld. The day was perfect, and the prospect of a short respite from the conditions of war service made us eager for the bracken and heather-clad hills of Perthshire.

Purring along delightfully in the Enfield, the climb up the Birkie Brae seemed like level ground, but some pot-holes impossible to avoid almost led to a disaster.

#### A Petrol Leakage.

The luggage on our carrier consisted of a tin of the precious fluid, petrol, and it had been strapped and corded so securely (?) by our friends somewhere behind in the Sparkbrook that even Hudini himself could not have removed it inside fifteen minutes. One terrible bump over a sample pot-hole, however, and we had a "trailer" usually associated with a boy and a dog. Pulling up quickly, we saw our two-gallon tin following us at the end of about eight yards of rope and strap, and at each bump leaving a little circle of moisture on the parched road. Locating the leak, we propped the precious tin in the sidecar, thanking the Enfield designer for his thought in providing such extra room, and we then waited the arrival of the "strappers and fixers."

Over the next five minutes we draw a veil, and it was only on the appearance of veal and ham pies, etc., that peace was declared. Once refreshed we again took the lead—we had the only speedometer—for the famous Tullybacart hill and the Vale of Strathmore. We had just commenced the descent of the hill when the "Spark" driver pulled alongside, and with a sarcastic smile suggested that we need not walk any further. With a wave we offered to

follow, but just at that moment a "phizz" made us look and the man in a hurry was forced to draw in at the roadside with a deflated back tyre.

#### A Useful Refinement.

Then the ears of the builders of the Sparkbrook must have tingled, for we gazed in admiration as the proud owner slid out his back wheel, slipped in a new tube, and was ready again in a very few minutes. On we went with the whole glorious Strath before us, away through quaint old Coupar Angus, and thence by the charming village of Meikleour with its ancient cross and famous Brankstone. Then came our turn. Just as we were admiring a lovely farmyard scene another "phizz," this time on our own back tyre, called for attention.

Our prolonged stay in that farmyard was due to tyre troubles, and the remarks of the rustics about our "detachable tyres" added much to the joy or otherwise of the occasion. Having now given the Napier as much start as we could afford we put a little more vim into our pleasure, so that the sounds of the hay cutters and other agricultural implements became entirely obliterated. Caputh and Dunkeld, where the Scottish Horse were resting after their terrible time at Gallipoli, were soon passed, and we wound along the main road to Inverness through some of the finest scenery in the Highlands. The Tay, still in spate from the recent heavy rains, ran some hundred feet below, and the ever-changing views of both river and rock were extremely beautiful.

Hidden from view under the trees alongside a tumbling hill-stream was the Napier and its occupants, the latter packing up the baskets of fragments that are the inevitable results of a feast. When the cheers announcing our arrival had echoed away up the Glen we unpacked our "provision department," and after a wash in the brook partook of a second lunch.

#### A Lusty "Stone-putter."

Meanwhile, the "car cargo" indulged in air-gun practice and "putting the stone," which latter game was terminated when a particularly vigorous member of the



The amateur gypsies preparing the fire in Rannoch Wood.



### In the Central Highlands.—

party "put" the stone right to the corner of the road and nearly sent a vehicle down into the river.

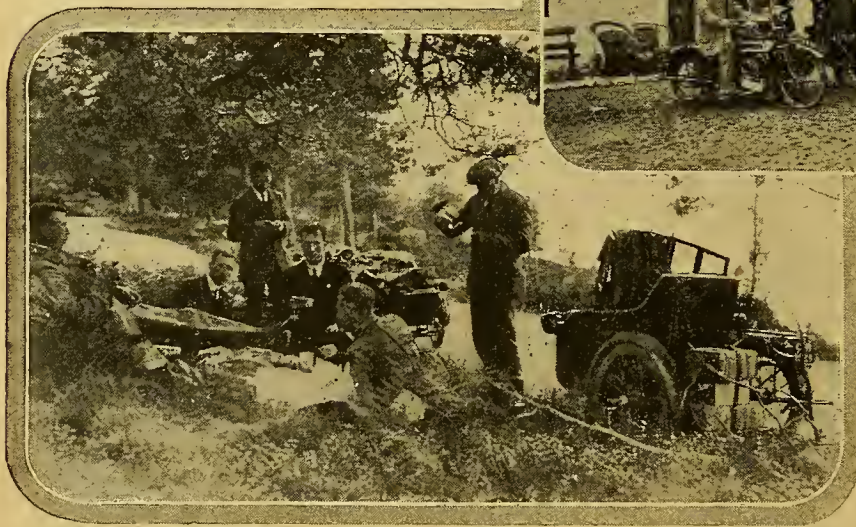
Our flasks (Thermos, please) emptied, and our fragments collected, we set off *via* Pitlochry, and the climb through the pine woods to Queen's View, Loch Tummel. Any strangers who may take this route must exercise great care when turning down from the Inverness road, as the bend is very acute and the hill steep, and immediately on crossing Garry bridge another sharp turn with a stiff hill calls for extra caution. The road here is very beautiful—just a long avenue of pines, but owing to the great demand for timber huge tracts of forest are being cleared, and the drawing of heavy lumber waggons over the roads in all weathers has rendered the surface terrible in places.

### The Queen's View "Mist."

Several of our party had never seen Queen's View, Loch Tummel, and as we neared the locality excitement became evident. "Excelsior" is the motto on this bit of road, for it is a climb all the way, but just as we saw the summit a real Scotch mist and heavy drizzle blotted out the whole

After a smoke we unpacked the rods, adjusted the bait, and went our several ways to fish—but not all to catch, alas! One novice returned, weary and wet, with a single trout. Another member also announced one capture, and would have caught more except for the fact that his next fish was whipped out of the stream so vigorously that it looped the loop several times round a high branch of an overhanging tree, and in proof of the story "is hanging there to this day." Our fisherman proper reported—and produced—fourteen, a fact that made us all feel proud.

Supper on the seats outside the hotel, with the cloud-capped hills gradually disappearing from our view, a



(Upper) Starting from Tummel Bridge Hotel. The sidecars are a Sparkbrook and an Enfield  
(Lower) Lunch on the road that runs alongside the shores of Loch Rannoch, under the giants of the Black Wood of Rannoch.

scene. However, we left our machines and climbed out to the edge of the jutting crag, pointing out as well as we could the points of interest. Had there been a visitors' book we would have copied the entry of a Ben Nevis climber under similar circumstances who wrote, "I've seen the mist but 'mist' the scene." A short run at the legal limit down the side of the loch, and with a sharp turn we are jerked over the well-known hog back bridge to our home for the night.

One of the benefits of motor cycling that is not sufficiently emphasised is the glorious appetite and sound digestion that always mark a long run, and the waiting maid at Tummel Bridge Hotel would bear eloquent testimony to the efforts of our party at the dinner table.

quiet smoke, and then off to bed. A hearty "ham and egg" breakfast—and Tummel Bridge is famed for its H. and E.—and then began preparations for our journey.

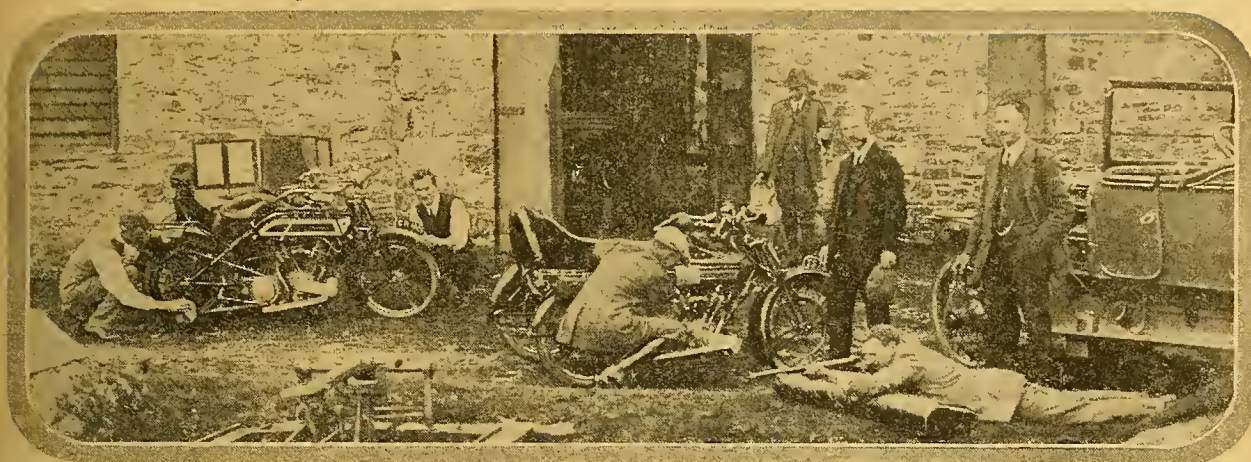
### A Stiff Climb.

At 10.30 we waved our "farewells" and set off for Loch Rannoch. The road is of good surface, and winds through a lovely glen to Kinloch Rannoch.

The hill at Dunalastair, however, is a terror, and needs very careful driving. The gradient at the bend must be about 1 in 4. Of the road round Loch Rannoch it is difficult to write. Certainly it is one of the most charming lochside roads in Scotland, and on this lovely morning, with the boatloads of farmers and crofters in their Sabbath "bravs" singing on their way to church, it was lovely indeed. About five miles up the south side of the loch we chose a spot for lunch, and awaited the arrival of the Napier. Slowly the minutes dragged on—half an hour passed and still no news, and we had almost given up hope when the truants roared up to us. They had gone straight on past the end of the loch for four or five miles before discovering their error.

Luncheon in the shadow of the remaining giants of





Polishing up in the Tummel Bridge Hotel yard for the second day's run. Note the effective windscreen on the Sparkbrook sidecar.

the Black Wood of Rannoch, a little fishing but no fish, a little potting at the target, and then away we went again.

We set off for the long and heavy climb over the shoulder of Schiehallion to Whitebridge. The district here is just a chaos of hills and glens with corkscrew roads, but of such beauty that the equal is seldom seen. On the summit we stopped and added our mite to the cairn that is rapidly growing, and to admire the

glorious expanse of mountain, moor, loch, river, and forest.

From Whitebridge we have a four miles descent to Coshieville, and there joined the Tay Valley and ran along by the cultivated land to Weem, where we had tea under the beeches.

By this time the rain had begun to fall, and after waiting threequarters of an hour for the "Spark" and the Napier, we set off for home.

## News from a "Tank" Operator.

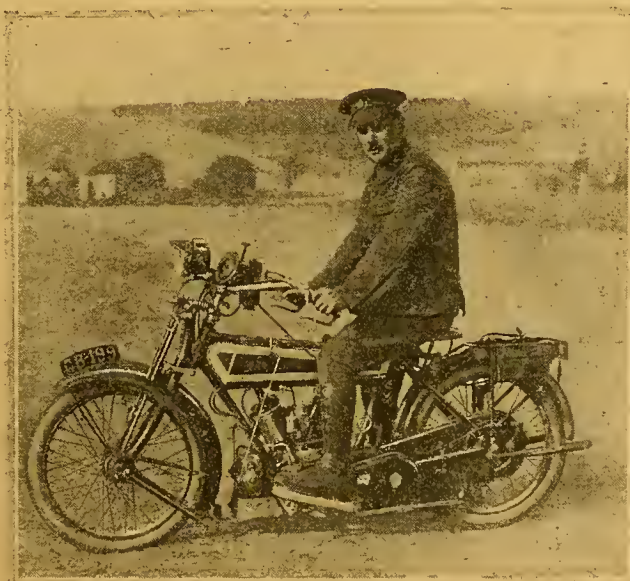
**A** GUNNER of the Heavy Section, Machine Gun Corps, the section operating the famous "Tanks," writes from France as follows:

"Our daily life goes on satisfactorily here. We are working rather harder now on a part of our training that had fallen into arrear somewhat before we left England, but there is nothing to complain of. In fact, compared with the men in the trenches, we are having a very easy and comfortable time, though the folk at home might consider it a rough life enough.

"We are all briskly employed in some sort of work or another. Fortunately the weather has been brilliantly fine and warm, with congenial autumn sunshine all day long, so you can imagine how this, and the fine performance our corps put up in its first experiences of action, has bucked us all up. The men are all as cheerful as can be, and one could not wish to be among a better lot of fellows. This is a very

quaint little French village in a typically pleasant community. Everybody lives happily together in tumble-down little houses, with the manure heap just outside the back door and the pigs and fowls wandering in and out of the kitchen quite like members of the family. The

folk are desperately hard-working and thrifty, but are very civil-spoken. I am trying hard to improve my French; such an opportunity must not be lost. There is a fine old chateau hereby, and a church with a fantastic tower and spire just like an illustration of H. R. Millar's in the 'Strand' fairy stories. There are a few cafés where light wine and sour beer are bought. We are an early-rising corps. Reveillé at 6 a.m., and most of us are in bed by 9 p.m. The papers give very good accounts of the performances of our corps, and we are all delighted to think that our comrades have made so brilliant a beginning. One feels proud of belonging to a corps that is helping to make history."



Sgt.-Artificer C. Collins, A.S.C., M.T., a Coventry motorist attached to armoured cars, who enlisted in the Motor Machine Gun Service during the early days of the war. Owing to an accident, Collins is at present in hospital in England. His three brothers and four brothers-in-law are serving with the Colours.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### To Assist Pedalling.

Would a two-stroke, 2in. x 1½in., develop enough power to be used as a cycle motor after the style of the J.E.S.? Please say the approximate power under good conditions.—R.L.B.

Such an engine would have a capacity of about 75 c.c., and if well designed and soundly constructed should answer your purpose. It should give about ¾ h.p.

### Slow Running.

(1.) I have a 1914 6-8 h.p. Rex, fixed gear, solid front forks—the firm's Brooklands model. No doubt you know the kind of machine. As I wish to get very slow running, would you be kind enough to give me your opinion on the matter? I have a B. and B. carburetter on now, but as I want to go beyond carburation to obtain slow running. (2.) I thought of a Philipson pulley. What would you suggest using?—W.L.E.F.

(1.) To obtain slow running it is necessary to be very careful to eliminate all air leaks between the carburetter and the engine, and to use a small jet. The spark can also be retarded to some extent, but to run for long on a much retarded spark is likely to cause overheating. Do not set the plug points too near together. (2.) We can thoroughly recommend the Philipson pulley.

### Lighting.

I should like to know whether a motor cyclist has any right on the road if he pushes his machine after lighting-up time without front and rear lights. If he has not, what is he to do with his machine, if there is no house in the immediate neighbourhood? Recently I had to push my motor bicycle because the water had got in the gas pipe of my acetylene generator. A pedal cyclist ran into me while I was pushing my motor cycle, and was thrown badly. Has he any claim? I was pushing the machine on the left side of the road. He was riding too fast for safety, and did not see me till he was right upon me, though he had a good light which would undoubtedly shine on my rear light glass, which was knocked off by the force of his impact.—N.F.G.

The latest ruling is that a bicycle (and we presume a motor bicycle would be included) may be pushed when unlighted, provided that it is kept at the extreme left-hand side of the road, but, if your mishap occurred before this ruling, we are afraid that you would be liable, as the motor bicycle then came into the same category as a handcart, which must show

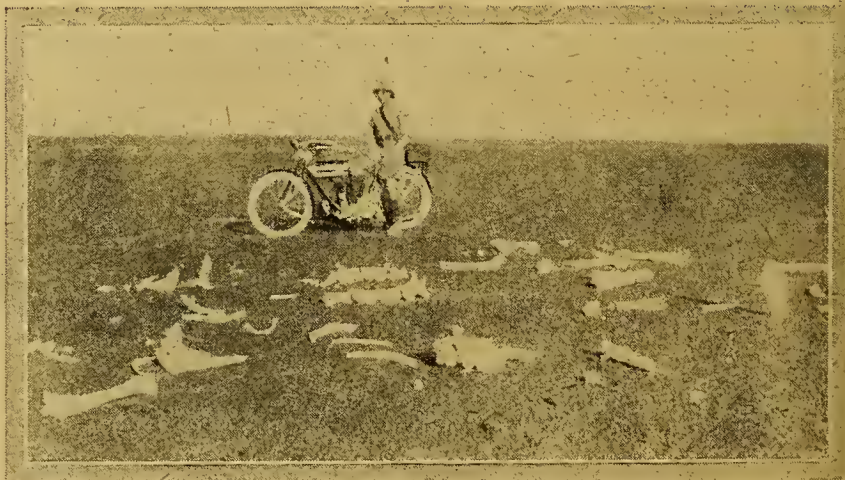
a white light to the front and a red light to the rear. It is rather a difficult question to answer, but this is certainly a view which the Courts might take. Of course you might plead that the cyclist was riding faster than he ought to have done, but it would be very hard to persuade a Court that he was responsible. The push cyclist would always be given the benefit of the doubt in a case against a motorist.

### Petrol Consumption.

I have been troubled for a long time with an excessive petrol consumption. The machine is a 1915 model, twin-cylinder, three-speed, with cylinders of 70x64.5 mm. bore and stroke, c.c. 496, Amac one-lever carburetter. I have taken an immense interest in motor cycles since I became a rider in November, 1907, and this will be the ninth machine I have had. I had a 1911 P. and M. (sold recently), which did me yeoman service, and with an Amac carburetter has been running 110 m.p.g. I began by fitting a new carburetter, viz., a pilot jet B. and B., really a magnificent hill-climber, but I could not improve on 50 m.p.g. I carefully noted that the joints to cylinders were air-tight, etc., and by very careful driving I once got 62 m.p.g. average. I then obtained an Amac carburetter (standard), latest model, 28 jet, and found an improvement, though it did not climb hills as well. On the advice of a friend, I fitted a

25 jet, when I noted it would then take full air, but the climbing powers were, of course, further reduced. I managed to get about nineteen miles to a quart of petrol, which works out at about 76 m.p.g.—best I have done yet. The timing of valves and spark has been noted twice, and corrected and checked in accordance with the makers' directions, and all seems quite in order. The compression of the front cylinder is not so good as the rear, and as the inlet valve guide appears worn I am renewing it. Would this give rise to a marked increase in petrol consumption through air leakage? I know the extreme importance of having the junctions of the T inlet pipe and the cylinders absolutely air-tight. Is it also needful that the junction of the T inlet with the carburetter shall be as air-tight?—J.H.

You cannot expect quite the same fuel efficiency in a twin as in a single, but you certainly ought to get better consumption than you have been doing. It is important that all joints between the carburetter and engine should be air-tight, but a leak would be more likely to affect slow running than petrol consumption. We are inclined to suspect a leak in the tank or tubing. If you put a little paraffin with the petrol, this will easily be detected if it exists. A high compression tends to economy, and, of course, there must be no leaks in the engine past the piston rings, valves, valve caps, or sparking plug.



Gnr. A. Templar, of the — Light Armoured Motor Battery, M.M.G.S., Egyptian Expeditionary Force, with his Triumph in the desert. In writing he remarks that the scene is by no means typical, for in most parts either loose stones or dunes abound. Note the skeleton remains in the foreground.



**A Cracked Cylinder.**

?

I have a 4½ h.p. single-cylinder 1916 model machine, the compression of which has not been very good lately. I removed the exhaust valve with an idea of grinding it in, and was surprised to find a crack in the cylinder in the wall between the exhaust valve and the main chamber. I presume this has partly to do with the bad compression, and would be glad of your opinion as to the cause, and whether there is any harm in continuing to run the machine.—P.J.T.

This, of course, would account for the loss of compression of which you have been complaining. The best plan would be to submit the cylinder to a firm of welders, and they will tell you on inspection if the crack can be welded or not. It may eventually extend, and there will be further loss of power. It is a matter which should be seen to as soon as possible. The cause is probably due to overheating, and consequent unequal expansion of the metal of which the cylinder is composed.

**Loss of Compression.**

Q.

Having reason to be dissatisfied with the compression of my 1916 6 h.p. twin (it could be wheeled along quite easily on top gear), I decarbonised the cylinders and piston and ground in the valves. I find now, after a run of fifty miles, that the compression is improved, although I can still wheel it along with top gear engaged without much effort. The front cylinder does not run with nearly so much power as the rear one. On the stand, at comparatively low speeds, the engine will instantly stop if the back cylinder is shorted, but if the throttle is opened about half it will continue to fire, but rather weakly. The spark is very strong, and the plug seems all right. The valves are correctly adjusted, and the inlet pipe, under the oil test, appears perfectly air-tight. The rings are quite good, and clean right round. I use a Binks three-jet carburettor, and the only reason I can think of as the cause of the trouble is that the charges of gas to each cylinder are not of equal strength. When the front cylinder is shorted it makes no appreciable difference to the running of the engine on the stand. I am completely at a loss as to what to do, and I should feel greatly obliged if you would suggest a remedy. I always understood that it required a good deal of effort to push a motor cycle against compression.—PUZZLED.

The trouble of which you complain is rather puzzling, as everything appears to be satisfactory from what you say in your letter. Are you sure that the valve clearances are correct, as unless the valves close absolutely you will get a leak of compression? If the leakage is not at the valves, valve caps, or plugs, it must be at the piston rings. It is rather difficult to get these V twin-cylinder machines to run with each cylinder giving equal power, but there should not be much divergence in the case of a modern V twin with mechanical inlet valves. It is just possible there might be a blow-hole in your cylinder.

Q.

**Auto-wheel Licences.**

Could you tell me what licences are required for an Auto-wheel?—F.L.

The licences for an Auto-wheel are the same as for any other motor cycle, viz., Inland Revenue £1, driving licence 5s. In addition to this, 5s. must be paid for registration. The first two are paid annually. If, however, the Inland Revenue licence is taken out after October 1st the charge for the remainder of the year is 10s.

**IMPORTANT NOTICE.****GOODS MADE IN GERMANY.**

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE &amp; SONS LTD.

**READER'S REPLY:****Automatic Inlet Valves.**

Like "L.F.I." in your "Questions and Replies" columns I had an automatic inlet valve 5-6 h.p. twin which gave a lot of trouble by blowing back past the valve case seatings, which had only a very narrow ledge. The copper asbestos washers supplied by the makers were perfectly useless. The tighter the cap was screwed the worse the trouble. Seccotine, gold size, and various things were also tried with asbestos cord, but were not always satisfactory. Eventually I found it quite cured by discarding the asbestos and using a thin rubber washer cut out from an old I.R. hot water bottle. Put the washer in position, and screw the cap lightly. Start the engine, and as the rubber gets melted with the heat gradually screw down the cap until there is practically nothing between the valve

casing and the seating. This, in my case, would last until I wished to remove the valve for cleaning.—E.J.C.

**RECOMMENDED ROUTES.****CARNARVON TO FISHGUARD.—M.W.**

Carnarvon, Beddgelert, Harlech, Barmouth, Dolgelly, Dinas Mawddwy, Machynlleth, Aberystwyth, Aberayron Cardigan, Fishguard.

**COVENTRY TO CARDIFF.—R.R.**

Coventry, Warwick, Stratford-on-Avon, Bidford, Evesham, Tewkesbury, Gloucester, Newnham, Chepstow, Newport, Cardiff. Approximately 110 miles.

**CHINGFORD TO DROITWICH.—A.V.L.**

Chingford, Enfield, Chipping Barnet, St. Albans, Tring, Aylesbury, Bicester, Aynho, Banbury, Stratford-on-Avon, Alcester, Droitwich.

**BASINGSTOKE TO BEDFORD.—F.J.D.**

Basingstoke, Swallowfield, Reading, Henley, Great Marlow, High Wycombe, Amersham, Tring, Dunstable, Ampthill, Bedford.

**HEMEL HEMPSTEAD TO WINCHESTER.—H.C.B.**

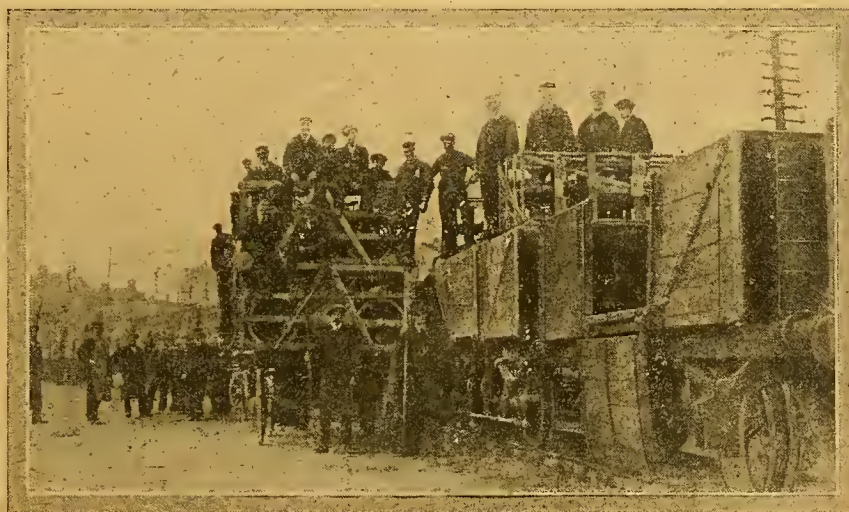
Hemel Hempstead, Watford, Rickmansworth, Uxbridge, Staines, Bagshot, Blackwater, Hartley Row, Basingstoke, Winchester.

**WOLVERHAMPTON TO COLCHESTER.—C.C.**

Wolverhampton, Walsall, Fazeley, Atherstone, Smockington, Lutterworth, Husbands Bosworth, Market Harborough, Kettering, Thrapston, Huntingdon, Cambridge, Linton, Haverhill, Halstead, Colchester. Approximately 160 miles.

**PORTSMOUTH TO BIRMINGHAM.—W.P.W.**

Portsmouth, Cosham, Fareham, Bishop Waltham, Winchester, Whitechurch, Newbury, East Isley, Abingdon, Oxford Woodstock, Enstone, Shipston-on-Stour, Stratford-on-Avon, Birmingham.

**BRITISH MOTOR CYCLES FOR THE ALLIES.**

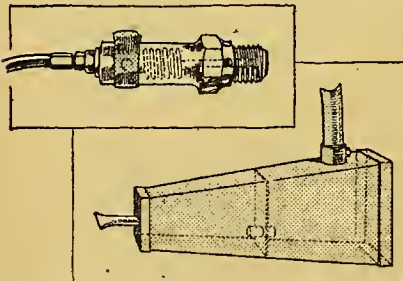
Recently the War Office authorities sent urgent instructions to Messrs. Douglas Bros., Bristol, for a large number of motor cycles, and our picture shows G.W. Railway employees who in a few hours made up a complete train of Douglas machines.



# The 1917 Sun Two-stroke Lightweight.

General Excellence maintained with Numerous Improvements in Detail.

THERE seems to have been a tendency of late to relegate the two-stroke machine to the background, and we have, not infrequently, heard the opinion that its popularity will not last. We are at a loss to know on what foundation such statements are made, unless it be the unfortunate experiences of those who have discovered that some two-stroke models were carelessly designed and slung together in a very reprehensible fashion. But the thoroughly good two-stroke engine will always command a considerable popularity; its even, smooth running, quick acceleration, and simplicity will outweigh any minor disadvantages, most of which are rapidly being eliminated; noisy exhaust, oil slinging propensities, extravagance in petrol, and carbonisation now cause very little, if any, trouble to the owner of a modern well-designed engine. The Sun Cycle and Fittings Co., Ltd., Aston Brook Street, Birmingham, for several years past have marketed a

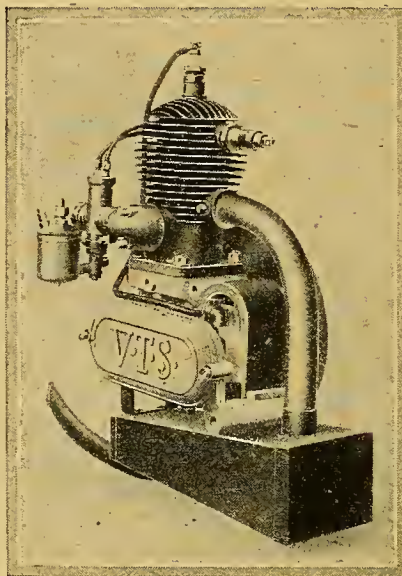


(Top) The decompressor or release valve.  
(Below) The new pattern silencer of curious shape.

very reliable series of lightweight models, and the principal features of these are being retained in the new models for 1917.

## The Engine Unit.

The heart of the machine is still that excellent engine, the V.T.S., of British manufacture, dimensions  $70 \times 70$  mm., giving 269 c.c., or approximately  $2\frac{1}{2}$  h.p. The piston is improved by the fitting of



The latest type of engine complete with the new silencer, and incidentally showing method of mounting the British-made magneto.

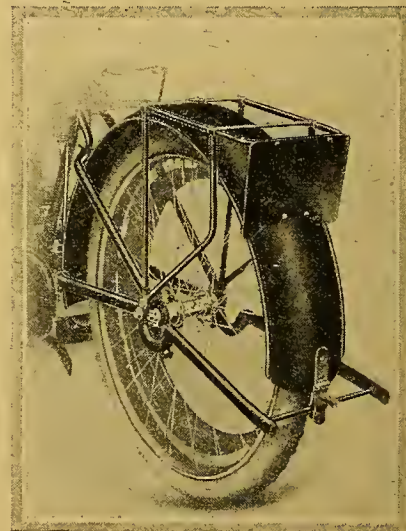
deeper rings,  $\frac{1}{4}$  in. in place of  $\frac{3}{8}$  in., and the taper gudgeon pin is still further held by split cotter pins at each end, the sides of the piston being recessed to accommodate them. The crankshaft and connecting rod, phosphor bronze bushes, cylinder and transfer ports remain as before. A very neat type of decompressor or release valve is fitted, operated by Bowden cable. The casting of the crank case, magneto chain case, and magneto platform all in one piece was always an excellent feature of the V.T.S. unit, and its retention is a matter of course. A British-made magneto, the Thomson-Bennett, is fitted as standard, a sign of the times which points to the rapid advance of British magnetos, and gradual

ousting of the numerous foreign makes. The silencing of the exhaust is one of the most notable improvements, an unusual type of exhaust box being employed. It is rectangular in section and tapers from front to back; the interior is divided into two chambers, and the exhaust ultimately reaches the open air through a flat-ended tube.

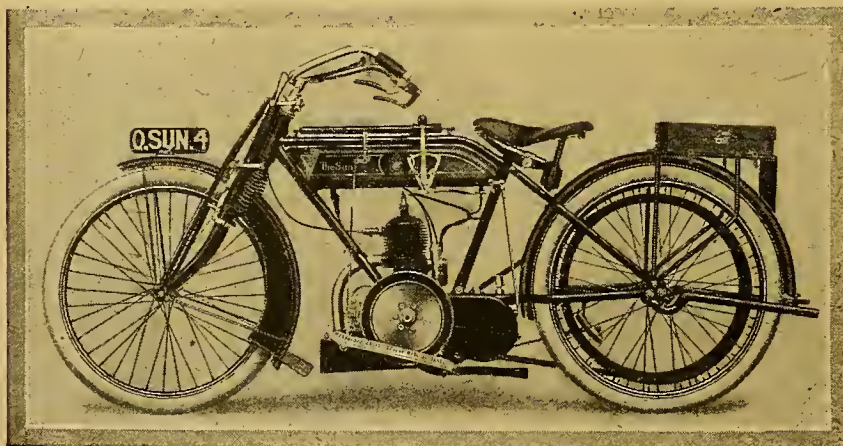
An Albion countershaft gear box is incorporated in the two-speed models, driven by Hans Renold chain running in an oil bath gear case. A  $\frac{3}{4}$  in. Dunlop belt completes the drive.

## Mudguarding.

Perhaps the chief alteration in appearance is the back mudguard and carrier. This guard is now made 7 in. wide, and flatter in section than usual, set well up to give plenty of clearance, and a neat grooved fitting to the bottom stays is added. Side wings are omitted, and it is next to impossible to get the guard choked up with mud. The carrier is



On the 1917 Sun the rear mudguard is of exceptionally wide dimensions.



Flywheel side of the 1917 model  $2\frac{1}{2}$  h.p. Sun-Vitesse lightweight.

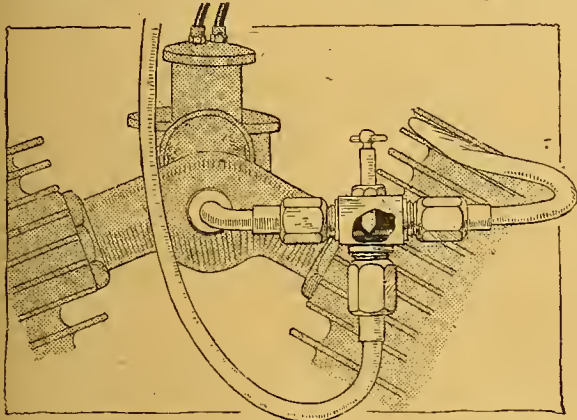
set further back and slightly lower, and forms in one with the guard a very substantial piece of work. In other respects the various parts remain as in 1916: Amac or B. and B. carburetter, lubrication by separate supply through Best and Lloyd sight feed to a shelf in the top of the crank case, and by drilled ways to the main bearing, and through the crankshaft to the big end. Tank, frame, Druid forks, brakes, and all the usual fittings are of noted British manufacture, and go to complete an excellent specimen of the two-stroke lightweight motor cycle. As must be expected in these times, prices are increased somewhat, the two-speed model as described being marketed at about £39.

It is very interesting to note that a number of these machines are destined for Portugal, our ally being one of the latest to buy in the English market.



## A Simple Attachment to Facilitate the Use of Paraffin.

**A** FURTHER addition to the already long list of devices for assisting in the use of heavy fuels is being made by Messrs. A. Pilkington and Co., 56, Aston Road, Birmingham. Simplicity is its particular advantage, and it does not necessitate the cutting about or derangement of the existing carburetter or induction pipes. It consists of a brass T



A device, easily attached, which enables heavy fuel to be used with the existing carburetter.

union with copper connecting pipes, one tapped into the induction pipe, one turned into the fins to supply hot air, and the lower pipe connecting to a small auxiliary tank of petrol. Into the centre of the brass junction is fitted a small needle valve, controlling the petrol supply.

To start up, this valve is set to give a very small supply; the best position is easily found by experiment, and the petrol turned on. This will give sufficient supply for slow running, but more power can be obtained by opening the needle valve. The rider can proceed for a short distance, a hundred yards or so is all that is necessary, until the engine has warmed up, when the change to the heavier fuel can be made without dismounting. First open the throttle, and for a yard or two a mixture of petrol and heavy fuel is in use, then close down the needle valve and the engine will carry on without hesitation. It is, in fact, a miniature carburetter, simple and perhaps primitive, it is true, but none the less efficient. The actual vaporisation of the heavy fuels is left to the ordinary type of carburetter. Messrs. Pilkington and Co. also supply a very good type of auxiliary tank, suitable for use in conjunction with this starter, a description of which appears in our issue of September 28th last.

## CATTLE ON THE ROAD AT NIGHT.

Lights to be Carried by Persons Driving Animals. A Real Danger Minimised at Last.

**A** MOST important regulation under the Defence of the Realm Act has lately been made, which deals with the question of cattle driven on the highway after dark. We refer to the matter editorially this week. The order reads as follows:

(1.) Every person who shall cause or permit—

(a) Any horse, mare, gelding, mule, ass, bull, ox, cow, heifer, steer, or calf (in this Order referred to as cattle); or

(b) Any sheep, lamb, goat, kid, or swine to be driven or led, during the period between half an hour after sunset and half an hour before sunrise, along any street, highway, or road to which the public have access, shall provide a lamp capable of showing a white light both to the front and to the rear, which lamp shall be carried at the rear of the animal, herd or drove.

Provided that, in the case of an animal or animals not exceeding four in number which are being led, the lamp may be carried by the person leading the animal or animals, instead of being carried at the rear.

(2.) If the herd or drove contains—

(a) More than twenty head of cattle, or

(b) More than 100 head of sheep, lambs, goats, kids, or swine,

he shall provide a second lamp also capable of showing a white light to the front and to the rear, which shall be carried in front of the herd or drove.

(3.) The person in charge of the animal, herd, or drove shall see that the lamp or lamps are properly trimmed and lighted and are carried in such a manner that the light is at all times visible for a reasonable distance, without obstruction, in the direction in which the animal, herd, or drove is proceeding, and also in the reverse direction; and the person carrying any lamp shall carry it accordingly, and shall, on the approach of any vehicle, swing or wave the lamp so as to indicate that there is an obstacle on the road.

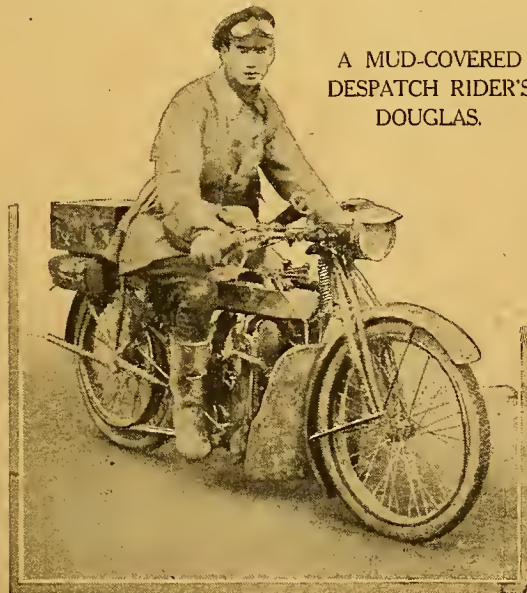
This Order shall not apply in the case of an animal which is being ridden or which is drawing a vehicle, or led at the

rear of a vehicle, on which the lights required by law are displayed.

This Order shall take effect on and after 22nd October, 1916, and shall apply to the whole of England and Wales.

This Order may be cited as the Lights (Driving of Animals) Order of 11th October, 1916.

A MUD-COVERED  
DESPATCH RIDER'S  
DOUGLAS.



This photograph will assist readers at home in realising the very bad road conditions in the French war zone during the winter months. The rider is L.-Cpl. J. F. Harvey, formerly in the motor trade in Liverpool, who joined the army three days after the outbreak of war.



**TIMES TO LIGHT LAMPS.**

GREENWICH TIME.

Oct. 26th	...	5.14 p.m.
" 28th	...	5.11 "
" 30th	...	5.7 "
Nov. 1st	...	5.3 "

**The Latest.**

Lights on cattle! After many years agitation, an order has been issued to the effect that all cattle on the roads at night must be accompanied by a person carrying a white light.

**Cooling the Plug.**

A water-cooled sparking plug is suggested in *The Light Car* published yesterday (Wednesday). Evidently the plug question is a troublesome one among light car owners as well as motor cyclists.

**Dispensing with the Road Test.**

Motor cycles are still tested on the road, but there is a possibility that a good deal of preliminary road tests may be dispensed with in the future if an electrical shop test of the completed machine be adopted. Such a system is described in last Wednesday's issue of *The Light Car*, showing how the power can be tested at the road wheels.

**Special Road Warning.**

A resolution was recently considered by the County Council of Hants. asking for a speed limit of ten miles per hour for the village of Liphook. The Council decided not to apply for a speed limit order, but to request the police authorities to prevent dangerous driving. The A.A. and M.U. has been requested by the local Council to assist in making this decision known to motorists passing through the village of Liphook.

**Increased Taxation—Abroad.**

The Australian Government proposes to increase the licence fees on motor cycles, and to prohibit all speed trials. It recommends these drastic proposals because, in its opinion, races and overloaded sidecars seriously damage the roads. Moreover, it contends that motor cycles are the noisiest machines on the road, hence the proposed prohibition of trials.

A special sub-committee has been appointed by the Victorian and N.S.W. Motor Cycle Clubs to prevent, if possible, these proposals being carried into effect. It points out and illustrates a report showing the serious damage done to the roads by untaxed horse and bullock teams.

To suggest that rubber tyres damage some of the Australian roads is worse than accusing a camel of damaging a desert tract in the Sahara.

**An Error.**

A case recently came to our knowledge of a motor cyclist being caught in a trap and accused of doing over twenty-two miles per hour, whereas his speedometer never exceeded seventeen miles per hour at the outside. An error of one second was found between the two watches, and the victim was exonerated.

**Another Problem Solved.**

We have heard of a rider whose inner tube blew out, resulting in a hole several inches long, and quite beyond ordinary patch repair. He solved the problem by tying string round the tube tightly an inch or two from each end of the burst. He then wrapped his handkerchief tightly around the tube at the hole. This primitive repair enabled him to reach home safely, and without damage to the tyre.

**Cycle Cars Very Old.**

The writer of the article on "Automobiles" hides no simple facts in his contribution to the new book "Eclipse or Empire" just published. Touching upon the origin of cycle cars, this is what he says: "Cycle cars were originally British, but failed through lack of financial and manufacturing support. They were reintroduced in France, and again taken up and brought to maturity here, whilst the light car, as a development from them, is entirely British, and the British product is supreme."

**SPECIAL FEATURES.**

NEW DESIGNS (Illus.).

IN THE CENTRAL HIGHLANDS.

MILITARY NOTES.

**Report of Self-Sealing Rubber Co., Ltd.**

The twenty-first annual report of the Self-Sealing Rubber Co., Ltd., shows that the net profit for the year's working was £4,000. With the last year's balance of £299, and writing off income tax, the declared dividend is 12½% free of income tax. The sum of £2,511, less the directors' remuneration, is carried forward to next year's balance. A very satisfactory year!

**The Second-hand Shows.**

The Management Committee of the Manchester Automobile Club has given its approval to the forthcoming shows of second-hand cars in London and Manchester. This approval, especially applies to the Manchester Show, which will be held in the Exhibition Buildings, Royal Botanical Gardens, from December 1st to 9th of this year. It is hoped, therefore, that motorists in the Midlands will do their best to support the patronage of the Club Committee, either by visiting the show or by entering such cars as they may wish to dispose of, in order that the event may be an unqualified success.



Two hardened New Zealand campaigners—Cpl. A. J. Davies (left) and Cpl. F. C. Garland. After despatch riding in Egypt, New Zealand and the Dardanelles, they are back again in England, with a mileage of 40,000 to their credit. Their machines are 2½ h.p. Douglasses.



**More New Models in This Issue.**

Two entirely new designs are described and illustrated in this issue. The new V type two-stroke Vitesse engine is likely to create considerable interest, as this engine has been on the road undergoing private test for nearly two years.

**The National War Funds.**

At the week-end the principal war funds stood as follow:

The Prince of Wales's Fund (£3,468,925 distributed)	£5,966,954	0	0
The British Red Cross Fund	4,489,615	0	6
Tobacco Fund	115,955	0	0
The Queen's Work for Women Fund	170,798	4	2
Kitchener Memorial Fund (over)	358,000	0	0

**The Admiral Arbuthnot Trophy.**

The A.C.U. is at the present moment in negotiation with Lady Scott, the widow of the famous explorer and a well-known sculptor, for the execution of the statuette which is to form the trophy. It seems peculiarly apt that Lady Scott should be invited to undertake this work, being herself the widow of a distinguished naval officer.

**The Question of Bearing Pressures.**

We have received from Mr. J. L. Norton a communication on the question of bearing pressures in relation to long stroke engines. It will be remembered we published an article last week on the subject, and Mr. Norton takes exception to certain statements made, and says the article is based on erroneous assumptions, and that vital factors have been omitted. Mr. Norton is too occupied at the present time to write the necessary lengthy explanation of his assertions, but promises to do so as soon as an opportunity occurs.

**The Effect of Naphthalene Balls.**

In view of the attempts made by certain firms to place on the market multi-coloured balls smelling, and sometimes looking, like moth balls, which are claimed to remove carbon deposit from the pistons and cylinder heads of internal combustion engines, our sister journal, *The Autocar*, recently sent a sample box of these to Faraday House, whose experts report as follows: "The tablets consist of naphthalene ( $C_{10}H_8$ ) only. We consider that the tablets could not remove carbon deposit from the piston heads and combustion chambers of an internal combustion engine. The tablets are not of uniform weight. The mean weight of three tablets was found to be 1.48 gm. When this amount of naphthalene is dissolved in a gallon of petrol, the maximum increase in calorific value is 0.04% (i.e., 1 in 2,500, practically nil). The result would be the same with a mixture of paraffin and petrol. The figure given above shows that there could be no appreciable increase in the mileage obtainable by the addition of one tablet to a gallon of petrol. Our experience with very similar materials in actual engine tests entirely confirms the conclusions given above. (Signed) ALEXANDER RUSSELL, Principal."

**Petrol Permits in Ireland.**

We are informed that in Ireland it is necessary to have a police permit to purchase petrol in addition to the usual licence which is issued by the Petrol Committee on payment of the tax of 6d. per gallon. Steps are also taken to ensure that traders do not supply petrol in excess of the quantity authorised by the police permit.

**Singles v. Twins.**

The controversy started by "Road Rider" on the subject of the survival of the single-cylinder machine continues to produce a large number of letters, only a selection of which we are able to publish. Mr. J. L. Norton enters the arena this week, and, of course, champions the single, "the most mechanically and thermally efficient type of engine in use to-day." He asks the mileage per gallon of various 500 c.c. twins, as compared with singles of the same c.c.

**Single Cylinders.**

So far from the 500 c.c. single entirely disappearing, we heard last week that a firm hitherto specialising in big single-cylinders will enter long market a 500 c.c. mount. The post bellum 500 c.c. single-cylinder machine should be a great advance over the same sized engine of pre-war days in the light of the knowledge recently gained on the subject of ultra efficient engines.

**Donations Wanted.**

We are in receipt of an advance copy of an appeal for donations for the Cycle and Motor Trade Benevolent Fund; secretary, Mr. A. J. Wilson, 154, Clerkenwell Road, E.C. In issuing the appeal for donations Mr. H. W. Dover, of Northampton, the president, is following the example of last year's president, Mr. Harry Smith, in postponing the customary banquet until after the war. Without being a war charity the Fund has, in addition to its other beneficent activities, which have been uninterruptedly maintained, assisted in numerous cases of distress caused solely by the war. In many cases weekly allowances are being made to dependants of subscribers serving in His Majesty's Forces, while grants have also been made for subscribers on joining up to enable them to meet liabilities which have not been allowed for by the various State schemes. Together with the literature sent we have received a small booklet containing a few letters of thanks received by the Benevolent Fund during the last twelve months. Donations may be sent either to the secretary or to Mr. H. W. Dover.

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**Petrol Prices.**

The current prices of motor spirit in England and Wales generally are: First quality, 2s. 10d.; second, 2s. 9d.; third, 2s. 8d. per gallon. Motorists who are asked to pay more should write to the secretary of the Motor Trade Association, 157, Great Portland Street, London, W. In Ireland and Scotland prices vary according to the district.

**The Dixie Magneto.**

It appears that certain American magnetos imported since the outbreak of war had German magnets. A naval officer has again brought the matter to our notice, and we have elicited a reply from a firm of agents in this country, who state that the Government Departments are now satisfied that the magnetos imported into this country are entirely of American manufacture.

**Increase of Imports in N.S.W.**

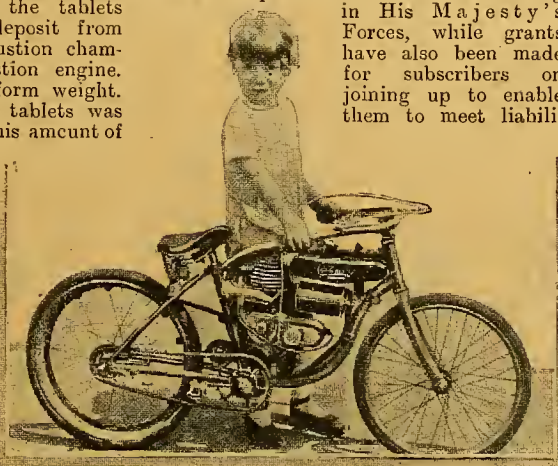
During the first half-year of 1915 and 1916 there were imported into the State of New South Wales motor cycles to the value of £20,498 and £36,407 respectively, representing an increase of £15,909. Rubber goods, chiefly tyres, during the same period increased from £59,034 for the first half-year of 1915 to £335,220 in 1916, this huge increase no doubt being occasioned by the absence of German-made tyres, and British makers wisely seizing their chances.

**Our Substitution Scheme.**

At this juncture, men are as much the coins of the nation's wealth as those of silver and gold. To the manufacturer engaged on munitions of war the first is indeed of more importance than the last, and as difficult to get. Those in need of assistance in this direction are reminded that the Editor of this journal has a list of experienced motor cyclists unfit for, and discharged from, military service, which he will be pleased to submit to any manufacturer who is in need of more hands or wishes to substitute eligibles by ineligible.

**Street Accidents at Night.**

We should say that in the case of 90% of the accidents to pedestrians who cross the darkened roads at night the drivers of motor vehicles are not to blame. Pedestrians often cross a street where there is no lamp, walk in the roadway instead of on the footpath, and cross over without looking both ways first of all. There would be a marked decrease in the number of accidents if it were laid down that all drivers travelling at a reasonable speed, and against whom no act of carelessness could be alleged, were exonerated from all responsibility in the case of a person being run over. If such were the state of affairs the man crossing the street would take greater care of his own safety, and much lighten the burden of the motorist who is compelled to drive after dark.



**A YOUTHFUL RIDER OF A LIGHTWEIGHT.**

Master George Dalmeanic, aged 5, a member of an American troupe of trick cyclists, with his specially constructed lightweight which he rides on both streets and stage.



## MILITARY NOTES.

### ITEMS OF INTEREST FROM CAMP AND BATTLEFIELDS.

#### A DESPATCH RIDER'S IMPRESSIONS.

THE Editor has received an interesting letter from Cpl. W. Pratt, the erstwhile P. and M. exponent, who was formerly a lorry driver with the A.S.C., M.T., more recently an instructor at home, and is now out in France again with the Heavy Section, Machine Gun Corps. At present he is acting as a despatch rider. He tells us he has many an interesting tale to impart, but, as he points out, at present secrecy forbids. Pratt says, "You may guess I am interested, and I know you are, on account of your connection with this section." He goes on to say that things are very, very different from when he was out in France last year. The artillery is amazing. It is one incessant roar, and one needs to be near the fighting line to realise its effect. He winds up by stating that the roads are indescribable.

#### TANK CREATORS—STILL THEY ARRIVE.

ALTHOUGH we published in our last issue a statement by Mr. Lloyd George, setting forth the names of persons chiefly responsible for the design and introduction of the "Tanks," we notice that in reply to a question asked by Capt. Burgoyne in the House of Commons as to whether the idea originated with the R.N.A.S., Dr. Macnamara, Financial Secretary to the Admiralty, stated that:

"There is no doubt that the idea of using armoured cars for trench warfare occurred individually to several people, and all the Admiralty can do is to take what appears in the official records as to who was responsible.

"The idea was suggested by officers of the Royal Naval Air Service from their experience of naval armoured cars in Flanders in the early days of the war. After various experiments by officers of



Cpl. W. Pratt, A.S.C., M.T., a popular competition rider before the war, mounted on a Douglas. Usually he piloted a P. and M. motor cycle.

the R.N.A.S., the late First Lord of the Admiralty (Mr. Churchill) instructed Mr. D'Eyncourt, the Director of Naval Construction, to undertake the design of a tank, or landship, capable of carrying out certain definite performances.

"The officers of the Air Dept. at the Admiralty primarily concerned were Commodore Sueter, Wing Commander W. Briggs, and Squadron Commander T. G. Hetherington.

"While the principal credit for the design of the 'Tanks' now being used at the Front rests with Mr. D'Eyncourt, the latter has mentioned the following gentlemen as rendering him valuable assistance:

"Mr. W. O. Tritton (Managing

Director of Messrs. W. Foster and Co., Ltd.); Lieut. D. C. Wilson, R.N.A.S. (now Maj. Wilson, M.G.C.); Mr. P. Dale Bussell, Contract Dept., Admiralty; Lieut. A. G. Stern, R.N.A.S. (now Lt.-Col. Stern, M.G.C.); Capt. Symes, M.G.C.; and Mr. F. Skeens, Acting Assistant Constructor."

#### IN THE TANKS.

THE Editor has received the accompanying letter and photograph from Gunner W. Hudson, who, together with his five colleagues, is a member of the Heavy Section, Machine Gun Corps. Curiously enough, the letter was censored, and certain deletions made, by Sec.-Lt. H. B. Elliot, who was formerly connected with *The Motor Cycle*. He writes:

"I have been asked by several of the boys on the enclosed photograph to send same to you, as they are six of the boys you passed for enlistment at Coventry last year, and all are out here doing their 'little bit.'

"The photograph was, of course, taken in England before embarkation, but we have all forgotten where.

"Curiously, six counties are represented, and all are very great friends, who did not know of the others' existence until they met at Coventry.

"I shall be glad if you can return photograph; all six send their wishes for the further success of *The Motor Cycle*."

#### A POSER.

A question from the examination paper for candidates for commissions in the M.T., A.S.C.: "The sparking plug on your Triumph cycle becomes unserviceable; you have no spare. How would you act?"



Six counties are represented in this group of men enlisted in the Heavy Section, M.G.C., by the Editor of *The Motor Cycle*. (See accompanying letter.)





A Canadian Scottie helping a Clyno ammunition sidecar out of a difficulty. This official photograph issued by the Canadian War Records Office shows the appalling state of the roads. Correspondents often attempt to convey an idea of the muddy surfaces, but the photograph reveals fully the unspeakable difficulties of transit. Even the caterpillar "tanks" would have trouble here!

#### A MOTOR CYCLIST THE FIRST TO CROSS THE ISONZO.

WE learn that Motor Cyclist Gino Ottoboni, of a Bersaglieri Cyclist Battalion, was the first motor cyclist to cross the Isonzo Bridge on his  $2\frac{1}{2}$  h.p. Frera, on the occasion of the taking of Gorizia. He says, "I put the first Italian wheel along that road, and it was certainly a great honour for me since the morning of May 1st, when I first began to work on this front."

#### A.S.C., M.T.

PROSPECTIVE recruits for the Motor Transport Section should note that, for the present, men passed in Class A cannot be accepted in this branch of the A.S.C.

#### HEROES OF THE "TANKS" HONOURED.

CAPT. A. M. INGLIS has been awarded the D.S.O. for having brought his tanks forward over very difficult ground. Although one of the wheels of his tank was blown off by a shell he succeeded in reaching his objective, and manœuvred through the whole operation.

Sec.-Lt. G. O. L. Campbell, on the occasion of his tank breaking down, removed all the guns to his commander's tank, and remained with him throughout the entire operation, personally taking charge of one of the guns. For this he receives the Military Cross.

#### R.F.C. REQUIREMENTS.

SKILLED fitters of all classes, as well as skilled blacksmiths and copper-smiths, are the only trades at present open to prospective recruits in the Royal Flying Corps. The need of the former is urgent. Men in category A are not now accepted as car drivers.

#### AFTER TWO LISTS OF INVENTORS.

ACCORDING to a letter written to the daily press by Mr. C. W. Pennell, chairman of Messrs. William Foster and Co., Ltd., Dr. Macnamara's statements as to the origin of the "Tanks" are disputed. Mr. Pennell claims that the credit for the only successful design of "Tank" is entirely due to Mr. W. A. Tritton, managing director of Messrs. W. Foster and Co., Ltd., and Maj. Wilson, and that the first "Tank" was built solely by Messrs. William Foster and Co., Ltd.

Mr. Pennell adds "that the idea of a protected and movable fort has been going begging for generations, and no one can truly claim to be the inventor of the idea. The man who has been able to evolve a practical, workable machine from the mass of ideas, suggestions, and requisitions of the many Government departments concerned is the man to whom the whole credit is due. Why has this credit been withheld?"

#### A COVENTRY MILITARY MEDALLIST.

GNR. W. LEE, of the Motor Machine Gun Service, who was one of the original No. 5 Battery recruited through *The Motor Cycle* exactly two years ago, and who has been serving in France for upwards of twenty months, has been awarded the Military Medal for gallantry and devotion to duty in action.

Five other members of the M.G.C. have recently received similar distinction.

#### "THE MOTOR CYCLE" IN FRANCE.

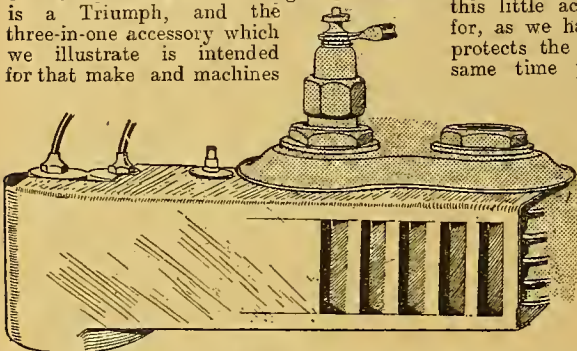
CPL. W. C. P., writing on behalf of a number of Despatch Riders in France, challenges the statement of a D.R. in the issue of the 12th inst., that a certain French agent charges the average price of 1 fr. 20 centimes, and even goes to the extent of 2 frs. 50 centimes for copies of *The Motor Cycle*. The latest writer considers that the statement is an exaggeration. All the men of his Signal Section have never failed buying this journal for a sum not over 30 centimes, the average price being about 25 centimes. He points out that the journal may be bought from the enterprising *garçon*, just behind the line, for the sum of 30 centimes.

We learn that Lt. S. A. Rowlandson, who, by the way, is to be married shortly, is now attached to the Heavy Section, M.G.C.



## A UNIQUE TROUSER GUARD.

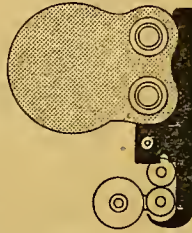
THERE are quite a number of trouser guards in use on single-cylinder motor cycles, but we have seen no design, with the exception of the one we are about to describe, which is arranged so that the guard collects air and deflects it upon the valve ports, a region in which cool air is beneficial. The inventor, Mr. M. Wright, Deane House, Chilton, Ferryhill, Durham, has produced a shield which may well be called *multum in parvo*, acting as it does as trouser guard, valve port cooler, and with still a third object of conveying warm air to the extra air inlet of the carburetter. Mr. Wright's machine is a Triumph, and the three-in-one accessory which we illustrate is intended for that make and machines



A trouser guard, air deflector, and warm air collector combined.

of similar construction. It was only recently that we dealt with the desirability of heating carburetters on motor cycles, and a great many motor cyclists have found that by warming the air entering the extra air supply, beneficial

running results are obtained. As proof of the fact that the air is really warm at the point where it enters the carburetter, a rough model of this deflector was shown to us, which had been used on a Triumph, the back end of which had had the paint scorched by reason of the heat of the air impinging on the end of the guard. To those who find the need of a trouser guard for the valve ports, this little accessory is bound to appeal, for, as we have pointed out, it not only protects the rider's trousers, but at the same time performs two other useful purposes.



The three-in-one accessory described on this page.

## WAR WORKERS IN A PAPERCHASE.

LAST week-end members of the Daimler Motor Cycle Club, holders of War Service badges, held a paperchase over a course of approximately fifty miles. A start was made from the outskirts of Coventry in fine autumn weather, and a liberal trail of *The Motor Cycle* clippings, laid by Mr. D. F. Heather from a B.S.A. sidecar, accompanied by Mr. Peters on an 8 h.p. Zenith, enabled the competitors

to follow without difficulty—that is if the village yokels had not been tempted to practise a little mischievousness. Round hairpins, along narrow lanes, over the Fosseway, and twirling about for over twenty miles, led to the climb from Warmington village across the main road, which kept the riders busy, then doubling back to the Banbury Road. The latter town was skirted, and after more lanes and bylanes had led through beautiful old-world villages, the Daventry Road was reached. In some of these villages the village youth had collected all the paper obtainable and laid false trails at forked roads—the competitors did not mind, it added to the fun. The speeds to be averaged had been drawn for at the start, and at the finish, on the summit of Newnham Hill, near Daventry, it was found that A. Johnson (driving a 6 h.p. Zenith sidecar, formerly owned by E. B. Ware) had ridden nearest to time, being but 1m. 44s. out in his reckoning. The speed he had drawn was 19.8 m.p.h.

No doubt this sixty-mile trip in the crisp air of a lovely autumn day was the means of many jaded workers resuming with renewed vigour their efforts in the Great Task.

## THE NEW LIGHTING ORDERS.

On his way home on Monday last, the first day of the new lighting regulations, a member of our staff noted the following between the hours of six and seven: Two pedal cycles entirely without lights, one pedal cycle with a glaring acetylene head light, one car with a single light in front, and one led horse with no light whatsoever. So far the new regulations seem to have been more honoured in the breach than in the observance.



"OUR DAY." Every patriot succumbed to the persuasion of the pretty saleswomen, motor cyclist officers in khaki not escaping their appeals. Both the machines shown are Douglases.



# RACING ON THE BED OF A LAKE.

An Account of a Motor Cycle Meeting held at Kalgoorlie in Western Australia.



A TEN MILE RACE ON THE DRIED BED OF A LAKE.

A Sunbeam leading in a fine race held on the bed of Lake Perkolilli, Western Australia.

THE Goldfields Motor Club held their eighth motor "picnic" on September 3rd last. An interesting fact in connection with the event is that the members used as their "Brooklands" the bed of the dried up Lake Perkolilli. It makes a capital track in the dry season, and on this occasion, being favoured with fair weather, good racing was witnessed. British motor cycles were well represented, among them being the Douglas, Triumph, Sunbeam, Singer, and Royal Ruby.

Fast times were put up by several riders, and the following are the results:

#### FOUR MILE OPEN HANDICAP.

1. F. Thornton (5 Indian), 40s.
2. A. E. Pike (3½ Triumph), 40s.
3. G. Bird (7-9 Indian), scr.

The winner's time was 5m. 46½s.

#### 2½ H.P. AND UNDER, FOUR MILES.

1. W. Guille (2¾ Douglas), scr.
2. — Bowlin (2½ Royal Ruby), 40s.
3. L. Pilkington (2¾ Sunbeam), 40s.

The winner's time was 8m. 15s.

#### 3½ H.P. AND OVER, FOUR MILES.

1. G. Bird (7-9 Indian), scr.
2. A. E. Pike (3½ Triumph), 35s.
3. J. Elsbury (3½ Sunbeam), 25s.

The winner's time was 4m. 36½s.

In the Ten Miles Open Handicap G. Bird won, on his 7-9 h.p. Indian, covering the distance in 12m. 4s., equalling a speed of 49.72 m.p.h. The Final Handicap was won by F. Thornton, on his 5 h.p. Indian, in 7m. 22s.

The proceeds from the meeting went in aid of the Patriotic Fund.



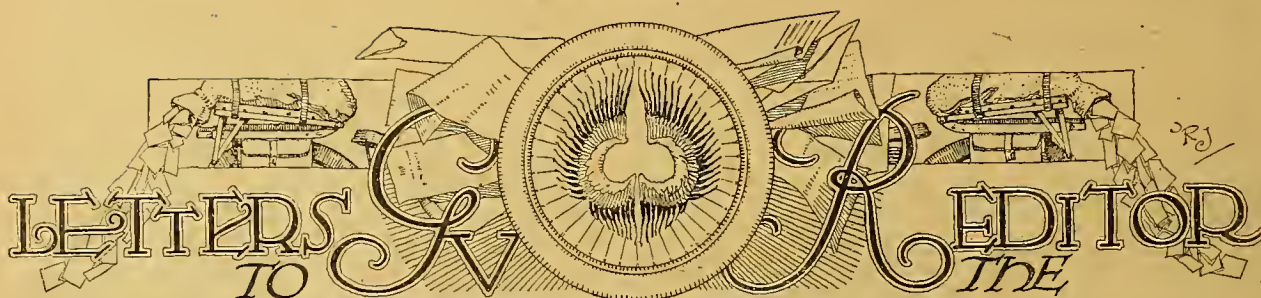
The competitors gathering for the start of the four mile race for 3½ h.p. machines. Sunbeams, Singers, and Triumphs are to be observed.

## ADJUSTING GEAR CONTROLS.

WE all know that a motor cycle sometimes sets us to tackle jobs entailing a disturbance of the main rod from the gear lever to the gear box fork, and that manufacturers offer us no assistance in the readjustment of the parts. In some cases it is a simple matter, *e.g.*, when the gear box is so wide that there is an appreciable motion of the external lever attached to the striking fork between each pair of gears, when there are no pieces of spring steel in the connection, and when all the details of the control are accessible. The other day a new three-speeder was delivered to me, one where only first and second gears were available. I found that (a) if all parts were disconnected, it was excessively difficult to "feel" the

three gear positions by waggling the small lever on top of the gear box, as in a narrow gear box the clearances are almost infinitesimal; (b) there were three light springy parts in the control couplings, which quite upset any attempt to work by the lever on the gear box; (c) the control couplings were mostly situated under the crank case, or behind the external flywheel, or in other frightfully inaccessible places, so that if a trial adjustment suggested an alteration of, say, 1/16 in., it was intensely difficult to make the correction. I have now made six attempts to adjust that rod, and not one of them has provided me with more than two gears—sometimes I get first and second, sometimes second and third, but never all three.—ROAD RIDER.





The Editor does not hold himself responsible for the opinions of his correspondents.  
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Overheated Sparking Plugs.

Sir,—I notice with interest a letter from a Mr. R. J. Cosh, in your issue of October 19th, who rides a Brough and has plug trouble. I also ride one, and have had a lot of trouble. I have tried all well-known makes, giving up to 7s. 6d. each for them, but always had the same trouble. I recently wrote to the Sphinx Manufacturing Co. and told them my troubles, and they sent me a pair of their special two-stroke plugs at 3s. 6d. each. They seem to have solved the difficulty, for they have now been running without trouble for over four months, this with liberal engine lubrication and high speeds. As far as I can judge, these plugs are not on the market, but can be purchased direct from the makers.

I hope this will help to solve the difficulty. The usual disclaimer.

LAWRENCE CLAYTON (Capt.).

#### Dixie Magnets.

Sir,—*Re* the little paragraph which appears in *The Motor Cycle* referring to "Goods Made in Germany." Has nobody yet pointed out that the Horseshoe magnets of the Dixie magneto are made in Germany? I stripped a Dixie fitted to a 1915 Calthorpe some few weeks ago and found, to my disgust, that on the inside of the magnets was stamped "Germany."

W. C. JOHNSON (Lt.), R.N.

We submitted a copy of this letter to the American Supplies Co., Ltd., the distributors of the Dixie magneto in this country, who reply as follows:

[Copy.]

"Your correspondent is quite in error. He is referring to a Dixie magneto that is fitted to a 1915 motor cycle, and undoubtedly the material used in the manufacture of this magneto was purchased by our works in America during the year 1914. At this time, before the war, we did purchase some of the magnets used in the manufacture of the Dixie magneto from the American representative of a German firm. Since the beginning of the war, however, this was discontinued, and the magnets now used in the Dixie magneto are entirely of American manufacture; in fact, this statement applies to the magneto throughout. It is entirely of American manufacture, and we have entirely satisfied the Government Departments, whom we are supplying with these, on this score.

"AMERICAN SUPPLIES CO., LTD.,

"H. J. Hinley, Manager."

#### Will the Single-cylinder Survive?

Sir,—With "Road Rider's" contention that the single-cylinder "bns" of 500 c.c. is on its last lap, I disagree. I am of opinion that, while there are on the market such machines as the  $3\frac{1}{2}$  h.p. Rudge (Multi), Triumph, Norton, Sunbeam, etc., in company with, not necessarily a gear box, but such devices as multi-gear, Philipson pulley, and, not forgetting the Zenith Gradua, the single-cylinder has little to fear. For the man who wants utmost reliability, with simplicity of cleaning and repairs, the single is "IT," and, I have every reason to believe, will remain so.

L. W. E. HURSLEY.

Sir,—I have been very interested by recent letters in your paper respecting the "Survival of the Single-cylinder Machine," and its merits as compared with twin-cylinder machines. "Engineer" points out that a new class of

former car owners has arisen to whom the single is a monstrosity, and who would prefer not to motor at all than endure its horrible faults. This has not been at all my experience. I began motoring some ten years ago with a single-cylinder, single-gear machine, and got a good deal of pleasure out of it, although I found it very inconvenient in traffic and for climbing bad hills in winter. Since then I have driven many makes of cars of every horse power, but on the outbreak of war sold my light car and subsequently bought a  $3\frac{1}{2}$  h.p. Sunbeam and side-car. This machine has proved remarkably satisfactory and is a pleasure to handle under any circumstances. With ordinary careful attention it has proved perfectly reliable, which is a great factor to anyone who has not unlimited time at his disposal for constantly tuning up. It is very comfortable to drive, quite fast enough for ordinary touring, and in traffic will tick along at a very slow speed without a sign of labouring. The twin-cylinder is no doubt very pleasant to drive, *provided* it is in perfect trim, but it frequently suffers from unequal firing of the two cylinders, as well as from unequal lubrication—both faults which are not easy to rectify, and which must have an appreciable effect on its balance.

In conclusion, therefore, as a car driver, I must say that I am perfectly satisfied with the reliability, economy, power, and, bearing always in mind that it is a single-cylinder, with the flexibility of my Sunbeam combination, which is infinitely more flexible than an 8 h.p. single-cylinder car I owned about eight years ago.

W.R.Y.

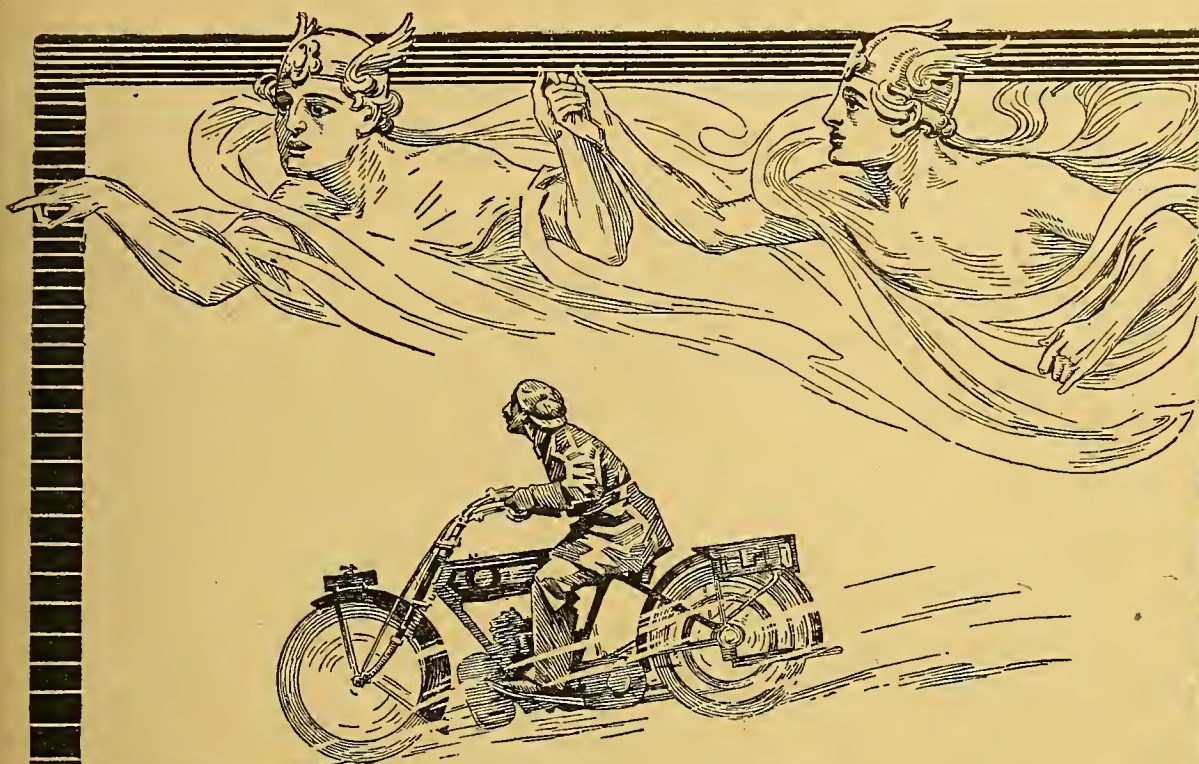
Sir,—The various letters *re* the survival of the single-cylinder have been read with interest, and I cannot but think that in some instances the harsh criticisms have been dictated by prejudice or inexperience rather than by a true knowledge of facts, or it is possible the writers have been unfortunate in their choice of a single-cylinder machine, or unhappy in their methods of driving, otherwise there would certainly be more, or less, than the wholesale condemnation of what is probably the most mechanically and thermally efficient type of engine in use to-day.

That there are advantages to be found in the use of two cylinders (particularly if horizontally opposed) admits of no argument, but the same may be said of the use of a single-cylinder, yet the champions of the twin generally appear adverse to give the humble single credit for any one redeeming feature. So far as sheer speed goes, the single has generally proved itself the equal, if not the superior, of the twin of equal capacity. Neither the usual V twin nor single can be perfectly balanced, but the difference in vibration, or absence of vibration, of a good single and V twin is negligible (frequently unnoticeable), and I have more than once heard pronouncements in favour of the single on this score. This is opposed to correct theory, and is merely evidence that, as a type, the single is most advanced. The notion that a single is uncomfortable or unpleasant to drive may be dismissed at once; this is borne out by numerous riders of all ages.

I believe, in the matter of economical fuel consumption, the average single is ahead of any type of twin. It would be interesting to learn the usual mileage per gallon of various 500 c.c. twins as compared with singles of the same c.c., both solo and with passenger, particularly during winter riding.

Comparisons of speed, power, or acceleration, with decisions in favour of the twin, are most frequently made by the owners of *big* twins against presumably 500 c.c.





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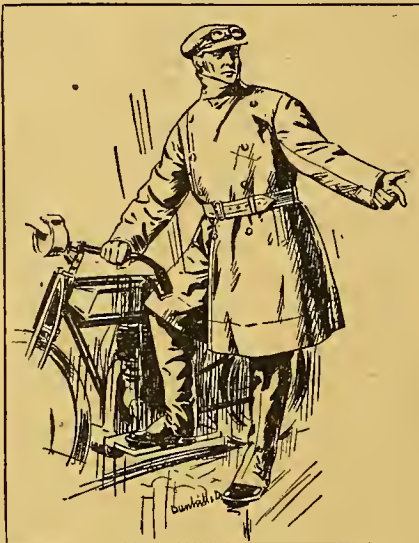
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singles; such comparisons will not greatly help us. 7 h.p., whether developed by a single or multi-cylinders, should score on these counts every time; but if equal capacities be compared, then I venture to say the simple single will give an astonishingly good account of itself to its critics. Perfection is not claimed, there being room for improvement in this, as in all types, but there is a place for it in the scheme of things—a big place—and it is impossible to say that it will not occupy a bigger place than other types in the future, as it certainly does to-day, and purely on account of its intrinsic merits of simplicity, economy of upkeep, and general all-round efficiency. It is at present the utility mount *par excellence*.

I have also read "Ixion" on single v. twin. I regularly turn to his articles with interest and pleasure, but my faith in the soundness of his deductions or decisions received a severe shock when I read that he would give up motor cycling altogether rather than ride a single or a heavy twin, which statement will be taken to mean that, in his opinion, such are unfit to ride. Surely "Ixion" cannot mean this, or has his keenness for the road and motor cycling interests so far deteriorated? I hope not.

JAS. L. NORTON.

### The Boycott of German Goods.

Sir,—It is, perhaps, almost unnecessary to say that the "British Empire Union" is in the strongest possible sympathy with the position taken up by "Britisher." The Union has adopted as its watchword Mr. Hughes's stirring appeal for the entire eradication throughout the Empire of German influence. How extensive and how dangerous that influence has been, not only in the commercial and industrial, but in the political and financial sphere is not, I fear, even yet fully realised by the nation. Our national independence has been determinedly and deliberately undermined; and we have not yet succeeded in breaking through the toils in which we have been involved by the treacherous ingenuity of the Germans.

Those who, like Mr. Pritchard, object to our adopting a policy of commercial defence in the future, have probably never examined the trade methods of the Germans. Everywhere they worked on a deliberate plan and with official assistance to weaken the political independence of the countries with which they traded, and so by a system of "peaceful penetration," to pave the way for German military aggression.

"Never Again!" consequently has become the motto of all who care for the strength, safety, and independence of the British Empire. Never again shall it be placed in such a position of peril as that from which it has but just escaped. Never again shall we in our open-handed carelessness and generosity provide Germany with huge profits with which to pay for the armaments she has directed against us.

"Britisher" suggests a special union or league of motor manufacturers and owners to boycott German goods. I could wish that he and those who think with him, could see their way to join either as a separate organised body, or as individuals, our British Empire Union. There is, I fear, some danger of a large amount of patriotic enthusiasm being dissipated among a plethora of leagues and societies.

The British Empire Union is a non-party organisation. Its policy is directed to the eradication of German influence, and the adoption by this country of a national and imperial commercial policy, that shall unite more closely the Dominions with the Motherland, and the British Empire with her Allies. As a first step it is urging on the Government the importance of giving immediate effect to the resolutions adopted at the Paris Conference.

I shall be most happy to send full particulars of the work of the Union to "Britisher" and any of your readers who may be interested.

F. C. CULLING-CARR.

Hon. Secretary, The British Empire Union.

346, Strand, London, W.C.

### American Motor Cycles.

Sir,—May I fill a few lines of your splendid journal with one or two words anent sundry points raised by various writers in the "Letters to the Editor" columns?

1. I have just returned from nearly two years as a motor machine gunner at the Front, and not having kept my eyes shut, can endorse Capt. Lindsay's admirable letters by

observation as well as by personal experience. In your most recent number (October 19th) his remarks are very much to the point. The excellent workmanship of the most famous British motor cycle does not always resist the systematic and thorough shaking to which French roads subject despatch riders' machines. Strip metal gearshifters, "twiddle" knick-knacks, and such features—all too common on Uncle Sam's productions—do not settle down to live their appointed lives where they were put!

2. Personally, I am inclined to think that the fault with American magnetos lies not with the design so much as with the too thin coating of shellac with which the vitals are protected.

3. To my mind, "Oleofend's" words on "Engine Noises" contain more than a grain of probability. Experts kindly step forward!

4. In consequence of "Ixion's" article on the sticking of rocking arms in magnetos, may I, in no other capacity than that of a satisfied user, bring to his notice the remarkably sturdy, simple, and ingenious contact breaker on the C.A.V. magnetos? I have yet to find one fail to "break," and hardly see, in fact, how they could do so.

5. Finally, may I recommend Mr. Robert J. Cosh to give any or all of the following plugs a trial on his mount: The Splittorf "Commonsense"; any of the Lodge mica insulated plugs, and particularly the three-point waterproof model, which admirably suits the exposed front cylinder position on "flat" twins or the K.L.G. (Lee-Guinness). This latter is difficult to obtain though, and costs a lot—12s. or thereabouts if I remember rightly.

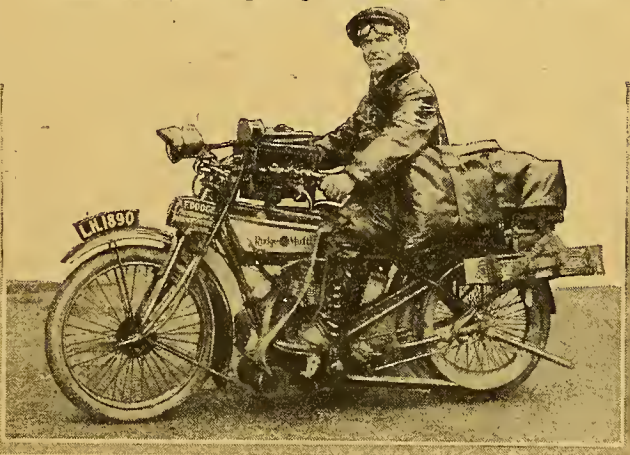
These plugs have rendered me yeoman service both in England on a variety of horizontally opposed twins and (the first two) in France on Douglas machines. With them I have never had the trouble your correspondent complains of, all my cases of loosening bodies and "blowing out" having occurred with porcelain insulated plugs, such as the Bosch.

Cambridge.

AN EMMA-EMMA GURK, M.M.G.S.

### Petrol Permits Galore!

Sir,—On October 5th you published a note from me in which I set out that after making an application for a petrol licence and writing three letters and waiting six weeks I had received three allotments in eight days. I obtained a licence on September 19th, and returned the other two allotment notes—one direct to the Petrol Control Committee and one through the A.A. and M.U. To my surprise, on the 8th inst. I received a letter from the Petrol Control Committee acknowledging one of my letters, dated August 17th, and enclosing me a petrol form No. 1 to enable me to make a return. On the 10th inst. I received another letter from the committee referring to one of my letters, dated July 31st, informing me it had not been possible to trace my return, "if any made," and requesting me to fill up a schedule on the end of the letter. The attentions of the Petrol Control Committee are now getting embarrassing! CR 2454.



A. F. Dodge, a veteran motor cyclist, who uses his Rudge-Multi exclusively for business purposes. He is out every week-end with his camera, wet or fine, riding on the most appalling roads, and has the reputation of never stopping for weather.



### Difficulty in Starting.

Sir,—I have fitted up my 6 h.p. New Hudson in the same manner as described by F. A. Holward in your September 14th number, but I cannot get my machine to start on the petrol jet. I have a Binks carburetter. Perhaps some of your readers could suggest the cause of the failure.

BRIGHTONIAN.

### The Scott Sociable.

Sir,—My view is that the sociable is a perfectly natural development, as many home-made "imitations," earlier than the Scott, will show. Its success does not therefore depend, as stated by "Ixion," on its selling price second-hand, as compared with other specialities. It will always be found that the best "sellers" second-hand are the most reliable and serviceable machines, and the Scott Sociable has to prove itself in use. That does not affect the wisdom of extending the front of the sidecar round the cycle so as to shelter the driver and make the combination look complete, and I wonder the Enfield Co. and other "combine" concerns have not done it before. Only in the cases of machines not designed to pull sidecars are the present hung-on carriers justifiable. Looking at the Scott chassis we can see that it is a short cut to the next stage, and by comparison the previous best, the Enfield combination, seems a long way round, and the result not so good. The pictures show the Scott to be clean, mechanical, and workmanlike, and it should greatly influence sidecar design. R. COLLYER.

Sir,—I was very interested to read Mr. Burnard's criticism of the Scott Sociable and Mr. Scott's reply in your issue of August 17th, just to hand, as although I was extremely favourably impressed with this machine from the mechanical point of view when I read the first report in an earlier issue, yet the same thought struck me that Mr. Scott would find himself up against considerable opposition on account of its appearance. Before the war I was connected with the light car business, and I know only too well how often superlative mechanical merit is overlooked in favour of appearance, especially by the fair sex.

I agree with Mr. Scott that Mr. Burnard's letter is rather sweeping in arbitrarily dismissing a machine which obviously is the result of the most careful thought and scientific ingenuity of an engineer with such a high reputation as Mr. Scott; but I must agree with Mr. Burnard that the appearance is distinctly against the machine. The obvious comparison with the sidecar is, in my opinion, not a true criterion, as the very fact of its being so far removed from the sidecar combination brings it for purposes of comparison into the light car class, where the lop-sided appearance is undoubtedly against it. The motor cycle and sidecar no one attempts to call a symmetrical affair; but a motor cycle with a sidecar attached is accepted as such, whereas (and this is my point) I fear the Scott will not be classed from point of view of appearance as an elaborated motor cycle and sidecar. The price of this machine is an interesting point on which I think no information has yet been forthcoming. If it compares favourably with the best sidecar combinations; that is to say, comes within £100, I predict that the objection against its appearance will vanish, and it should have a large sale. I for one shall be very tempted after the war.

Wishing your paper, which I eagerly look forward to in my mail, continued success,

Egypt.

H. LAMBERT (Sec.-Lt.), A.S.C., M.T.

Sir,—I join with those of your readers who consider that the Scott Sociable (admirable as it may be in some respects) is an unfortunate departure. It seems to me that the designer has gone off at a tangent from the natural curve of evolution. I well remember the days of old when I rode a Singer Apollo tricycle, and later on several Singer "straight-steerers." These machines kept to the true line of progress, and the final type of "straight-steerer" was the approved tricycle of the present day. There were contemporary types on the road—some were not unlike the Scott design; but they all disappeared before the superior merits of the normal tricycle. It is evident, therefore, that the equilateral or isosceles triangle has advantages over the right-angled variety; it is the natural tripod, in fact. It follows that

the Morgan has a more stable as well as a more beautiful basis than the Scott. But neither will stand comparison with a smart four-wheeler.

The sidecar does not come into the question. It is merely an addition to a powerful and highly developed motor cycle. I drive a Royal Enfield combination myself, and I consider that (as it obviously does not pretend to be more than a mere attachment) it is better looking than the Scott Sociable, or the Morgan for that matter.

Then in nature the highest types are bipeds and quadrupeds, and in vehicles the two-wheeled and four-wheeled types have stood the test of time, and reign triumphantly. Surely the same laws apply to cycle cars. If Mr. Scott will only apply his talent to the designing of a smart four-wheeler he will be glad to forget his latest pathological monstrosity. It is surely illogical to design an elaborate cycle car on the lines of a mere makeshift.

J. A. STEWART.

### Straining Heavy Fuels.

Sir,—I have now run my machine nearly 2,000 miles on paraffin and have found that a fluffy substance collects in the tap, preventing the fuel from flowing. This is the result of having to buy the paraffin from a local shop which cannot supply a strainer. Could not machines be fitted with a strainer which fits into the opening of the tank and is easily detachable to facilitate cleaning? I have found it necessary to drain the crank case of oil every 200 miles.

R.E.C.

[Many machines are already so fitted.—Ed.]

### Impressions of a Two-stroke.

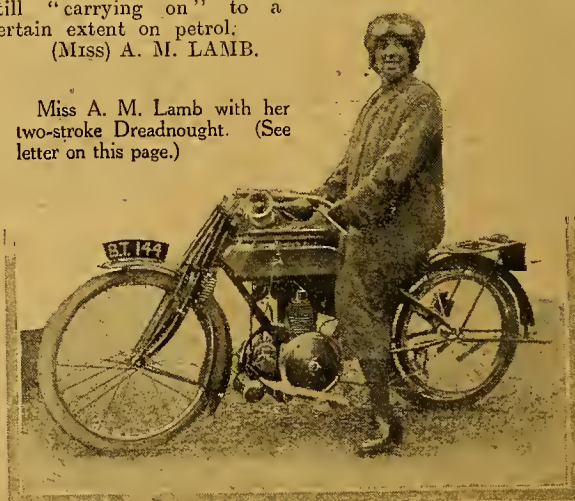
Sir,—Perhaps my early experiences may be interesting to women who so far have not become acquainted with this valuable and health-giving pastime. I used to look upon the motor cycle with some superstition and dread, but recently I purchased a single-speed 2½ h.p. two-stroke Dreadnought, and after about half an hour's practice with the different controls, riding the machine on the quiet country roads in the vicinity of my home, I soon became quite an exponent of the art.

My first ride of any note was about a week after, when I rode from my home to Whitby. My first stop was at Malton, where I pulled up and had some refreshment, after which I passed along again *via* Pickering to Levensham, a delightful little hamlet on the border of the moors. I finished my journey to Whitby without mishap, which goes to prove the efficiency of the present-day model. So far I have only had one accident, and that was when I was carrying a friend on the back. I had the impression of the hedge getting closer as I was negotiating a corner. The result was that my friend was forced to dismount rather unceremoniously! whilst I, fortunately, managed to keep my balance.

I have now had my machine just over twelve months, and am beginning to feel quite a veteran. My advice to all who so far have never tried a motor cycle is to obtain one, and I feel sure they will be recompensed by many hours of pleasure. My chief difficulties now are the restrictions on petrol, and I am considering the employment of some substitute. I can, however, do about 100 m.p.g., so that I am still "carrying on," to a certain extent on petrol.

(Miss) A. M. LAMB.

Miss A. M. Lamb with her two-stroke Dreadnought. (See letter on this page.)





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All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the letter as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON King Dick, 1914, T.T. model, condition perfect, 3-speed, clutch, Cowey, all accessories; £32.—16, Camden Rd., Wansted. [3649]

### A.J.S.

**1916** 2½ h.p. A.J.S. in stock; £55.—Cross, Agent, Rotham. [X9957]

**1916** A.J.S., 2½ h.p., in stock; £55.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X0024]

**A** J.S. 1916 6 h.p. Combination, fitted with spare wheel, heavy tyres, and screen, etc.—Moss, Wem. [X9984]

**R**ARE Opportunity.—1916 A.J.S., 4 h.p., and sidecar, just delivered; first cheque £96.—Taylor's Garage, Falmouth. [3267]

**A** J.S. 4 h.p. Combination, just delivered from works.—Prices and particulars, W. Brandish, Triumph Garage, Coventry. [X9653]

**A** J.S. 2½ h.p. Lightweight, 2-speed, splendid condition, spares, accessories; £25, or near offer; any trial.—Attlee, Ramsey. [3601]

**1915** A.J.S. Combination, interchangeable wheels, spare wheel and tyre, little used; £80.—Potter, Leicester Grove, Leeds. [X9963]

**A** J.S. 4 h.p. Combination, with spare wheel and storm apron, just delivered.—Bristol Agent, Fair, 201, Cheltenham Rd., Bristol. [X0051]



## BEST FOR ALL BUYERS,

Most satisfactory house for the expert as well as the new rider,

**INVITE YOU TO SEND FOR TO-DAY'S BIG LIST. IT INCLUDES**

Are showing Britain's largest display of bargains in newest models of best makes, and a matchless selection of

## CLEARANCE OFFERS AT RECORD PRICES

**ALL AT LOW BED-ROCK QUOTATIONS FOR CASH OR EASIEST EASY TERMS, WITH IMMEDIATE DELIVERY, AND EVERY MACHINE FULLY GUARANTEED**

No.	h.p.		
10705.	12-16	VAUXHALL Car	£125 0
10707.	3½	1912 clutch TRIUMPH	£25 0
10713.	4-5	1914 ZENITH-GRADUA	£37 10
10714.	2½	1916 2-sp. CALTHORPE J.A.P.	£31 10
10715.	3½	1914 2-sp. ROVER and Sidecar	£42 10
10717.	4	3-sp. PRECISION	£22 10
10718.	3½	1912 2-sp. B.S.A.	£27 10
10724.	3½	1912 2-sp. TRIUMPH and Sc.	£42 10
10726.	4	1916 3-sp. DOUGLAS and Sc.	£37 10
10727.	4	1915 3-sp. B.S.A. and Sidecar	£60 0
10728.	10-12	1912 DELAGE Car	£175 0
10731.	5-6	1914 RUDDGE and Sidecar	£37 10
10682.	3½	1914 3-sp. BRADBURY	£47 10
10684.	7-9	1914 3-sp. INDIAN	£27 10
10687.	12	single-speed J.E.S.	£10 0
10688.	2½	1912 2-sp. DOUGLAS	£22 10
10696.	3	1915 A.J.S.	£40 0
10699.	3	1913 3-sp. HOBART & Sidecar	£35 0
10700.	5-6	1913 2-sp. F.N. and Sidecar	£32 10
10701.	2½	1911 single-speed	£22 10
10638.	3½	1912 single-speed INDIAN	£20 0
10643.	3½	1914 RUDDGE Multi	£40 0
10649.	3½	1913 single-speed B.S.A.	£25 0
10661.	6	1913 ENFIELD and Sidecar	£45 0
10663.	7-9	1914 2-sp. INDIAN	£35 0
10673.	4	1914 3-sp. B.S.A. and Sidecar	£45 0
10674.	6	1913 CLYNO and Sidecar	£68 0
10675.	6	1913 2-sp. DOUGLAS	£27 10
10685.	4	1915 3-sp. JAMES and Sidecar	£55 0
10686.	2	1914 3-sp. NEW HUDSON, Sc.	£45 0
10614.	3½	1911 single-speed HUMBER	£25 0
10628.	3½	1914 single-speed DAYTON	£12 10
10629.	3	1914 3-sp. ROVER and Sidecar	£50 0
10637.	4	1914 3-sp. SINGER and Sidecar	£45 0
10587.	3½	1914 3-sp. QUADRANT & Sc.	£42 0
10588.	3½	1913 RUDDGE Multi and Sidecar	£45 0
10590.	8	1912 3-sp. MATCHLESS & Sc.	£35 0
10596.	3	1913 RUDDGE Multi	£35 0
10567.	2	1915 2-sp. 2-str. CALTHORPE	£25 0
10573.	2½	1915 2-sp. CALTHORPE	£31 10
10584.	3½	1912 PREMIER and Sidecar	£20 0
10538.	3	1915 twin INDIAN	£47 10
10540.	4	1914 3-sp. JAMES and Sidecar	£50 0
10542.	3	1913 3-sp. HUMBER	£25 0
10333.	3	1908 2-sp. TRIUMPH	£22 10
10553.	1½	J.E.S.	£10 10
10565.	3	twin M.U.T.	£35 0
10517.	3½	single-speed 1912 TRIUMPH	£25 0
10519.	3½	1914 2-sp. PREMIER	£35 0
10523.	2½	1913 2-sp. DOUGLAS	£44 0
10533.	4	1912 3-sp. QUADRANT	£27 10
10477.	2½	1912 2-sp. SINGER	£22 0
10485.	4	single-speed BRADBURY	£23 10
10430.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10448.	4	1914 3-sp. B.S.A.	£57 10
10453.	3½	1915 SUNBEAM and Sidecar	£65 0
10458.	2	1914 2-sp. 2-stroke CLYNO	£25 10
10462.	5-6	1913 2-sp. N.S.U.	40 gns.
10390.	2	1915 2-sp. WOLF-J.A.P.	£30 0
10396.	3½	2-sp. FAFNIR	£12 10
10402.	4	1915 GRANDEX	£37 10

**WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON.**

Phone: 5777 Holborn. Wires: "Opticer, London."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted, with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

**1915-16** 2½ h.p. A.J.S., sporting model, 2-speed, clutch, lamps, mechanical horn, spares, little used, perfect, 120 m.p.g., 42 gns.; also 1914 New Imperial, £24.—Hilary, The Peak, Basingstoke. [3642]

**1916** A.J.S. Combination, latest 4 h.p., brand new, with spare wheel, tyre, and wind screen; in stock for immediate delivery.—Prices and particulars, Robinson's Garage, Green St., Cambridge. [3368]

**1916** 4 h.p. A.J.S., latest model, specification as list, with Lucas horn, ridden about 500 miles, soiled only, genuinely and really indistinguishable from new, condition guaranteed; £70.—Robinson's Garage, Green St., Cambridge. [3369]

**A** J.S. Combination, 1914, double lighting set, D.A. cylinder, electric Klaxon 24/4 horn, Lucas hand horn, Cowey trip speedometer, 25/5 watch, hood, screen, side curtains, hardly been ridden, mileage 2,000; cost over £130, sell £85.—Roscoe, 1, Deunam Grove, Seacombe, Cheshire. [X0018]

### Alldays.

**ALLONS** in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [3620]

**COLMORE** Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

**1915** Allon, 2-stroke, 2-speed; £30; exchange with cash for combination.—Clapham, King George St., Greenwich. [X0032]

**2** h.p. Allon, 2-stroke, 1916 model, 2-speed, handlebar clutch, ridden only 200 miles; £36.—Cook, 38, Blandford St., W. [3570]

### Ariel.

**ARIEL**, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3821]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

**1913** 3½ h.p. Ariel, Palmer front, Kempshall back, Philpott, knee-grips, pulley, lamp, horn, etc., fast machine; £28.—Thos. L. Hunter, Old Cumnock. [3531]

**ARIEL**, 3½ h.p., semi T.T. model, with variable pulley gear, a fast and serviceable mount at the low price of £22/10.—Laytons' Garage, Bicester, Oxon. [X0084]

**1916** 5.6 h.p. Ariel Combination, almost new, all black finish, done 2,000, all possible accessories, in splendid order and condition guaranteed; £60; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3822]

### Auto-Wheels.

**THREE** Genuine Wall Auto-Wheels, 1914 models, little used, splendid condition, from £7/10.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X9960]

**AUTO-WHEEL**, and Lea and Francis bicycle, strengthened buck wheel, adjustment for wheel brazed to bicycle, excellent condition; £17; Auto-wheel separate £8/10.—Attleborough Vicarage, Nunenton. [X9885]

### Bat.

**BATS**.—P. J. Evans, Birmingham agent.—Immediate delivery 4.5 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X9979]

**1915** Bat-Jap, 6.8 h.p., countershaft 3-speed, clutch, kick starter, with large Swan coachbuilt sidecar finished dark green, whole outfit is in nearly new condition, all tyres are excellent, and lamps, horn, etc., are fitted, very handsome turnout; £67/10; exchanges.—Newham, 223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [3666]



MOTOR CYCLES FOR SALE.

Bradbury.

1914 Bradbury 4h.p. Combination, 2-speed gear, tyres new, splendid condition; £30.—Fogden, 53, Denmark Hill, Camberwell. [3545]  
BRADBURY, 4h.p., Brampton gear, gas and electric lights, fitted Atwood's paraffin appliance; £21.—E. F. Bunting, Harrow. [3655]  
1914 4h.p. Bradbury, 2-speed countershaft, kick starter, all chain drive, Dunlop combination; 30 gns.—358, Lordship Lane, E. Dulwich. [3637]  
LATE 1914-15 Bradbury, 3-speed countershaft gear, and sidecar; £57, or near offer; first-class condition.—Horswill, 103, Brook St., Chester. [3723]  
BRADBURY, 1914 (October), 4h.p., coachbuilt sidecar, 2-speed, clutch, splendid condition, run 3,000 miles, new extra heavy Dunlops, all accessories, carefully used; £38.—Shaw, 50, King St., Oldham. [X9945]  
BRADBURY, 1915 (late), 4h.p., N.S.U. gear, free engine, kick start, P.H. lamps, Stewart trip, new Dunlop tyre and belt, recently overhauled, sidecar, waterproof apron, excellent order; trial; £30.—Breckenbush, King's Rd., Sunninghill, Ascot. [3716]  
BRADBURY, 4h.p., 2 speeds, clutch, free engine, kick starter, new coachbuilt sidecar, electric light, speedometer, painted iron grey colour, all to match, excellent condition, just overhauled; £35.—Fairfield, 19, Arran Av., Brooklands, near Manchester. [X9893]

Brown.

20.—Brown, 2½h.p., perfect condition, lamps, pump, horn, accessories, easy starter; cash wanted.—48, Ravensdale Rd., Stamford Hill. [X0075]

B.S.A.

B.S.A., new latest models H and K in stock, no waiting.—Moss, Wern. [X9985]  
COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]  
B.S.A.—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. 'Phone: Hornsey 2562. [3823]  
B.S.A., 1914, 2-speed, chain drive, Lucas lamp set, horn; £37.—Seen at 248, Bishopsgate, London. [3777]  
B.S.A. Models H and K for immediate delivery.—Sole Bristol Agent, S. J. Fair, 201, Cheltenham Rd., Bristol. [X0050]

PETROL Free with 1915 B.S.A., semi T.T. clutch model, new condition; 36 gns.—Troward, 78, High St., Hampstead. [3673]  
1916 B.S.A., 4½h.p., chain drive, combination, very little used, fully guaranteed; £62.—Box L2,413, to The Motor Cycle. [3849]  
14 B.S.A., 3½h.p., clutch model, good condition, very fast, must sell; £27, bargain.—M., 18, Malvern Rd., Dalston, N.E. [3774]  
B.S.A., 1915, model K, 3-speed, with C.B. sidecar and complete equipment; accept £50 for quick sale.—Tollady, Bicester, Oxon. [X0077]  
B.S.A., 1915, 4½h.p., clutch model, splendid machine; £24/10, bargain; don't miss it.—3, The Mews, Victoria Rd., Clapham, S.W. [3805]  
B.S.A., 1914, 4½h.p., countershaft 3-speed, all-chain drive, in fine order, lamps, and horn; £40.—Penlor, 36, Clarence St., Kingston. [3653]  
B.S.A., 1916, 4½h.p., all chain drive, Montgomery sidecar, coachbuilt, only done 1,800 miles; bargain; £65.—Baton, 200, High St., East Ham. [3855]  
1914 T.T. B.S.A., lamps, good tyres and belt, etc., a really fine machine, price £33.—Sanders' Cycle Depot, Bridge St., Hitchin, Herts. [X9388]  
1913 2-speed B.S.A., chain drive, all accessories, guaranteed perfect; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [3824]  
1913 2-speed B.S.A., belt drive, all accessories, in splendid condition; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [3825]  
B.S.A., 4½h.p., 1917, 3-speed countershaft, K models, just delivered from works; £64; liberal exchange terms.—Eagles and Co., High St., Acton, W. [X0088]  
1913 3½h.p. B.S.A. and Sidecar, 2-speed, F.E., electric light on sidecar, Lucas head lamp, all spares and accessories, including belt, 2 tubes, Deluge overalls; £38.—12, Columbia Rd., Bolton. [X0005]  
1913 B.S.A., clutch model, in perfect condition, few tools and spares, 4 gallons petrol, 2 gallons lubricating oil, this included; £24 the lot; owner enlisting—G. Macbeth, 15, The Royalty, Sunderland. [3709]  
1½h.p. 1915 B.S.A., countershaft 3-speed gear, 14 model, and free engine and kick start, fitted with handsome coachbuilt sidecar to match, includes all accessories; £60.—Wauchope's, 9, Shoe Lane, E.C. [3796]  
1½h.p. 1914 B.S.A., 3-speed countershaft gear, free engine and kick start, all chain drive machine, fitted with No. 2 B.S.A. sidecar; £45, including accessories; guaranteed.—Wauchope's, 9, Shoe Lane, London. [3788]  
B.S.A., 1914, and smart cab sidecar, chain drive, 2 speeds, F.E., all lamps, speedometer, etc., a good looking and absolutely dependable outfit, economical, and very easy to run on petrol or substitutes; cost £29, £37/10, lowest; buying car.—Lient. B., A.S.O., Old Park, Canterbury. [X9687]



WE OFFER

exceptional bargains in second-hand Motor Cycles and Light Cars, overhauled in our own Works, and guaranteed to be in good running order. They are available for cash, or deferred payments can be arranged. A selection is given below.

Write or call for list.

A large stock of new models of all types including the

ENFIELD, HAZLEWOOD, JAMES, B.S.A., and AMERICAN EXCELSIOR COMBINATIONS.

ENFIELD 3 h.p. and JAMES 3½ h.p. MEDIUM-WEIGHTS.

O.K. JUNIOR, NEW IMPERIAL, ALLDAYS ALLON, SUN, CONNAUGHT, ROYAL RUBY, COVENTRY EAGLE, J.H. CAMPION, and WOLF LIGHTWEIGHTS, etc., etc.

SIDECARS.—SERVICE, WATSONIAN, MILLFORD, CANOELET, & IVY Coachbuilt Models.

SECOND-HAND MOTOR CYCLES

No.	h.p.	Specification.	Price.
947.	2½	O.K.-PRECISION	£16 0
311.	2	TORPEDO, 2-stroke	£18 10
280.	3½	BRADBURY, 1912, very nice machine	£20 0
237.	2	SERVICE, 2-stroke, 2-sp., 1915	£24 0
312.	2	SUN-VILLIERS, 2-speed, 1915	£27 10
298.	2	RADCO, 1916, 2-speed	£27 10
323.	2	LEVIS, 2-stroke, fine machine	£29 0
259.	2	ALLON, 1916, 2-speed, clutch	£36 0
308.	2	DOUGLAS, 1914, T.T., 2-speed	£40 0
306.	5-6	RUDGE Multi & Sidecar, 1913	£32 10
309.	3½	PREMIER, 1914, like new, Canoelet Sidecar, hood, screen, many accessories	£60 0
326.	6	ENFIELD 1915 Combination, fully equipped	£65 0
324.	3½	BLACKBURN, 1915, 3-speed, countershaft, and Sidecar	£50 0
303.	2½	DOUGLAS, 1915, T.T., overhauled	£44 0
2900.	3½	RUDGE Multi, 1915, Phoenix coach-built Sidecar, accessories	£52 10
327.	3½	P. & M., 1914, P. & M. Sidecar, and accessories, almost like new	£48 0

CARS IN STOCK.

125.	11	LAGODA, 1915, 4-seater, fine order	£145
127.	10	BAYARD, 4-seater, dyn. lighting, almost new condition	£225
126.	6-9	Baby PEUGEOT, 1915, splendidly fitted, very slightly used	£155
04.	20	FORD Van, 1916, new. Delivery London	£134
133.	10	ENFIELD, 1916, 2-seater, dyn. lighting, spare wheel, speedometer, clock, looks like new	£200
134.	10	ENFIELD, 1915, 4-cyl., dynamo lighting, electric horn, speedometer, etc.	£170
10.		MORGAN, G.P., 1914, accessories	£95

EXTENDED PAYMENTS ARRANGED. EXCHANGES A SPECIALITY.

SOLE LONDON AGENTS FOR BROUGH, CLYND, CONNAUGHT, and METRO MOTOR CYCLES; EMPIRE and HERCULES SIDECARS.



MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A. 1916 4½h.p. Combination, 3-speed counter-shaft gear, not run 400 miles, complete, with lamps, speedometer, mechanical horn, and tools, guaranteed, unscratched; £65.—Hatcher, 83, Dock Rd., Victoria Docks, E. [3610]  
B.S.A., 4½h.p. model H, Lucas dynamo lighting set and horn, Cowey speedometer, Godiva coachbuilt sidecar, upholstered Bedford cord, practically unscratched; bargain, £65.—Brewer, 1, Inman Rd., Earlsfield, S.W. [3771]  
B.S.A., 1915 model, with usual accessories, complete, including B.S.A. sidecar, the whole outfit in almost new condition, and carrying a written warranty as to soundness throughout; worth £65, accept £56.—Laytons' Garage, Bicester, Oxon. [X0085]  
B.S.A. 1915 model H 3-speed Countershaft Combination, Dunhills underslung torpedo S.O., 2 lamp sets, speedometer, mechanical horn, lot spares, tyre, tubes, etc., mileage 3,400; absolute bargain, £51; called up.—Lee, 30, Cholmeley Rd., Reading. [3600]  
1916 B.S.A. Model H, 3-speed, enclosed chain drive, and coachbuilt sidecar, fitted wind screen, horn, lamps, etc., complete, new September, total distance covered 95 miles, insurance transferred free; death clause of sale; £62.—Farnsworth, Bleasby, Nottingham. [X0074]  
B.S.A.—Three 1917 models, with their newest fittings, just arrived from works, £64 each; also a model H at £66; B.S.A. Canoelet sidecars, with hood and wind screen, delivered from stock, 13 gns.; exchanges, also E.P. suggestions entertained; also 1915 4½h.p. model K, 2½, and late 1914 K and B.S.A. Canoelet sidecar, £44/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green, Tels.: Walthamstow 169, and Hornsey 1956. [3524]

Calthorpe

CALTHORPE-J.A.P., 1915, 2½h.p., Enfield gear, perfect; £25.—35a, Lyric Rd., Barnes. [3597]  
CALTHORPE Junior, 1914, 2 speeds, in real good order; £14.—6, Warren St., London. [3754]  
SOLE Bristol Agents for Calthorpes; immediate delivery.—Derby Motor Co., Bishopston, Bristol. [X0035]  
CALTHORPE Junior, 2 speeds, fitted for paraffin, runs well; £15/10.—51, Gilpin Av., East Sheen, S.W. [X9932]  
CALTHORPE-J.A.P., 1916, Enfield 2-speed gear, all accessories, good as new; £27/10.—E. F. Bunting, Harrow. [3634]  
2½h.p. Calthorpe-Jap, in first-class condition, 1915 machine, 2½ tyres; £25.—Chilton, 199, High St., Watford. [3558]  
1915-16 2½h.p. Calthorpe-Jap, Enfield 2-speed, all accessories and spares; £30; after 6.—34, Finsbury Sq., E.C. [3743]  
COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]  
1915 Calthorpe-Jap, 2½h.p., Enfield 2-speed, reliable machine; £26; exchanges.—Newham, 223, Hammersmith Rd., W. 'Phone: Hammersmith 50. [3670]  
CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]  
CALTHORPE-J.A.P., 2½h.p., new in August, Enfield 2-speed gear, variable ignition, spare belt and leather case carrier, P.H. lamp set, plugs, not done 1,000 miles; £30.—Brown, 18, Islington St., Swindon. [3581]  
CALTHORPE Junior, late 1914, 2h.p., 2-speed, just overhauled, new bearings throughout, new piston, rings, and belt, splendid condition, very economical; £18, offers.—Smith, 7, Attarbury Terrace, Stockton-on-Tees. [X9897]

Campion.

CAMPION Motor Cycle, 1915, Precision 2½h.p., 4-stroke, 2-speed, countershaft, nearly new, good condition; £27; exchange Baby Triumph.—Kew, Alfred, Lias. [3571]

Chater-Lea.

LATE 8h.p. Chater-Lea and Sidecar, 2-speed, kick starter, free engine, all accessories; bargain, £33, or nearest.—J., Wastdale Rd., Forest Hill. [3781]  
8h.p. Chater-Lea, with 2-seated sidecar, 3-speed gear box, new condition, guaranteed perfect; and trial given; £45.—Watson, Foresters Arms, Brady St., White, chapel. Near offer. [3744]

Chater-Lea-Jap.

CHATER-LEA, 5h.p. twin J.A.P. engine, and sidecar, in real good order; £18.—6, Warren St., London. [3756]  
6h.p. Chater-Lea-Jap, cane sidecar, 2-speed, new tyres, tubes, tools; £50.—176a, Queen's Rd., Battersea. [3750]

PETROL Free with 1914 Chater-Lea-Jap, 8h.p., Sturmy-Archer 3-speed countershaft gear box, handle-bar clutch, kick start, large, luxurious sidecar, 2 tyres new; 44 gns.—Troward, 78, High St., Hampstead. [3672]

Clyno.

1914 Clyno Combination and accessories, in good condition; £57/10.—Boude's Garage, 223, High Rd., Kilburn. [3619]



## MOTOR CYCLES FOR SALE.

## Clyno.

**CLYNO** Combination, late 1913 model, detachable wheels, spare wheel with tyre complete, speedometer, watch, lamps, tools, and all accessories, 2-seater sidecar; any trial given.—White, 78a, Junction Rd., N. [3783]

## Connaught.

**1916** Connaught, 2-stroke, fitted Dunlop tyres, good condition; £21.—27, Woodbridge Rd., Moseley, Birmingham. [X9991]

**CONNAUGHT** 1914½, 1915 model, faultless condition, specially tuned; bargain price.—4, New River Crescent, Palmer's Green, London. [3567]

**P. J. EVANS**, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X9978]

## Coventry Eagle.

**COVENTRY** Eagle, 2½ h.p., 2-speed, 2-stroke; £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

## Dayton.

**DAYTON**, 1½-2 h.p., 1914½, 2-stroke, new lamps, horn; £15/10, or nearest; Saturday after 3, evenings 6.—Gardner, 9, Elm Place, South Kensington, S.W. [3749]

## Despatch Rider.

**DESPATCH** Rider, 1915, 2-stroke, 2½ h.p., low frame; £20.—Write, 18, Beechwood Av., Thornton Heath. [3546]

## Dot.

**DOT**, late 1913, 6 h.p. twin J.A.P. and Canoelet sidecar, Jardine 2-speed and F.E. countershaft gear, chain drive, handle starter, latest Longuemare automatic carburettor, just overhauled, runs well on paraffin, very reliable and economical, silent as a car, splendid climber, spares and accessories; bargain, £50.—Boydell, 44, Leigh Rd., Atherton, Manchester. [X9998]

## Douglas.

**DOUGLAS** 1915 4 h.p. Combination, almost new; £70.

**DOUGLAS** 1914 4 h.p. Combination; £55.

**DOUGLAS**, 1915, 2½ h.p., 3 speeds, T.T.; £47.—6, Warren St., London. [3764]

**1915** 2-speed Douglas, perfect; £35.—Wilkin and Co., Hunters Bar, Sheffield. [X0014]

**2½ h.p.** Douglas, 1913, excellent condition, lamps, horn, and generator; £30.

**2½ h.p.** Douglas, 1913, perfect running order, tyres as new; £32.—2, Disraeli Rd., Putney. [3787]

**1914** 2-speed Douglas, in good condition; £32.—Wilkin and Co., Hunters Bar, Sheffield. [X0011]

**LATE** 1912 2-speed Douglas, excellent condition; £25/10.—Singer, Henry Rd., Tottenham. [3678]

**2½ h.p.** Douglas, 1915, horn, lamps, wide mudguards; £42 cash.—Bubb, Porthill, Shrewsbury. [X9689]

**DOUGLAS**, 2½ h.p., first to view will purchase; £15, no offers.—14, Doddbrooke Rd., West Norwood. [1541]

**1913** Douglas, T.T., 2-speed, and accessories, in good condition; £30.—Bounds' Garage, 223, High Rd., Kilburn. [3619]

**DOUGLAS**, 3-speed, clutch, May, 1916, 700 miles, everything as new, perfect.—Box 378, c/o The Motor Cycle. [X9894]

**DOUGLAS**, 2½ h.p., 1915, 3-speed, lamp, horn, tools, etc., very good condition; £46.—Edward Kemp, Louth, Lincs. [3623]

**DOUGLAS**, 1913, 2½ h.p., 2-speed, heavy Dunlop on back, and new belt; £33.—Orchin, 22, Abye Rd., East Dulwich. [3573]

**1915** Douglas, W.D., 2-speed, end accessories, in good condition; £43/10.—Bounds' Garage, 223, High Rd., Kilburn. [3620]

**1915** 2½ h.p. 3-speed Douglas, semi-T.T. footboards, excellent condition; £41.—Stocks, Thurlstone, Penistone, (D) [X0045]

**DOUGLAS**, 1914, T.T., 2-speed, equipped; £35; seen any time.—South-Western Garage, 283a, Brixton Rd., London, S.W. [3630]

**DOUGLAS**, 1911, 2½ h.p., 2 speeds, open frame, good condition, tyres, lamps; £20.—Lee, Hope Lodge, Oxtou, Birkenhead. [X9941]

**LATE** 1914 2-speed Douglas, 2½ h.p., new January, 1915, complete with lamps, etc.; £35.—27, St. Ann's Pk., Rotherham. [X0002]

**1912** Douglas, 2-speed, new tyres, Lucas black lamp set, good condition, fast; snip, £22.—404, Garratt Lane, Enfield, S.W. [3629]

**DOUGLAS** T.T., 2½ h.p., 2-speed, 1913 model, overhauled, re-enamelled, Amac, Dunlops, fast; £35.—Railway Garage, Staines. [3835]

**DOUGLAS**, late 1914, 2-speed, T.T., special low gear, hardly used; owner in service; £38.—Petty Officer, 19, Grimwood Rd., Twickenham. [3596]

**1914** W Douglas, 2-speed, kick-start, touring or T.T. bars, footboards, 2 lamps, horn, engine guaranteed perfect; £36.—Robinson's Garage, Green St., Cambridge. [3366]

## SECOND-HAND BARGAINS

## SIDE CAR OUTFITS.

**JAMES** 1914 4½ h.p. 3-speed Combination, all access. £50  
**REX**, 1914, 6 h.p., 2-speed, modele de luxe ..... £40  
**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidecar... £32  
**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame..... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ..... £60  
**RUDGE**, 1913, 5-6 h.p. Multi, with Rudge Sidecar... £46  
**INDIAN** 1916 5 h.p. Combination, 3-speed ..... £63  
**ZENITH**, 1914, 8 h.p., clutch, and Sidecar, all access. £68  
**ENFIELD**, 1912, 6 h.p., 2-speed twin, Enfield Sidecar... £30  
**RUDGE** 1913 4½ h.p. Multi, coach-built Sidecar ..... £33  
**B.S.A.**, 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidecar, only done 500 miles ..... £70  
**SCOTT**, 1914, 3½ h.p., 2-sp., and Scott Sidecar Chassis £45  
**B.S.A.**, 1915, 4 h.p., 3-speed, chain drive, C.B. Sidecar £50  
**ZENITH**, 1915, 3½ h.p., twin, clutch, and C.B. Sidecar £52

## CARS AND LIGHT CARS.

**N.A.G.**, 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set ..... £300  
**SUNBEAM**, 12-16 h.p., 4-speed, 5-seater, hood and screen, just thoroughly overhauled..... £295  
**KNIGHT JUNIOR**, 1914, 12 h.p., 2-seater, sporting body ..... £155  
**G.W.K.**, 1914, 9 h.p., just re-painted and new hood fitted ..... £115  
**G.W.K.**, 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £160  
**DEEMSTER**, 1914, 9-5 h.p., 2-seater, all accessories; a bargain at ..... £100  
**OVERLAND**, 1916, 12 h.p., 5-seater, dynamo and self-starter equip., as new ..... £185  
**FORD**, 1916, 20 h.p., 5-seater, shop-soiled ..... £125

## SOLO MODELS.

**NEW IMPERIAL J.A.P.**, 1915, 2½ h.p., 2-speed ..... £26  
**DOUGLAS**, 1911, 2½ h.p., 2-speed, spring forks..... £20  
**CALTHORPE**, 1914, 2 h.p., 2-speed ..... £18  
**RUDGE** 1913 3½ h.p. Multi, T.T. bars ..... £33  
**IVY**, 1915, 2-stroke, single-speed ..... £18  
**NEW HUDSON**, 1913, 3½ h.p., 3-speed J.A.P. engine. £34  
**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £28  
**RUDGE**, 3½ h.p., Philipson pulley, 1915 improvements £40  
**BROWN**, 3½ h.p. model, Bosch magneto ..... £14  
**INDIAN**, 1915, 5 h.p., 3-speed twin ..... £52  
**ROVER**, 1912, 3½ h.p., T.T. clutch model ..... £20  
**DOUGLAS**, 1912 2½ h.p., single-speed ..... £16  
**ALLWAYS ALLEN**, 1915, 2-speed, 2-stroke ..... £32  
**DOUGLAS**, 1915, 2½ h.p., colonial, 3-speed ..... £53  
**NEW HUDSON**, 1915, 2-stroke, as new ..... £24  
**TRIUMPH**, 1913, 3½ h.p., 3-speed ..... £33  
**TRIUMPH**, 1914, 2 h.p., 2-speed, 2-stroke ..... £34  
**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equip. .... £50  
**ENFIELD**, 1910, 2½ h.p., twin, Grado gear ..... £14  
**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, twin... £56  
**LEVIS**, 1914, 2½ h.p., 2-stroke, countershaft ..... £18  
**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, as new £53

## NEW MODELS.

## ALL THE UNDERMENTIONED ACTUALLY IN STOCK.

**HARLEY-DAVIDSON**, Model 16F ..... £20 15  
**HARLEY-DAVIDSON**, Model 16F, T.T. bars ..... £20 15  
**HARLEY-DAVIDSON** Sidecar to either of above... £21 0  
**ROYAL ENFIELD** 6 h.p. Combination ..... £24 10  
**ROYAL ENFIELD**, 3 h.p., twin, 2-speed ..... £57 15  
**ROYAL ENFIELD**, 2½ h.p., 2-speed, 2-stroke ..... £44 2  
**B.S.A.**, 4½ h.p., 3-speed, all-chain, H ..... £64 0  
**B.S.A.**, 4½ h.p., 3-speed, chain-cum-belt, K ..... £62 0  
**B.S.A.**, 3½ h.p., T.T. fixed gear, D ..... £50 10  
**INDIAN**, 7 h.p., Powerplus, model G ..... £75 0  
**INDIAN**, 7 h.p., Powerplus, and Sidecar ..... £104 0  
**ROYAL RUBY**. All models ex stock.  
**LEVIS**, 2½ h.p., s-speed, Popular model ..... £32 0  
**COVENTRY EAGLE**, 2-stroke, de luxe ..... £37 15

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## MOTOR CYCLES FOR SALE.

## Douglas.

**DOUGLAS**, new, latest pattern, 2½ h.p. models for immediate delivery, including War Office black Douglas—Moffat, Yeovil. Tel.: 50. [585]

**DOUGLAS**, 2½ h.p., late 1914, with light sidecar, 2 speed, kick-start, clutch, perfect condition, 1144 used; £45.—53, Hodford Rd., Golders Green. [383]

**A** SNIP.—2½ h.p. Douglas, guaranteed perfect, climb anything, fast, powerful, any trial here; £21 secures, no offers.—Bon Marche, Chesterfield. [X004]

**DOUGLAS** Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2241]

**1912** Douglas, single speed, footboards, lamps, etc. in exceptional condition, everything guaranteed. Sanders' Motor Cycle Depot, Bridge St., Hitchin, Herts. [X939]

**SOME 'Bns**.—A Douglas, 1914½, model V, T.T., real good, fast, perfect; £36; entertain exchange combination.—Albert, 23, Market Place, Kingston, S.W. [3651]

**1915-16** 4 h.p. Douglas Combination, done 2500 lamps, horn, speedometer, tools, spares, guaranteed perfect; £67/10.—H.F., 38, Claverton St., Bath. [X002]

**DOUGLAS**, 2½ h.p., 1913, 2-speed, complete with accessories, excellent condition, recently overhauled.—Quote H.K. 426, Macrae and Dick's Garage, Invergor don. [X0037]

**DOUGLAS**, late 1913, perfect condition, good running, all accessories, spare tyre new; £28.—P. Selfe, c/o Officers' Mess, Airship Station, Hoo, North Kent. [X9931]

**2½ h.p.** Douglas, late 1915, War Office model, Lucas 24 lamps, excellent condition; £48; exchange 1914 3½ h.p.—Rogers, Nancledra, near Penzance, Cornwall. [3704]

**COLMORE** Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

**DOUGLAS**, 1913, 2-speed, £27; Douglas, 1911, 2 speed, £18; Douglas, 1914, 2-speed, lamps, horn, tools, fine order, £36.—Batchelor's, Clarence St., Kingston. [3654]

**DOUGLAS**, 1914, 2½ h.p., 2-speed, kick starter, clutch, new Dunlop and belt, enamel and plating perfect, appearance as new; £35, lowest.—205, High St., Plumstead, Kent. [X0034]

**1913** 2-speed T.T. Douglas, has just been enamelled grey and re-fitted at cost of £12, special chain case, long nickel exhaust, 12 and 11 lamp, Stewart horn, Jones speedometer, knee-grips, Pedley handles, spare tube, 2 valves, belt, etc., never used, beautiful machine; £35.—J. Lidderdale, Weeping Cross, Stafford. [X9683]

## Edmund.

**EDMUND**, 1916, spring frame, Levis engine, Enfield 2 speeds, chain driven, run 50 miles, guaranteed like new; £40.—6, Warren St., London. [3758]

## Enfield.

**ENFIELDS**.—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. [3826]

**ROYAL** Enfield, 2½ h.p., 2-speed; price £19.—248, Bishopsgate, London, E.C. [3778]

**COLMORE** Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

**1914** Enfield Coachbuilt Combination; £53, bargain.—Olephem, jun., King George St., Greenwich. [X003]

**ENFIELD**, 1916, 3 h.p., 2 speeds, lamp, horn, speedometer, grand condition; £45.—Box 376, c/o The Motor Cycle. [X9883]

**ENFIELD**, 2½ h.p., 1914, 2-stroke, 2-speed, lamps, horn, etc., perfect condition, good tyres; £32.—8, Half Moon Lane, Herne Hill. [3701]

**ENFIELD** 1914 6 h.p. Combination, hood, screen, speedometer, lamps, new back tyre, perfect condition; £55.—Vine and Lee, Portlaid. [3800]

**1915½** 6 h.p. Enfield Combination, hood, screen, lamps, Cowey, H. splendid condition throughout; £65.—220, Camberwell Rd., S.E. [3697]

**8 h.p.**, 6 h.p. Enfield Combinations, 3 h.p. twins and 2½ h.p. 2-speed 2-strokes; immediate delivery from Jones, Garages, Broadway, Muswell Hill. [3627]

**1916½** Enfield Combination, as new, hood, screen, etc., £78; or good light weight and cash; seen after 7.—S.O., 497, Old Ford Rd., Bow. [3680]

**ENFIELD**, 3 h.p., 1914, recently overhauled, excellent condition, 2-speed, chain drive; bargain; £27; with sidecar £30.—Hayes, Aylesbury. (D) [3560]

**1916** Enfield Combination, Lucas dynamo lighting set, Watford speedometer, almost new; £85, lowest.—G., 5, Rugby Mansions, W. Kensington. [3711]

**ENFIELD** 1915 6 h.p. Coachbuilt Combination, splendid condition, engine just overhauled, Lucas lamps; £65.—Downes, 3, High St., Starbeck, Harrogate. [X0029]

**1915** Late Enfield, 3 h.p., original tyres, hardly worn, Gloraphos, lamps, etc., not been used for 9 months; £35.—Clegg, 1, Shilbury Rd., Southampton. [3558]

**1915** Enfield 3 h.p. Twin, in splendid condition after little and careful riding, with speedometer, etc.; £45, no offers.—Hanbury Francis, Pharmacist, Clifton, Bristol. [X9022]



MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 1916 Combination, run only 3,000 miles, and in perfect order, complete with lamps, horns, and tools, etc.; £75.—Wallace, 36, Clarence St., Kingston. [3655]

1916 6h.p. Enfield Combination, O.K. double sidcar, all new, July, fully equipped, mileage 300; cost £106, sacrifice £86.—Oswald, 227, Stockport Rd., Levenshulme, Manchester. [X9882]

ENFIELD Combination, coachbuilt, 1912, 6h.p., lamps, spares, motor suit, done 3,000 yearly, running splendidly, condition good; £35.—King, 2, Kingley Park Terrace, Northampton. [X9818]

1913/10.—Late 1911 Enfield twin, 2½h.p., re-hushed, new piston and rings last month, new Dunlop and Palmer tyres, Bosch mag., re-assembled, as new.—D.R., Orderly Room, Thorpeass, Suffolk. [19830]

ENFIELD Combination, 90 gns.; 3h.p. twin, 55 gns.; 2½h.p. 2-stroke model, 45 gns.; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [10838]

1916 Enfield, 6h.p., and sidcar, 2-speed gear, hand clutch, handle starter, tyres perfect, Stewart horn, Miller lamp, machine in lovely running order, and absolutely as new; 70 gns.—Julian, Broad St., Reading. [10856]

1916 6h.p. Enfield Combination, latest model, mileage 2,800, Stewart trip speedometer, P and H lamps, spare tank, machine in perfect condition, unscratched; £70.—87, Caversham Rd., Reading. [3706]

1916 6h.p. Enfield Combination, in first-class condition, 3 lamps and generators, mechanical horn, speedometer, all tools, spare valves and plug unused; £70; trial by appointment.—Leasey, Chilham, Kent. [3695]

ROYAL Enfield, late 1915, 2-stroke, 2-speed, Bates front, Dunlop studded back, scarcely scratched; will sell at sight £30, including front and rear lamps, generator, etc., no offers.—Somerset Turner, Packington Rd., Ashby-de-la-Zouch. [X9828]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all models, including lighting set combination, special 8h.p. with hood and screen, and standard 6h.p. combination, also 5h.p. standard and sporting models, and 2½h.p. 2-stroke; prices from 42 gns [X9972]

ENFIELD 1917 Models just arrived from works; 8h.p. combination, hood and screen, £102/2; 6h.p. standard combination, £94/10; both fitted with the latest type sidcar, hood, screen, and luggage grid; terms quarter down, and balance in 12 or less instalments; liberal concession for short term payments; exchanges.—Lamb's, Enfield Specialists, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956 [3585]

ENFIELD 3h.p. Touring Model actually in stock, kick starter, £57/15; also 3h.p. T.T. bar, no kick starter, £57/15; also 1914 6h.p. electrically equipped combination, 3 Lucas lamps and horn, speedometer, hood and screen, great war bargain, £79/10; 6h.p. 1916 commercial combination, ridden 1,700 miles, heap accessories, £84; and 1916 3h.p. model, ridden 400 miles, £49/10; 1916 6h.p. standard combination, very little used, £80, really fine condition; reasonable suggestions invited; liberal exchange; and a 1916 Enfield de Luxe, heap accessories, ridden approximately 1,000 miles, £90.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [3586]

AMERICAN Excelsior, 8h.p., and racing sidcar; bargain, £45.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3391]

EXCELSIOR, 2½h.p., 2-stroke, and sidcar, only been used 2 months; owner reverting to car owing to petrol increase; price £55.—Apply, Box 384, c/o The Motor Cycle. [X0028]

7-h.p. Excelsior, electrically equipped, only 3 weeks old, 3-speed gear, free engine, dual control, kick start, property of an officer; £60, bargain.—Seen at Wanchopce's, 9, Shoe Lane, London. [3793]

5-h.p. Excelsior, November, 1915, 3-speed, and coachbuilt Millford sidcar, Palmer cord tyres, in excellent condition; will climb anything, not done 1,000 miles; price £50; owner bought car.—Apply, Shankland, Whitehall, Kilmacolm, Scotland. [X9829]

EXCELSIOR (American), 1916, electrical model, 3 lamps, electric horn, speedometer, spares, with beautiful £20 coachbuilt sidcar to match, only run a few miles, otherwise brand new; cost £105, must sell, £75, no offers.—29, Brigstock Rd., Thornton Heath. [3650]

Excelsior.

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5-h.p. Excelsior, November, 1915, 3-speed, and coachbuilt Millford sidcar, Palmer cord tyres, in excellent condition; will climb anything, not done 1,000 miles; price £50; owner bought car.—Apply, Shankland, Whitehall, Kilmacolm, Scotland. [X9829]

EXCELSIOR (American), 1916, electrical model, 3 lamps, electric horn, speedometer, spares, with beautiful £20 coachbuilt sidcar to match, only run a few miles, otherwise brand new; cost £105, must sell, £75, no offers.—29, Brigstock Rd., Thornton Heath. [3650]

FAFNIR, 3½h.p., mag., B. and B., new tyres, all accessories; owner called up; bargain, £12.—Gordon, 364, Brockley Rd., Crofton Park, S.E. [3782]

Fafnir.

FAFNIR, 3½h.p., mag., B. and B., new tyres, all accessories; owner called up; bargain, £12.—Gordon, 364, Brockley Rd., Crofton Park, S.E. [3782]

F.N., 2½h.p., 2-speed, free, shaft drive; £12/10, bargain.—Box L2410, c/o The Motor Cycle. [3851]

2½h.p. F.N. new tyres, belt, and magneto, B. and B., footboards, requires new pulley, otherwise perfect; £12.—Campbell, 57, Tweedside, Walkerton. [X9867]

F.N., single-cyl., 1915, and specially made sidcar, will carry passenger anywhere, runs splendid on paraffin; £30, or exchange higher power machine and cash adjustment.—F., Gloucester House, Park Lane, W. [3772]



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1916 8 h.p. ENFIELD Combination. Just delivered .....	£96 12
1916 2½ h.p. EXCELSIOR, 2-speed, and clutch, new .....	£44 2
1916 4 h.p. CALTHORPE Combination, new .....	£70 7
1916 Junior TRIUMPH, 2-speed, run 500m. .....	£38 0
1916 2½ h.p. CALTHORPE J.A.P., 2-speed, new; cancelled order; cost £37 16; .....	£34 0
1913 3½ h.p. ARIEL, 3-speed, and Sidcar .....	£40 0
1914 ALLON and Watsonian Sidcar, 2-sp. .....	£28 0
1916 H.-D. Combination, electric equipment. Just delivered .....	£115 0
1914 2½ h.p. IMPERIAL J.A.P., 2-speed .....	£18 10

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MOTOR CYCLES FOR SALE.

Harley-Davidson.

HARLEY-DAVIDSON Combination, 1916, brand new, actually in stock.

HARLEY-DAVIDSON Combination, 1916, run 1,000; £85.

HARLEY-DAVIDSON, 1916, as new, electric equipment; £70.—6, Warren St., London. [3762]

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [X9929]

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [10802]

HARLEY-DAVIDSON (117), electric light and horn, Stewart speedometer, tyres and condition very good; £58.—Buck, c/o Mrs. Traylor, High St., Wivenhoe. [3527]

HARLEY-DAVIDSON, 7-11h.p., late 1915, dynamo lighting set, Canoelet sidcar, splendid condition throughout; bargain, £65.—Gray's Garage, Watford. [5542]

1916 Model 16F Harley-Davidson, in perfect order, as new, been in use 3 months only, with Verona coachbuilt sidcar to match; 80 gns., bargain.—Fancourt, St. Paul's St., Stamford. [X9929]

1916 Harley-Davidson, 16F, with special Gloria coachbuilt sidcar to match, perfect condition, hardly soiled, £85, bargain, cost £108.—Hollycroft, Bryn Rd., Pontleasraith, Mon. [X9904]

LATE 1915 Harley-Davidson Combination, disc wheels all round, extra fast one, absolutely as new, only done 400 miles; sacrifice £72, take solo Douglas, Triumph, Norton part.—Else, Dimple, Matlock. [X0020]

HARLEY-DAVIDSON, 7-9h.p., 1915 model 11F, scarcely used, and in perfect order; first offer over 48 gns. secures, great bargain.—3, King's Rd., Windsor. [3722]

HARLEY-DAVIDSON new models in stock; your present machine taken as part payment.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [10481]

HARLEY-DAVIDSON 1916 Couch Combination, 7-9 h.p., mag., 3 speeds, kick, dynamo lighting; almost a gift, 68 gns.; exchanges entertained.—Wadsworth Motor Exchange, Ebner St., Wadsworth (Town Station). [X9996]

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, with Montgomery coachbuilt sidcar, horn, lamps, tools, and spares, in perfect condition, not ridden since overhauled by makers; £63.—Horne, Colley Manor, Reigate, Surrey. [3547]

HARLEY-DAVIDSON, 1916, 7-9h.p., 3 speeds, model 16F, with special Montgomery sidcar to match, used for a few miles only, guaranteed as new; £95.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [10552]

HARLEY-DAVIDSON Model F and in stock; also shop-soiled bargain, with H.D. Canoelet sidcar, absolutely equal to new; easy payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [3583]

HARLEY-DAVIDSON, the Silent Orey; immediate delivery of 1916 models, all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [10817]

HARLEY-DAVIDSON 7-9h.p. Late 1915 Combination, electric lighting set and hooter, Stewart speedometer, saddle seat, heavy steel-studded tyres on buck wheel, spare nearly new cover and tube, large ear style hood, adjustable wind screen, specially made carrier, motor suits, caps, goggles, pump, plenty of costly spares, excellent condition; £75 and petrol, a real bargain.—Gregory, 624, Fulham Rd., Fulham. [3565]

HARRIS.

HARRIS-PEUGEOT, 3½h.p., 1913/ F.E., Bosch, B. and B. horn, lamps, tools; cheap.—43, King Edward Rd., Rugby. [X0101]

Hazlewood.

HAZLEWOOD 5h.p. Twin, 3-speed, countershaft, very fine coach sidcar, with hood and screen, lamps, etc.; £45, bargain.—Hedgcock, 7, Wilton Mews, Upper Belgrave St., S.W. [3685]

HAZLEWOOD Combination, 5-6h.p. J.A.P., 3 speeds and clutch, tyres almost new, new belt, fitted with auxiliary tank complete for running on substitutes, coachbuilt 4-point suspension sidcar, perfect; £60, or gear offer, or would consider part exchange with 1914-15. T.T. Douglas.—Apply, Box 363, c/o The Motor Cycle. [X9616]

Henderson.

FOR Sale, Henderson, late 1915, with Millford coachbuilt sidcar, little used, fine turnout; £75.—Box 350, c/o The Motor Cycle. [X9398]

Hobart.

1914 Hobart-Jap, 4h.p., Bosch, B. and B. carburettor, new back tyre, belt, lamps; £22; called up.—68, Elgin Rd., East Croydon. [X9937]

Humber.

2h.p. Humber, single-speed, Bosch mag., overhauled, splendid condition; £12.—F. Prisk, St. Agnes, Cornwall. [X0033]

HUMBER, 1914, 2½h.p., new big-end, Druids, less mg.; bargain, £12.—Lidstone, c/o Dollis Garage, Ltd., Finchley. [5813]



## MOTOR CYCLES FOR SALE.

## Humber.

**HUMBER**, 1912, 3½ h.p., 2-speed, and sidecar, in excellent condition, new belt; £30.—T. Mastio, Gorton, Spalding. [X9693]

**HUMBER** and Sidecar, 1913, 3½ h.p., 2-speed, handle starting, splendid running order; £22/10.—Vine and Lee, Portlaid. [3799]

**HUMBER**, 3½ h.p., 3-speed, 1915, brand new; £55.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [X842]

**3½ h.p. Humber**, 2-speed, handle start, and 1915 Watsonian sidecar, lamps, horn, perfect condition; trial; £25.—65, Grove Rd., Walthamstow. [3576]

**HUMBER** 1913 4 h.p. Coachbuilt Combination, 3 speeds, handle starting, lamps, speedometer, horn, ship of the week £27/10.—3, The Mews, Victoria Rd., Clapham, S.W. [3804]

## Indian.

**INDIAN** 1916 Powerplus Combination, brand new, actually in stock.

**INDIAN**, 1914, 7-9 h.p., 2 speeds, electric equipment, combination in nice order; £45.

**INDIAN**, 1915, 7-9 h.p., T.T., almost new; £45.—6, Warren St., London. [3761]

**INDIANS**, both new and second-hand, in stock.—Massey, Excelsior Works, Spalding. [3525]

**INDIAN**, 1915½, 7 h.p., clutch, excellent condition; 36 gns.—245, Hammersmith Rd., London, W. [3718]

**7-9 h.p. Speed Model Indian**, bought new July, 1916, accessories; £50.—Capt. Dixon, R.F.C., Cirencester. [3776]

**5-h.p. Indian**, in good running condition; £25.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3388]

**1916 Powerplus Indian**, 3-speed, spring frame; £54; perfect condition; no offers.—Box 379, c/o The Motor Cycle. [X9905]

**INDIAN**, 1915, 7-9 h.p., T.T., clutch, excellent condition; £35, or offers.—Lieut. Booth, Air Station, Howden, Yorks. [X9892]

**INDIAN** Combination, 1915, 7-9 h.p., 3-speed, electrically equipped, speedometer, splendid condition; £60.—101, Upper St., N. [3604]

**INDIAN**, 1914, clutch model, 7-9 h.p., very fast, splendid order and condition; £39.—Bullock, 1, Johnstone Row, Weymouth. [X1013]

**1915 Indian**, 5-6 h.p., 3-speed, kick start, lamps, mechanical horn, new tyre, perfect; £50.—Jones, 35, Alderbrook Rd., Balham. [3611]

**INDIAN** Powerplus, 1916, accessories, spares, condition as new; £65; leaving for Front.—Thurston, Military Hospital, Dover. (D) [X9907]

**INDIAN** Powerplus, June, 1916, sidecar de luxe, speedometer, lamps, horn, 2,000 miles; £75.—17, Dennington Park Rd., West Hampstead. [X9420]

**INDIAN** Combination, 1912, 3½ h.p., 2-speed, clutch, new tyre and chains; £28.—Messinger, Albany Cottage, Cul de Sac Rd., East Molesey. [3773]

**7-9 h.p. Indian**, spring frame model, 2-speed free engine, clutch and kick-start model; £27/10.—Wauchope's, 9, Shoe Lane, London, E.C. [3792]

**INDIAN** Combination, 7-9 h.p., hardly soiled, beautiful condition, electric light, speedometer, etc., with 20 gns. sidecar; £75.—Orton, 256, High St., Manor Park. [3638]

**INDIAN** 1914 Combination, hardly used, 7-9 h.p., 2-speed, clutch, spring frame, valuable spares, electric lighting; £52; joining up.—Brittain, 27, Waterloo Rd., S.E. [3616]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X9976]

**INDIAN** 1915 5 h.p. Combination, 3-speed, kick start; £63; nearly new; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. [3740]

**LATE** 1915 7-9 h.p. 3-speed Indian Combination, electrical equipment, wind screen, hood, luggage grid and spares; any trial; £70, or near offer.—Apply, 2, Burton Rd., Lincoln. [X9884]

**POWERPLUS** Indian, slightly used only, lamps, speedometer, and Klaxon horn; first cheque £68 spares; 3½ h.p. model, all accessories, £47.—Humberstone, 7, Bolton Lane, Ipswich. [X9156]

**INDIAN** Powerplus, 7 h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X9974]

**INDIAN** 1915 7-9 h.p. Combination, 3-speed, kick start, first-class order, £66; sidecar equal to new; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. [3747]

**BIRMINGHAM** Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5 h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X9975]

**INDIAN**, 7-9 h.p., 1913½, coachbuilt car, 2-speed, clutch, and kick starter, spring frame, Lucas head, rear, and sidecar lamps, tools, etc., ready to ride away; £42/10.—John Ashton, 54, Keane St., Ashton-under-Lyne. [X9943]

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Model F.	7	b.p.	twin INDIAN, spring frame, 3-sp. gear, rear drive speedometer, Splitdorf ignition-lighting outfit, kick starter	£	s.	d.
" K.	2½	b.p.	INDIAN Lightweight, 3-sp. gear	£90	0	0
" B.	5	h.p.	twin INDIAN, 3-speed gear, kick starter	£49	10	0
	2½	h.p.	CALTHORPE J.A.P., Enfield 2-speed, variable ignition	£37	16	0
	2½	h.p.	CALTHORPE Lady's, 2-str., Enfield 2-speed, variable ignition	£35	14	0
	4	h.p.	CALTHORPE L'weight Combination, twin engine with Enfield 2-sp. countershaft gear, variable magneto, handle starter, complete with highly finished coach-built Sidecar	£70	7	0
	2½	h.p.	LEVIS, 2-stroke	£32	0	0
" E.	2½	h.p.	LEVIS, 2-speed	£47	10	0
" II.	2½	h.p.	COVENTRY EAGLE, 2-str., with countershaft 2-speed gear	£44	2	0
No. i.	2½	b.p.	NEW IMPERIAL Light Tourist, 2-speed, variable ignition	£38	0	0
Model K.	4½	h.p.	B.S.A., 3-speed c/shaft gear, chain-cum-belt drive, kick starter	£64	0	0
	2½	h.p.	ALLDAYS ALLON, 2-stroke, countershaft drive, 2-speed gear	£42	0	0
No. 180.	6	h.p.	ROYAL ENFIELD Sidecar Combination 2-sp., handle starter	£94	10	0
Model A.	3½	h.p.	ZENITH, standard, T.T. bars and Gradua gear	£62	7	6
" C.	4-5	h.p.	ZENITH, standard, Gradua gear	£65	16	9
" E.	6	h.p.	ZENITH, standard	£76	4	6
No. 6.	4½	h.p.	JAMES, 3-speed	£66	5	0
No. 6.	4½	h.p.	JAMES, 3-sp., complete with Sidecar and apron	£81	12	0
No. 7.	3½	h.p.	JAMES, twin, solo model	£66	5	0
No. 8.	2½	h.p.	JAMES, 2-speed, 2-stroke	£38	12	6
	3½	h.p.	ROVER, 3-speed c/shaft gear	£69	10	0
	3½	h.p.	ROVER, T.T. model, hand-controlled Philipson pulley	£61	10	0

## SECOND-HAND GUARANTEED MACHINES.

£17.	1914	2½	h.p.	TORPEDO, 2-stroke.
£17.	1914	2½	h.p.	ALLDAYS MATCHLESS 2-stroke.
£22.	1915	2½	h.p.	RADO, standard, with accessories.
£25.	1914	2½	h.p.	NEW IMPERIAL, 2-speed.
£25.	1914	2½	h.p.	NEW IMPERIAL, 2-speed.
£28.	1915	2½	h.p.	VELOCETTE, 2-str., 2-sp., chain drive.
£28.	1915	2½	h.p.	NEW IMPERIAL, 2-speed, lamp, generator, and Stewart horn.
£28.	1915	3½	h.p.	OVERSEAS, adjustable pulley, semi-T.T. bars.
£35.	1914	2½	h.p.	GLYNO Lightweight, 2-stroke, 2-speed, and clutch, and sporting coach built Sidecar.
£38.	1913	7	h.p.	INDIAN, 2-speed, spring frame.
£45.	*1914	3½	h.p.	P. & M., 2-speed, kick starter, lamp, generator, rear light, horn, and Millford Corvette Sidecar.
£49.	1915	7	h.p.	INDIAN Road Racer.
£52.	*1914	7	h.p.	INDIAN, 2-speed, electrically equipped, with Sidecar.
£57.	1915	5	h.p.	INDIAN, 3-speed, lamps, and horn.
£57.	1916	4-5	h.p.	ZENITH, standard C, Gradua gear, done 250 miles only.
£60.	1915	3½	h.p.	SUNBEAM, 3-speed, T.T. bars, kick starter, and accessories.
£72.	1915	7	h.p.	INDIAN, 3-speed, spring frame, kick starter, elec. equip., with coach-built Sidecar.
£75.	*1915	7	h.p.	INDIAN, 3-speed, spring frame, kick starter, elec. equip., with coach-built Sidecar, hood and screen.
£78.	*1915	7	h.p.	INDIAN, 3-speed, spring frame, kick starter, elec. equip., with coach-built Sidecar, hood and screen.
£78.	*1915	7	h.p.	INDIAN, 3-speed, spring frame, kick starter, elec. equip., with coach-built Sidecar.
£85.	1916	7	h.p.	INDIAN, 3-speed, spring frame, kick starter, electrically equipped.

\*Sidecar combinations.

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## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN**, 1915, 5 h.p., and Phoenix sidecar, nearly new, 3-speed and clutch, electric lighting, lamps, tools, spares, magnificent outfit, hardly used; £65, or offer; would deliver 100 miles.—Hinson, 22, Addison Rd., Reading. [3684]

**INDIAN**, 1915 (October), 5 h.p., 3-speed, clutch, kick start, T.T. bars, complete with lamps, horn, tools, scarcely used, about 300 miles, absolutely new and unscratched; £50, no offers.—Walton, Osman Cottage, Sunderland. [X10104]

**INDIANS**.—One 1915, 5 h.p., 3-speed, with coachbuilt sidecar, at £63 and £48/10 respectively; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: Hammersmith 80. [3667]

**POWERPLUS** De Luxe, mag. dynamo, together with double-seated sidecar, extra side light, also pushing lamp in case of repairs, a really beautiful turnout; most altogether £117, a bargain £95; will guarantee in perfect condition throughout.—Below.

**LATE** 1915 Model C 3-speed electric equipment Indian combination, in first-class condition, only done 2,000; £70.—Herswill, 103, Brook St., Chester, Indian Agent. Phone: 943. [3725]

**OCTOBER** (1915) 7-9 h.p. Indian, spring frame, electric lighting, special de luxe sidecar, fitted with hood and screen, done small mileage, and absolutely as new, guaranteed perfect in every respect, is new; £80; deferred payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3815]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5 h.p. 3-speed model, £70; 7 h.p. T.T. Powerplus, £75; 7 h.p. 3-speed, spring frame, and electric light, £78; special de luxe 7 h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X9971]

## Ivy.

**PETROL** Free with 1915 Ivy 2-stroke Sidecar, 2-speed gear; 30 gns., or separate.—Troward, 78, High St., Hampstead. [3676]

**1915** 4 h.p. Racing Ivy-Precision, low, will do 60 m.p.h., unscratched; exchange last cycle gear; sell £45.—Guerrard, 42, Angell Rd., Brixton. [3657]

## Ixon.

**SOLE** Bristol Agents for Ixons; immediate delivery.—Derby Motor Co., Bishopston, Bristol. [X0036]

**IXION**, 1914, in good condition throughout, lamps, etc.; owner enlisting; £18.—Apply, Bykyn and Sons, Warwick Rd., Kenilworth. [X0027]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [X0829]

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [X0803]

**1916** James Combination, new June, Lucas lamps, perfect condition; £67.—S., 32, Galloway Rd., Wyke, Weymouth. [3742]

**JAMES**.—P. J. Evans, John Bright St., Birmingham.—Immediate delivery all models, including 2-stroke, 3½ h.p. twin, and 4½ h.p. big single. [X9977]

**JAMES** 4½ h.p. 1915 Combination, complete, spare tyre and tube, 2 acetylene lamps, and spares, 2,000 miles, splendid condition; £56.—Childs, Melbourn Park, Dorchester. [3660]

**JAMES** 4½ h.p. 1914 Combination, 3-speed countershaft, chain drive, kick starter, splendid condition, good tyres, lamps, and horn, private ownership; £45.—C., 98, Station Rd., Wood Green. [3626]

## J.A.P.

**4** h.p. J.A.P., engine, tyres, finish like new; £30.—J. Woodcock, Barton Field, Barton-on-Humber. [X0096]

## Juno.

**JUNO**, 1916, 2½ h.p. V.T.S., 2-speed, 2-stroke, Dunlop tyres, aluminium footboards, 2 lamps, horn, and generator; £25.—Seen at 248, Bishopsgate, London, E.C. [3779]

## Kerry.

**KERRY-ABINGDON**, 3½ h.p., 1913, 2 speeds, low coachbuilt sidecar, lamps, horn, etc., perfect order; £27.—8, Half Moon Lane, Herne Hill. [3699]

## Levis.

**LEVIS**, 1916, brand new; in stock.

**LEVIS**, 1916, Enfield 2 speeds, chain drive, as new; £35.

**LEVIS**, 1916, run 100 miles, as new; £30.—6, Warren St., London. [3757]

**1916** Popular Model Levis; £32.—Wilkin and Co., Hunters Bar, Sheffield. [X0016]

**1916** 2½ h.p. 2-speed Model E Levis; £37.—Wilkin and Co., Hunters Bar, Sheffield. [X0015]

**LEVIS**, Baby, 1915, perfect; £20.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [3392]

**LEVIS** 1916 Latest Lightweight, one special sample in stock; also a few bargains in shop-soiled.—Laytons' Garage, Bicester, Oxon. [X0078]



## MOTOR CYCLES FOR SALE.

## Levis.

1916 Popular Levis, lamps, horn, etc., little used; £24 cash.—Taylor's Garage, Falmouth. [3268]

**C**OLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0894]

**L**EVIS, 1915, 2½ h.p., perfect condition, Brooks saddle, new tyres, all accessories, spares; £23, no offers.—Hampton, 10, Broadhinton Rd., Clapham, S.W. [X9889]

**L**EVIS, 1915, 2½ h.p., almost new, 100 m.p.g., 8 lamps, horn, with accessories, complete; must sell, called up; seen any time.—Miller, 62, Hampstead Rd. N.W. [3769]

## Lincoln-Elk.

**L**INCOLN-ELK, 3½ h.p., 1913, free engine in back wheel, kick starter, Lucas lamp, new belt, Brooks saddle, T.T. bars, machine in new condition; £17 cash.—64, Mill Lane, Brixton Hill. [X9712]

## Matchless.

**M**ATCHLESS Combination, model 8B, 1914, M.A.G. engine, 3-speed gear; offers.—Foxall, Stationer, Bridgnorth. [3529]

**M**ATCHLESS, 8 h.p., Gradua gear, 1912 horn, lamp; £40 cash.—T. R. Brown, Travena, Manorgate Rd., Kingston Hill. [3552]

1915 Matchless, 7.9 h.p., all chain drive, 3-speed gear, and 2-seater sidcar.—Julians, 84, Broad St., Reading. Biggest motor cycle dealer in the South. [0853]

1915 8 h.p. Matchless Combination, 3 P. and H. lamps, heavy Dunlops, spare Palmer, perfect condition; £76, lowest; seen any time.—Hobard, 53, Chalton St., Euston Rd., N.W. Phone: 2327 Museum. [3523]

**M**ATCHLESS Combination, 1915, 8B model, M.A.G. engine, 3-speed countershaft, fully equipped, not soiled, equal new, guaranteed; £20 cash, genuine bargain.—Hallam, Rosedale, Dove Holes, Stockport. [X9959]

**M**ATCHLESS, M.A.G., automatic lubrication, interchangeable, detachable wheels and spare, Lucas electric lighting outfit, spring wheel sidcar, with hood and screen; £85.—Apply, 75, New Rd., Woolwich, S.E. [3745]

**M**ATCHLESS, 1913, 6 h.p., and Chater-Lea sidcar, 2 speeds, free engine, pedal starting, hardly used during war, guaranteed take 3 anywhere, splendid condition, all accessories; £47.—3, Lushington Rd., Wrotham Rd., Harleiden. [3578]

**N**EVER Again.—Late 6-h.p. Matchless-Jap, 2 speeds, chain drive, kick start, clutch, 3 lamps, guaranteed perfect, enamel, plating, etc., as new, complete, Cassole sidcar to match; first £55 secure.—Bon Marche, Chesterfield. [X0043]

**M**ATCHLESS Combination, 1914-15, 8B model, M.A.G. engine, 3 speeds, countershaft gear, speedometer, clock, pillbox seat, tyres almost new, 2 spare tubes, perfect condition throughout; £70.—Ivydene, Dukethorpe Rd., Sydenham, S.E. [3736]

## Minerva.

**M**INERVA, 3½ h.p., spring forks, running order; £5, —455, York Rd., Wandsworth. [3645]

2 h.p. Minerva, mag., 2-speed, F.E. running order; £9.—24, Lower Park Fields, Putney, S.W. [3544]

**M**INERVA, 3½ h.p., mag., £15, or exchange with cash for higher power.—Bayliss, 13, Nutfield Rd., Thornton Heath, Surrey. [X9896]

**M**INERVA, 2½ h.p., with Minerva engine, mag. ignition, Druid forks, extra tank; £7.—Seen at 248, Bishopsgate, London, E.C. [3780]

## Moto-Reve.

**M**OTO-REVE, 2½ h.p., as new; £15.—12, Mill Lane, Brixton Hill. [3519]

## Motosacoche.

**M**OTOSACOCHE, 1912, 2½ h.p., h.h.c. variable gear, with free engine, plating and enamel in good condition; £12 for quick sale.—89, Saltergate, Chesterfield. [3739]

## New Hudson.

**N**EW Hudson Big Six Combination, late 1915, perfect; £50.—Vickers, 28, Colahill St., Birmingham. [X9922]

**N**EW Hudson, 2½ h.p. J.A.P. engine, 3-speed, clutch, in perfect condition.—K., 61, Lawrence St., York. [3658]

**N**EW Hudson, 2½ h.p., 1915, 2-stroke, 2-speed countershaft, speedometer; £18.—17, Cromwell Rd., Fitcham. [3770]

**N**EW Hudson, model C, 2-stroke; £38; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

**N**EW Hudson, Sep. 1915, 2½ h.p., 2-stroke, 2 speeds, free engine, nearly new, cost £42, only £28, or offer.—12, Blackhorse Lane, Walthamstow. [X9890]

1915 New Hudson, 4 h.p., 3-speed countershaft, all accessories, in fine order and condition; £54; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3828]

1913 3½ h.p. New Hudson, 3-speed, etc., wicker sidcar, all lamps, etc., in perfect order, guaranteed; £32; deferred payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3816]

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3 h.p. ENFIELD, Model 140 .....	£57 15
2½ h.p. ENFIELD, 2-stroke, 2-speed .....	£44 2
7 h.p. INDIAN, Model C, 3-speed .....	£78 0
7 h.p. INDIAN, Model G, 3-speed .....	£75 0
5 h.p. INDIAN, Model B, 3-speed .....	£70 0
4½ h.p. B.S.A., Model H .....	£66 0
4½ h.p. B.S.A., Model K .....	£64 0
2½ h.p. DIAMOND-J.A.P., Enfield 2-speed gear .....	£40 19
2½ h.p. O.K. JUNIOR-J.A.P., 2-speed .....	£38 0
2½ h.p. CALTHORPE-J.A.P., 2-speed .....	£37 16
2½ h.p. CALTHORPE-J.A.P., 2-stroke .....	£32 11
2½ h.p. EXCELSIOR, 2-stroke, 2-speed .....	£37 10
2½ h.p. EXCELSIOR, 2-stroke, single gear .....	£30 16
2½ h.p. LEVIS, 2-stroke, Popular Model ..	£32 0

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3 h.p. 1915 T.T. ENFIELD, 2-speed, horn, lamp, generator .....	£40 0
4 h.p. 1916 CALTHORPE Combination .....	£50 9
8 h.p. 1914 WILLIAMSON and Sidcar, 2-speed, horn, lamp .....	£50 0
7 h.p. 1912 INDIAN and Sidcar, 2-speed .....	£36 0
2½ h.p. 1915 DOUGLAS, War Model, 2-sp., lamp and generator .....	£48 0
2½ h.p. 1915 HOBART, 2-stroke, 2-speed, shop-soiled only .....	£29 10
2½ h.p. 1914 DOUGLAS, T.T., 2-speed .....	£34 0
3 h.p. T.T. NORTON .....	£23 0
6 h.p. 1915 CLYNO Combination, detachable wheels and spare .....	£68 0

## TO-DAY'S SECOND-HAND BARGAINS ON OFFER AT EDINBURGH:

TRIUMPH, 3½ h.p., fixed engine .....	£20 0
1916 CRESCENT, 2-stroke, 2-speed .....	£24 0
1916 CALTHORPE, 2-stroke, 2-speed .....	£26 10
1915 CALTHORPE-J.A.P., 2-speed .....	£27 0
1912 RUDGE, 3½ h.p., 2-speed .....	£27 10
1913 7 h.p. INDIAN, Sidcar, hood, screen .....	£40 0
1916 INDIAN, 2-stroke, 3-sp., kick starter, as new .....	£44 0
3½ h.p. LINCOLN-ELK .....	£38 0
1913 3½ h.p. RUDGE Multi .....	£35 0
1915 5 h.p. INDIAN, 3-speed, as new ..	£63 0
1916 ENFIELD 180 Combination, 8 h.p. engine, used few miles only .....	£32 0
7 h.p. INDIAN and Sidcar, spring frame ..	£45 0
1915-16 6 h.p. CLYNO Combination, very completely equipped, new condition ..	£80 0

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## ALEXANDER &amp; CO.,

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## MOTOR CYCLES FOR SALE.

## New Hudson.

**N**EW Hudson, 1914, 4 h.p., new Stepney road grip tyres, speedometer, lamps, 3 spare tubes, accessories, coachbuilt sidcar; £38; bought car.—Dennis, Earthenware Manufacturer, Fenton, Staffs. [3691]

**N**EW Hudson, 4 h.p., 1913½, 3 speeds, clutch, kick starter, countershaft drive, coach sidcar, spring footboards, speedometer, lamps, etc., engine and gear recently overhauled, receipts shown; £36.—Chaffey, 158, Dupree Rd., Charlton, S.E. [3593]

## New Imperial.

**N**EW Imperial, latest 2½ h.p. and 6 h.p. models in stock.—Crow Bros., Guildford. [3427]

**C**OLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0806]

**N**EW Imperial 1916 Current Models in stock, also one or two bargains, shop-soiled.—Laytons' Garage, Bicester, Oxon. [X0079]

1915 New Imperial-Jap, 2-speed, new condition; price £27/10.—Sanders' Motor Cycle Depot, Bridge St., Hitchin, Herts. [X9389]

**N**EW Imperial-Jap, 1916, 2-speed, variable ignition; £29; fast and economical.—Capt. Richardson, East-church, Isle of Sheppey. [3561]

**P. J. EVANS**, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X9973]

**N**EW Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool districts, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Renshaw St., Liverpool, and 261, Denagsgate, Manchester. [0814]

## Norton.

**N**ORTON Big Four Combination, brand new, actually in stock.—6, Warren St., London. [3765]

1913 3½ h.p. T.T. Norton, very fast; £27.—Wilkin and Co., Hunters Bar, Sheffield. [X0009]

**N**ORTON, June, 1916, racer, £11 accessories, 70 m.p.h.; £60.—Write, Bramwell, Gatehouse, Wembleton, S.W. [X9940]

**N**ORTON Tourist Trophy Model, No. 16, brand new, in stock, ready to drive away; 67 gns.—Embro Cycle and Motor Co., Charlotte St., Hull. [3577]

**N**ORTON, 3½ h.p., late 1915, 3-speed countershaft, chain drive, Lucas, Cowey, beautiful condition; offers.—9, Trinity Terrace, Corbridge-on-Tyne. [X9927]

## N.S.U.

1914 N.S.U., 6½ h.p., 3-speed, clutch, Speedwell sidcar, 1,200, as new; £48; exchange Morgan.—59, Waverley St., Hull. [X0102]

5-h.p. N.S.U., spring frame model, 1914 machine, 2-speed gear and sidcar, coachbuilt, hood and screen, and all accessories; £35; guaranteed.—Wanchope's, 9, Shoe Lane, London. [3798]

## O.K.

1914 O.K. Junior, 2-speed, in perfect order; £20.—Barton, 26, Brook Lane, Chester. [X9866]

1916 O.K., 2-stroke, 2 speeds, done 100 miles, like new; £30.—Cross, Biffingham Sq., Rotherham. [X9958]

O.K. Precision, 4½ h.p., 3-speed, usual equipment, in fine order; £25.—14, Dodbrooke Rd., West Norwood. [0856]

1916 O.K. Junior, 2-stroke, good condition; £19, or exchange with cash for combination.—Ginns, Carlisle, Carlisle. [3733]

1915 O.K. Mark IV, 2½ h.p., 2-speed, footboards, clutch, lamps, horn, spares; £17/17, cost £36; owner called up.—Shrubsole, 54, Nunnery Fields, Canterbury. [X9686]

## Omega.

**O**MEGA, 1916, 3 h.p., 2-speed, 2-stroke, in good condition, new tyres; £25, or nearest.—37, Canterbury Rd., Dalston, London, N. [3605]

## P. and M.

1914 P. and M., in fine order, complete lamps, horn, numbers, etc.; £35.—Cross, Jeweller, Rotherham. [X9956]

**P** and M Combination, complete, 1914, good as new; £50.—Mundy, 42, High St., Wealdstone, Harrow. [2914]

**P** and M., late 1913, Ivy C.B. sidcar, screen, lamps, etc.; £35.—Dental Surgery, 63, Laurel Rd., Leicester. [X9815]

**P** and M., 1913-14, with coachbuilt sidcar, lamps, spares, etc., excellent condition; bargain, £40.—10, Moyser Rd., Streatham Park. [3628]

## Peugeot.

5 h.p. Twia Peugeot, new tyres, good condition, and powerful; £15; also 2½ h.p. J.A.P. engine, in running order, offers.—F. Withers, 4, Cottage Rd., Waltham Cross. [3532]

**P**EUGET and Sidcar, 7.9 h.p., N.S.U. 2-speed, free engine, Claudel-Hobson automatic overhauler, new belt, tyres, recently overhauled; accept £50, or exchange lightweight and cash.—Cobb, No. 14, Officer Cadet Battalion Headquarters, Unity Hall, Berkhamstead. [X9968]



## MOTOR CYCLES FOR SALE.

## Precision.

2 1/2 h.p. Precision Junior, 2-speed; £16.—37, Bramble-bury Rd., Plumstead, Kent. [3572]

## Premier.

PREMIER, 3 1/2 h.p., free engine, good tyres, good running order; £15.—455, York Rd., Wandsworth. [3646]

PREMIER, 2 1/2 h.p., lightweight, excellent condition; £14.—Write, 51, Beechwood Av., Thornton Heath. [3343]

1913 2 1/2 h.p. Premier, in very nice order and condition; £17/10.—Jones, Garage, Broadway, Muswell Hill. [3829]

1914 3 1/2 h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PETROL Free with 1914 Premier, countershaft gears, clutch, excellent appearance; 32 gns.—Troward, 78, High St., Hampstead. [3674]

1913 2 1/2 h.p. Premier, just returned from re-bushing and overhauling, all spares, tools, etc.; £17/10, offers.—Turner, Hemsforth, Yorks. [X9935]

PREMIER, 2 1/2 h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X0080]

PREMIER, 3 1/2 h.p., just bought for £30; called up; will sell £20; not soiled.—S. G. Dawes, 11, Urban Rd., Wrockwardine Wood, Oakengates, Salop. [3591]

PREMIER, 2 1/2 h.p., 1914, 3-speed, clutch, brand new tyres, lamps, and horn, condition equal to new; sacrifice, £20.—Longman, King St., Acton. [3662]

3 1/2 h.p. 1913 2-speed Premier and coachbuilt sidecar, all accessories, in fine order, £30; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3830]

PREMIER, 1914, T.T., 3 1/2 h.p., Philipson pulley, very fast, perfect condition, £26; exchange lightweight.—C.S., Clayhall Tavern, Old Ford Rd., Bow. [3681]

3 1/2 h.p. Premier, late 1913, 3 speeds, new tyres and belt, electric lights, kick starter, overhauled and painted 1916, Montgomery £14/14 sidecar, as new, all fittings; £50, or nearest offer.—Whipp, Althorpe, Ernest Rd., Hornchurch. [X9691]

## Quadrant.

1916 4 1/2 h.p. Quadrant Combination, kick starter, 3-speed, hood, lamps, horn, speedometer, splendid condition, not run 400 miles; owner going abroad; £65.—Box 382, c/o The Motor Cycle. (D) [X9994]

1916 4 1/2 h.p. Quadrant, B.S.A. 3-speed gear, Canoelet sidecar, screen and grid, all black, disc wheels, numerous fittings and accessories; £65.—Capt. Tickler, 15th Yorks Regt., Rugeley, Staffs. [X0001]

QUADRANT, late 1914, 4 1/2 h.p., Canoelet sidecar, 3-speed gear, Senspray carburettor, speedometer, spare belt, tube, cover, lamps, accessories, splendid condition, done barely 2,000 miles, recently overhauled; £42.—Langridge, 1a, Holmdale Rd., Stamford Hill. [3703]

## Radco.

1914 1/2 2-speed Radco, 2-stroke, in perfect order; take cheaper machine part, sell £18.—Jarvis, Cirencester. [3731]

## Regal.

1913 Regal-Jap, 3 1/2 h.p. twin, very fast, new tyres and belt; owner joining up; 18 gns.—After 7 p.m., 7, Berwick St., Victoria, S.W. [3696]

## Rex.

1913 6 h.p. Rex Sideette; £33.—Wilkin and Co., Hunters Bar, Sheffield. [X0008]

1912 6 h.p. Rex Sideette, in perfect order; £28.—Wilkin and Co., Hunters Bar, Sheffield. [X0010]

3 1/2 h.p. Rex, Saxon, mag.; £12/10; appointment week-ends.—33, Oaklands Rd., Hanwell. [3659]

1912 6 h.p. Rex, Mabon clutch, K.S., stored since August, 1914; £16.—Hedges, 3, Chichester Place, Paddington. [3775]

REX, 5-6 h.p. twin, T.T. clutch model, tyres and belt new, machine in splendid condition; £20.—14, Duddbrook Rd., West Norwood. [1543]

REX 6 h.p. Twin, low and powerful, new tyre and belt, etc., £18; nearly new sidecar, £4/10.—Smith, 199b, King St., Hammersmith. [3713]

REX 6 h.p. 1911 Twin, just overhauled, in perfect running order, £7/10; magneto to suit, £4; B.H. carburettor, 15/-.—7, Talbot St., Kidderminster. [X9685]

REX, brand new, 1916, just delivered, magnificent coach combination, 6-8 h.p., enclosed valves, 2 speeds, kick; sacrifice 68 gns.—Wandsworth Motor Exchange, Elnor St., Wandsworth (Town Station). [X9997]

1914 Rex 6 h.p. Twin, 3-speed combination, with 2-seater sidecar, complete with accessories, in first order; £45.—Take and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [3749]

## Rover.

ROVER, new 1917 latest model combination in stock.—Moss, Wem. [X9986]

ROVER, 1916, 4 h.p., T.T., free engine, in real good order; 40 gns.—6, Warren St., London. [3759]

ROVER, 1914, 3 1/2 h.p., 3 speeds, £35; with new coachbuilt sidecar, £45.—6, Warren St., London. [3766]

# An Equitable Deal

## On a Business Basis.

We guarantee you this, and none can offer you more.

## IN STOCK.

3 1/2 h.p. PREMIER Com., latest model..	£79 18
6 h.p. ENFIELD Combination .....	£94 10
4 1/2 h.p. B.S.A., Model H .....	£65 0
4 1/2 h.p. B.S.A., Model K .....	£64 0
3 1/2 h.p. ROVER, T.T., racing model ..	£57 0
3 1/2 h.p. ROVER, Philipson pulley .....	£61 10
3 1/2 h.p. ROVER, countershaft model ..	£69 10
2 1/2 h.p. EDMUND, spring frame .....	£46 4
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## SECOND-HAND BARGAINS.

1916 4 1/2 h.p. JAMES Combination, complete, only done 500 miles .....	£75 0
1915 2 1/2 h.p. T.T. DOUGLAS, Lucas lamp, horn, etc., like new .....	£44 0
1915 4 h.p. NORTON, with Norton de luxe Sidecar, Sturmer countershaft 3-speed, beautifully equipped with Lucas lamps and horn, magnificent order throughout .....	£75 0
1914 4 h.p. 3-speed TRIUMPH, complete with lamps, lovely condition .....	£47 10
1913 2 1/2 h.p. twin ENFIELD, 2-speed, overhauled, etc. ....	£24 0
1915 IVY, 2-sp., 2-stroke, fine condition ..	£30 0
1912 genuine T.T. TRIUMPH, 3-speed, ridden in 1912 T.T. race, large tank, special fittings; a bargain .....	£35 0
1913 2 1/2 h.p. A.J.S., 2-speed, kick starter, lamp, and horn, just overhauled ..	£30 0
1911 SCOTT, 2-speed, kick starter, etc., with Millford Canoelet Sidecar, horn, lamps, speedometer, etc. ....	£37 10
1913 5 h.p. INDIAN (red), T.T. model. ....	£30 0
SCRIPPS-BOOTH, 2-seater, practically new, electrically equipped, including self-starter, beautifully finished in black and yellow, spare wheel, hood, screen, etc. ....	£240 0
10 h.p. ARGO, 2-seater, 4-cylinder, hood, screen, lamps, and many spares, practically new, only done 500 miles. A bargain .....	£115 0

## Continental Tyres.

Your money returned if not approved.

26 x 2 1/2 Heavy Rubber-studded, B.E.	25/-
26 x 2 1/2 Heavy Basket, B.E. ....	25/-
26 x 2 1/2 Ribbed, B.E. ....	12/6

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Telephone—283.  
Telegrams—"Motor Exchange," Wrexham.

## MOTOR CYCLES FOR SALE.

## Rover.

ROVER, 3 1/2 h.p., clutch model, sound, but not smart; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X0081]

ROVER, 1913, 3 1/2 h.p., 3 speeds, coachbuilt sidecar, lamps, speedometer, etc., run 4,500 miles; £33.—14, Chester Terrace, Halifax. [X9936]

3 1/2 h.p. Rover Combination, 3-speed gear and clutch 32 complete with Rover coachbuilt sidecar £47/10; guaranteed.—Wauchope's, 9, Shoe Lane, London. [3789]

1913 T.T. Rover, magnificent condition; only 27 gns., rare bargain.—Julians, 84, Broad St., Reading. Biggest motor cycle dealer in the South. [0854]

ROVER, 1914 (late), 3-speed, in perfect condition, unscratched, done 1,650 miles, all accessories; £40.—Ramsay, Banwell, Somerset. [X9887]

1914 Rover, 3-speed, clutch, with smart Phoenix coachbuilt sidecar, completely equipped; £40.—Newham, 223, Hammersmith Rd., W. Phone: Hammersmith 80. [3666]

3 1/2 h.p. 1915 Rover, 3-speed, countershaft, kick 32 starter, speedometer, lamps and horn, in perfect condition, little used; £48.—Bert Houlding, Church of England, Bulford Camp. [X0098]

P. J. EVANS, sole Birmingham Rover agent.—Immediate delivery T.T., semi T.T. models, with or without Philipson, also latest countershaft models.—87-91, John Bright St., Birmingham. [X9970]

1917 Rover Combination, 3-speed countershaft gear, all the latest improvements, as illustrated in "The Motor Cycle" of Sept. 28th; price complete £89/9.—W. Brandish, Triumph Garage, Coventry. [X9654]

ROVER, 1915, 3 1/2 h.p., very fast, 3 speeds, complete with lamps, horn, mirrors, and Mills Family sidecar, with wind screen, storm cover, hood and sides, all in excellent condition; £56; owner will run out 20 miles.—C.B., 61, Station Rd., Harlesden, N.W. [3707]

## Royal Ruby.

1915 2 1/2 h.p. Royal Ruby; £20.—Wilkin and Co., Hunters Bar, Sheffield. [X0013]

ROYAL Ruby, 2-stroke, late 1914, in perfect condition, tyres and belt nearly new, P. and H. front and rear light, leather knee-grips; £17/10, bargain.—Chamberlain, The Chestnuts, Horeham Rd., Sussex. [3580]

## Rudge.

RUDGE Multi, 1913, in real good order and condition; £26.—6, Warren St., London. [3755]

1912 3 1/2 h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

RUDGE, 3 1/2 h.p., free engine, all in good condition and last; £20.—455, York Rd., Wandsworth. [3647]

RUDGE, 3 1/2 h.p., clutch, free engine, electric light, horn; £26; good condition.—66, Stratford Rd., Plaistow, E. (near station). [3555]

1913-14 Free Engine Rudge, in perfect order throughout, with full set of accessories; 30 gns.—Fancourt, St. Paul's St., Stamford. [X9930]

1915 Isle of Man T.T. Rudge, lamps, speedometer, etc., very little used; £48.—Ede and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

LATE 1913 Rudge Multi, 3 1/2 h.p., wicker torpedo sidecar, child's seat, little and carefully used, new heavy cover, spare cover, tube, parts complete; £36.—Algar, Wymondham, Norfolk. [X9690]

RUDGE Multi, late 1913, 3 1/2 h.p., P. and H. lamp set, speedometer, excellent condition throughout, bargain, £27/10.—Cass's Motor Mart, only address, 5, Warren St., Euston Rd., W. Museum 623. [3729]

RUDGE Multi, 5-6 h.p., October, 1915, Rudge C.B. sidecar, hood, screen, speedometer, horn, lamp, recently overhauled; 60 gns., or exchange with cash for 3-4-seater light car, not earlier than 1914.—W. 19, Lavender Gardens, S.W. [3801]

5-6 h.p. Multi Rudge, fitted with a Rudge coachbuilt sidecar, including speedometer and all accessories; the combination complete, very powerful, and an excellent hill-climber; £37/10; guaranteed.—Wauchope's, 9, Shoe Lane, London. [3795]

## Scott.

COLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [0806]

SCOTT, 1913, 2 speeds, kick starter, in good running order; £28.—26, Seymour St., Euston Sq., N.W. [3854]

SCOTT 2-stroke Twin, 2 speeds, good tyres, etc., perfect order; £15.—Smith, 199b, King St., Hammersmith. [3712]

1912 Scott, 2-speed, clutch, kick-starter, automatic lubrication, Binks 2-jet carburettor; £24.—1, Heath Gardens, Twickenham, Middlesex. [3853]

1914 Scott Combination, in splendid order, guaranteed in perfect order, all accessories; £50; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3831]

1915 Scott, T.T. bars, lamp, horn, all tools, new Dunlop and Palmer cord tyres, B. and B. Pilot carburettor; owner joining forces, must sell; £35, no offers.—Baker, The Jewel Casket, Wigan. [3698]





# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## Mudguarding.

**M**OTOR cycles are probably better protected from mud now than they ever have been before, but there still remains a good deal to be done. Before doctors and professional men will take to a motor cycle for continuous work it must be rendered perfectly clean, and so be unnecessary for them to wear overalls. Most of the mud comes from the front mudguard. This does not stop the mud from flying from the edges of the side wings all over the machine and rider and, when a sidecar is used, into the face of the passenger. The only remedy appears to be a vertical guard or pair of guards extending from the head to the bottom of the crank case. This is, of course, an old idea, but it would be almost a novelty to find it incorporated as a standard by a manufacturer. To extend the guard further and make it act as an undershield would also be an advantage, as it would protect the working parts from mud. Attempts of this kind have, we know, been made, but only in a half-hearted fashion. We have fixed up a temporary device of this kind on our present sidecar combination, and are fully able to appreciate its worth. It does not come up quite high enough to protect the knees, but it affords a great deal of protection to the driver, and being extended as an undershield keeps a good deal of mud off both crank case and chain. With the mudguarding of the back wheel there is not so much fault to find. Such attempts as have been made by manufacturers to supplement the mudguarding by a similar device to that which we have referred, err chiefly because the auxiliary guard is not high enough, and so does not sufficiently protect the rider's nether limbs. It is most essential that the professional and business rider should be able to keep clean, while it cannot be other than an advantage that such important exposed working parts as chains and tappets should be protected from flying mud and grit. The only possible objection is that the wind

resistance of the machine is increased, an objection which is hardly a valid one, as the width of the guards is barely in excess of that of the rider's legs.

## Spring Frame Progress.

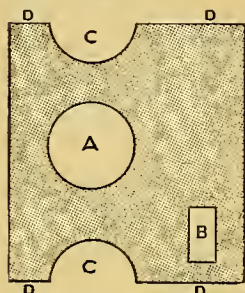
**A**T regular intervals we have directed attention to the desirability of springing the rear portion of the frame of motor cycles. There is growing support for our campaign, and efforts to solve the problem of the efficiently sprung motor cycle proceed from all quarters, and it is not too much to say that further headway would have been made but for the temporary cessation of activities due to war requirements. Those readers interested in the subject will be glad to know that since our campaign was launched something like eighty-two designs have been evolved in an attempt to meet the demand. Amateurs and experts alike have contributed their efforts. Many a man has entered the arena, struck by the simple nature of the demand; a good many have gone further, and marvelled that makers should be so tardy in fulfilling such an obviously reasonable and crying need. Such have, sooner or later, received their disillusionment, for, simple as it may appear at first sight, the spring frame problem is a real one. There are a good many intricate points which crop up even in plotting out a design on paper. The perfect spring frame will come—of that we are confident. More and more makers are concentrating attention on this all-important subject, and that very fact means that the concentration of brains in the endeavour to produce the ideal frame will have good results, and the perfect design will be evolved ere long. After the war it is the successful solution of such problems which will enable manufacturers to command the motor cycle field, and the sooner that all and sundry give close attention to the subject the better it will be for the pastime and the trade in general.



## HEATING THE CARBURETTER.

### A Simple Addition to an Amac Carburetter.

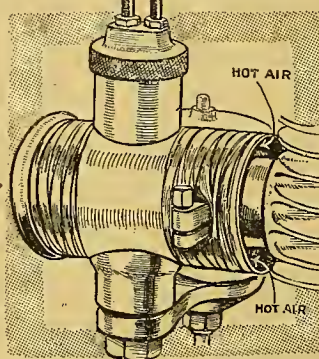
IN our issue of September 28th we reproduced a photograph of Major (now Lieutenant-Colonel) D. F. Nicholl, R.A., D.S.O., on his 4 h.p. Bradbury and sidecar, which he is running on a petrol substitute. He has made a very great improvement by taking in the air warm, which is carried out by quite an ingenious device, of which we give a description.



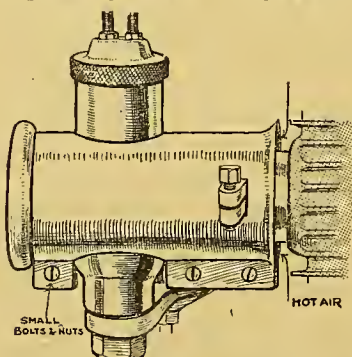
The tin should be cut to this shape for the rough model.

Some insulating tape. A plate was cut according to the shape shown, and this was then put over the carburetter from the top, the aperture A fitting round the

barrel, the throttle and air slide, etc., having been removed to allow it to go on. The plate was then bent round the induction pipe, the semi-circular indentations CC fitting closely together round the jet chamber, while the slot B was left to accommodate the squared end of the screw of the locking ring on the induction pipe. The edges DDDD of the plate just meet underneath, and the whole is held in position and made air-tight by means



The rough model of hot air jacket described by Col. Nicholl.



The more elaborate jacket finished in brass and secured by small nuts and bolts.

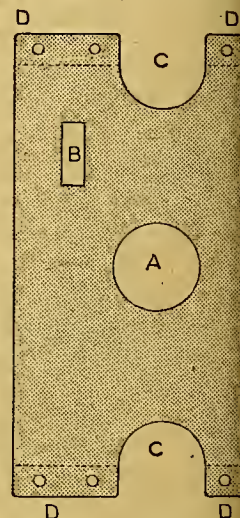
of insulating tape. It is fitted to an Amac carburetter, with which Col. Nicholl is extremely pleased. Though not neat in this particular form it works very well, the air being drawn in from the right-hand side of the illustration, the mouth of the intake being close up against the cylinder, of which it comes within a  $\frac{1}{4}$  in.

In a subsequent letter he says: "I have now bought a piece of sheet brass, price 8d., and half a dozen B.A. small threads and nuts, price 3d., of which I

shall probably only use three or four at the outside, and I am going to make up the gadget in a workmanlike form."

### The Device on the Road.

As regards the working of the device, he reports that "all the air is drawn from the open end within a  $\frac{1}{4}$  in. from the passes down the annular piece between the carburetter body and the jacket, with the result that when running the whole carburetter is warmed to such an extent that the dust cap which screws over the air intake on the Amac, and which is exposed to the air at its rear surface, is actually hot to the touch all the time. The vaporising is so much improved that I have been able to reduce the size of the control jet considerably, and yet use the air lever to the same extent as before. I am going to reduce the jet still further. The general running and pulling at slow speeds are much improved. The merit of the thing lies in its sweet simplicity and its negligible cost. Another great advantage is that the device involves no alteration whatever to the carburetter or engine, and leaves the former just as accessible as before."



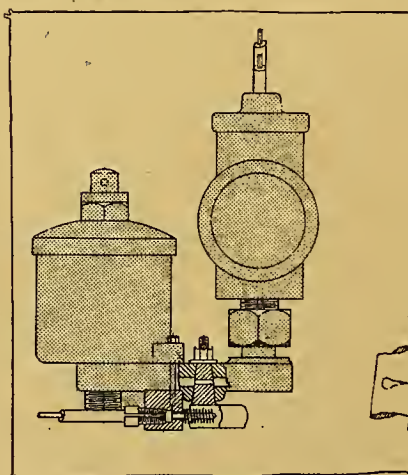
The shape for making the highly finished jacket.

### THE PETROL POSITION.

IT is especially gratifying to know that motor cyclists will be able in future to have double the amount of petrol allotted to them that they have had in the past. Motor cyclists are not debarred from applying for the fresh licences after, as they may put in their claims at any subsequent date, at any rate up to the end of November.

Licences will not be allotted for a less time than five months, so it is no good demanding a licence for a shorter period. For those who have no licence already new forms will be shortly issued, some of which may be obtained on applying to this office. In the event of a motor cyclist not purchasing the full amount to which he is entitled, he may claim the rebate at the end of the period for which the licence has been in force. We are still assisting readers to obtain supplies, and are glad to give all information possible on the subject. Readers who have sent postal orders to the Petrol Control Committee for their licences, and have not received them, should, when making

enquiry, quote the number of these postal orders, and we shall be pleased to do our best to assist them.

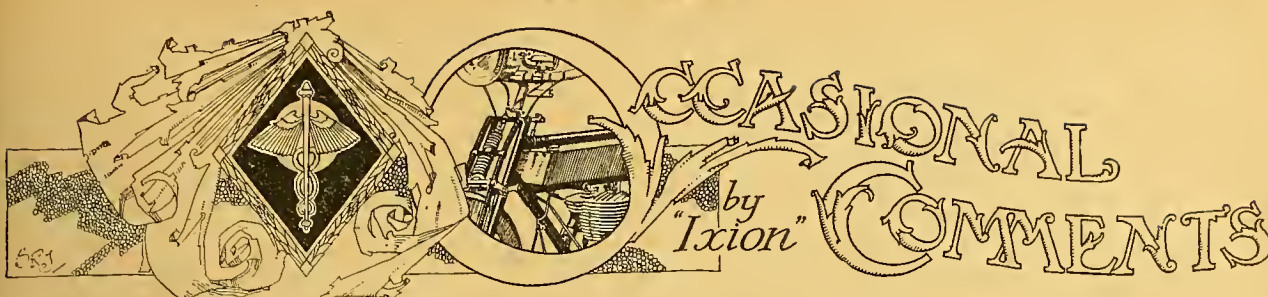


Sgt. R. Clough's variable jet carburetter.

### A VARIABLE JET CARBURETTER.

THE desirability of controlling the jet orifice of a carburetter is so obvious that it needs little demonstration. Two-stroke engines in particular are very sensitive to jet, as too large a jet tends to four-stroke, while too small a jet renders starting difficult and hill-climbing power insufficient. The carburetter illustrated herewith is designed to overcome this difficulty, but in this case the supply of petrol to the jet is controlled by a tap placed between the jet and the float chamber; this is operated from the handlebar by means of a Bowden wire. The hole through the cock is not made truly circular, but is cut away in such a manner that very gradual adjustment can be obtained. It is the invention of Sgt. Robert Clough, 51 Fort Camden, Crosshaven, Cork. Patent No. 13,408, 1915. There have in the past been many devices described in these columns, the object of which was effectively to regulate the quantity of spirit issuing from the jet.





### Number Three Petrol.

I should be very interested to hear from some chemist how the grade of spirit now being sold as No. 3 compares with the quality of Taxibus and Crown as marketed before the war. Several of my correspondents complain that the quality of petrol has deteriorated lately as rapidly as the price has towered, one rider being driven to abandon a system of dilution with paraffin which he has employed for years past. I have used No. 3 spirit on some of my motors for years past, finding it perfectly satisfactory when the carburetter was reset to suit it. But of late I have been bothered to death by a hill-climbing knock, which I could not account for, and last week I was struck by its resemblance to the hill-climbing knock which one gets from petrol substitutes until all the adjustments and heating have been adequately corrected. So I got hold of some No. 1 petrol of one of the lesser-known brands and tried a tankful of it; hey presto, the knock disappeared!

### More about Plugs.

An engineer engaged in aeroplane work is of the opinion that a British plug is the best for hot engines. He has to tend an engine with a compression of close on ten atmospheres. This engine runs continuously at 2,000 r.p.m. (some engine, eh?), and nothing will stand up in it but the K.L.G., a twelve-and-sixpenny plug, originally designed by Kenelm Lee Guinness for the Sunbeam racing cars. Ordinary plugs, says my correspondent, droop like a lily after two minutes in this engine, and their steatite insulators run and hang down like stalactites! This ingenious gentleman offers two tips for the preservation of a jealously guarded store of Bosch single points. The first is to slacken back the two lock nuts above the insulator when a super-efficient engine is being revved; this affords more room for expansion, and avoids a cracked steatite. The other is to use an oxy-acetylene blowpipe for cleansing carbonised samples. Warm the business end of the plug to a dull red, moving the flame about to prevent welding; when the plug is dull red, shut off the acetylene and continue with neat oxygen, which "cylcleans" the carbon away. I have not tried either of these tips, and cannot accept responsibility.

### Hard on Us.

The lighting restrictions are peculiarly hard on motor bicyclists, for the simple reason that we cannot slow down as conveniently as a car when vision is uncertain. Like the car drivers, we have throttles, clutches, and brakes, but our engines are less governable and more inclined to race and roar, and our machine wants more balancing as the pace falls off. When a car driver thinks he has sighted brass rabbits or white elephants, or any other of the weird phantoms

conjured up by dim light faintly diluting the gloom, he has merely to put his outside pedals hard down and peer. The unlucky motor cyclist has to curb his engine down to 150 r.p.m. without stopping it, apply his brake and clutch pedal with considerable force, and simultaneously balance his machine and peer into the murk.

### Inaccessibility, Thy Name is —!

Tyro Juggins, Esq., was proudly showing off his new machine to a circle of local enthusiasts, when the shabby veteran on the outskirts of the mob asked how the gear box was lubricated. Mr. T. Juggins had got the book of the words by heart before receiving delivery, and mentioned a plug in the top of the gear case. The veteran meekly asked to have the plug pointed out to him. After considerable search the plug was discovered to be situated on the forward curve of the gear box roof, deadlocked in front by the crank case, at the back by the gear box itself, above by the magneto, and enfiladed from both flanks by the steel brackets supporting the gear box and the magneto. In other words, before grease could be injected, it was necessary to remove the belt, two chains, various sprockets and pulleys, and, last but not least, the magneto. As a member of the mob remarked when homeward bound, "That's the worst of those assembled machines made of parts with proprietary gear boxes."

### Back to the Creepy-crawlies.

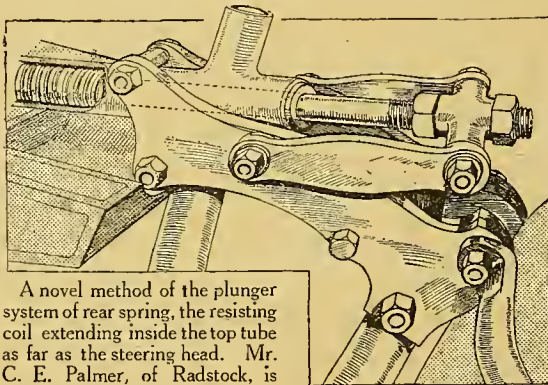
The approach of wet and mud has sent me back to a creepy-crawly again, to wit, a baby two-stroke—and rather a nice one at that. Mothball my petrol, but the little beasties are unco' slow after the big 'uns. A pal of mine says they are the only sporting mounts left, because, if you take them to really hilly country, you are not always too certain of getting up, and their exhaust reminds you painfully of the old diminuendo, "I-think-I-can, I t-h-i-n-k I can, I fear I can't!" of the old 2¾ h.p. Lincona belt days. Anyhow, my baby is in topping tune just now; slow, but sure, you know. It brought me recently up a two-mile hill, commencing with a fierce pitch of 1 in 6, and on the easier landings it positively accelerated to about twenty miles an hour. The babies have one merit the 1905 abominations never had; they are tolerably easy to restart on a grade; one does not have to go down to the bottom again, or search for a side lane out of which to pick up a new rush. Just give them three yards with nobody in the saddle, and they reach their climbing r.p.m. again. Mine is doing wonders at present, and I think its rejuvenation is largely due to a Sphinx plug, which does not get hot. Mr. Prestwich tells me the plug which stood up best in his tested septette was a Sphinx, and mine seems to be of the true Egyptian brand.



## REAR SPRINGING.

### MORE SPRING FRAME DESIGNS.

**T**HE *Motor Cycle* campaign in favour of spring frame motor cycles will be fresh in our readers' minds. We have for years continually advocated the adoption of spring frames for motor cycles, and have from time to time published articles on the subject, and have illustrated and described many devices that have been the outcome of this campaign. At the present time not many British manufacturers, or, indeed, the manufacturers of any other country,

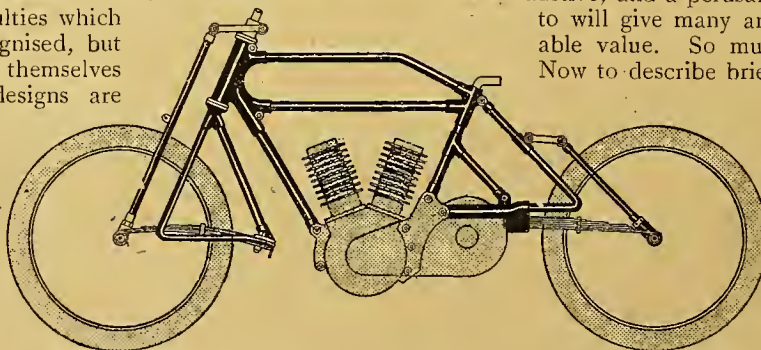


A novel method of the plunger system of rear spring, the resisting coil extending inside the top tube as far as the steering head. Mr. C. E. Palmer, of Radstock, is the patentee.

have adopted spring frames as a standard, though doubtless they would have been much more common than they are had it not been for the war. Overseas riders are continually demanding spring frames, and if there is still any British maker who has not studied the subject, then we implore him to lose no further time.

#### Many Difficulties to Face.

The design of a spring frame is not by any means the simple matter that some inventors seem to think. There are many difficulties which are not generally recognised, but which soon make themselves manifest when the designs are placed upon the road. All inventors and would-be inventors are strongly advised to read carefully the articles published in *The Motor Cycle* on this subject from time to time, notably those in the issues of July 29th, 1915, and February 3rd, 1916.

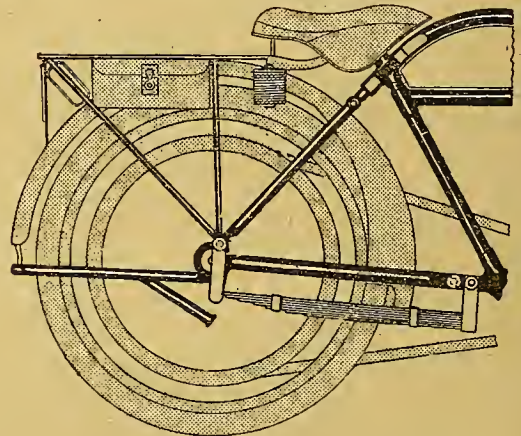


A completely sprung frame by Mr. G. E. Rigby, of the firm manufacturing the Royal Ruby motor cycle, consisting of laminated springs, and used both for rear and fore springing of the machine.

#### Essential Points.

In these articles are set out the desiderata of the perfect spring frame, and at the risk of repetition we refer again to some of the principal points. It is obvious that the lateral rigidity must be good or the machine will be decidedly dangerous, especially on slippery roads. Other essential points are, however, less obvious, so much so that they have often been

entirely ignored, e.g., the application of the brake must not throw any extra load upon the springing system, the belt or chain centres must vary as little as possible in their distance from one another, the rise and fall of the machine as it passes over rough surfaces, must not throw undue strains upon the transmission (we have known chains broken from this cause unless a certain amount of clutch slip was allowed),



Another method of adapting leaf springs. They are supported from the lower end of the back bar of the frame, the other end being connected with the back-stays. This system is patented by Mr. S. Thompson, of Bangor.

the tension of the brake rods must not be altered by the springing, and the movable joints must be as few as possible. It should be noted, too, that a bad front fork is much more noticeable when the rear part of a machine is sprung. It is not suggested that this short list is exhaustive, and a perusal of the articles referred to will give many another hint of considerable value. So much by way of preface. Now to describe briefly a few spring frames which have recently come to our notice.

#### The Palmer.

In the Palmer system of suspension the triangulated rear portion of the frame is controlled by a plunger rod, which slides in the top tube. This tube

must be straight, and preferably must slope downwards towards the rear. A strong spring fitted over the plunger rod inside the tube carries the weight of the machine and rider; a light spring takes the rebound, while a short stiff spring is placed in the front part of the tube to relieve the main spring of the last part of very severe shocks. Two flitch plates carrying the toggle arms bear on flat surfaces below the saddle-pillar, prevent any tendency to lateral movement,



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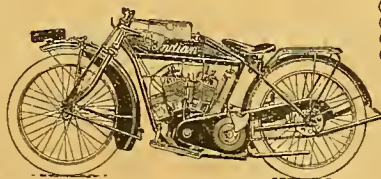
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**NOTE THE INDIANS ON THE ROAD.**




New Booklet just published.

# *"With British Troops in German East Africa."*

## *THE MOST UNIQUE WAR JOURNEY.*

*By Lieut. H. E. JACKSON.*



In this publication Lieut. H. E. Jackson, of the South African Motor Cyclists' Corps, describes how he with 400 men mounted on B.S.A. Motor Bicycles traversed 2,800 miles of enemy country. Many dangers and difficulties were encountered during this, the most arduous journey accomplished by so large a number of motor bicycles. Writing of the dread the natives have of motor cycles he says: "Needless to say the natives have a suspicious dread of the cycles. They call us the young rhinoceros, which is the most ferocious animal here. One of the Ugogo chiefs asked me if the noise the cycle made was because it was angry at having to go at such a speed. They cannot realize any vehicle not having a span of oxen to move it along."

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# **B.S.A. Motor Bicycles**

**FOR SOLO AND SIDECAR.**



**Rear Springing.**

and at the same time, by checking the vertical movement to a small extent, eliminate bouncing. The springs are quickly adjustable for different weights, and, being enclosed, are not liable to rust, while they can easily be renewed if required. Another point is that, in the unlikely event of a spring fracture, the frame cannot collapse. The whole arrangement is neat, and can be applied to existing machines without much alteration.

**The Royal Ruby.**

This invention in the name of Mr. G. E. Rigby consists essentially in a combination of laminated springs and upright stays, which are attached above the wheel to some convenient part of the frame by links. The general principle is the same both in the case of the front forks and the rear springing. In place of the ordinary fork blades the steering head terminates in a triangular member, at the rear of which the leaf springs are anchored. From the axle stays extend upwards, which are attached by links to the handle-bar pillar and help to maintain the lateral position of the wheel, but carry no weight. In the rear, the springs are anchored to a stout triangular construction behind the countershaft gear box. The lower members of this extend backwards, and then bend sharply upwards to carry the links supporting the stays. The reason for this rather peculiar shape escapes us; this remark applies also to the front forks.

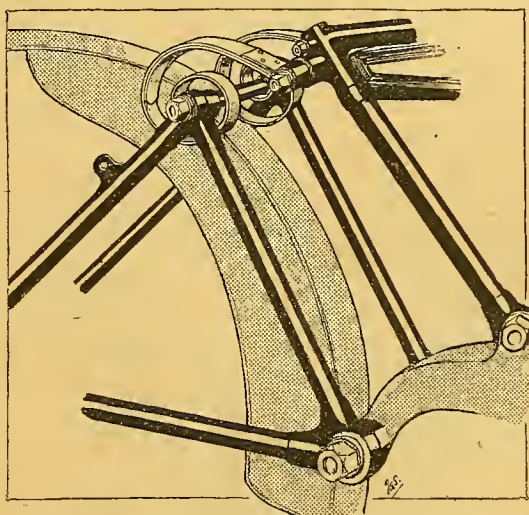
**The Thompson.**

The rear part of the frame in this device is hinged behind the bottom bracket, above the axle and below the saddle. The weight is carried by laminated springs anchored below the bottom bracket (in the drawing which we reproduce from the patent specification these are apparently upside down—a common error, we find, in patent drawings), and short coil springs which

operate on a plunger carried in an extension of the top tube. This idea is neat, and should prove efficient in practice, but only a road trial can settle this.

**The Allon.**

The Allon is another "live" firm interesting itself in this all-important problem of the motor cycle, and we illustrate the design now actually on the road. The rear part of the frame consists of a double triangle,



An effective design of coiled leaf springs as adopted on the new Allon two-stroke motor cycle.

which is carried in a wide bearing on the back of the countershaft. This is supported below the saddle by two wide springs wound in a spiral. Both the springs and the bearing tend to lateral rigidity, and there are very few joints to wear. The front forks on this machine are the Brampton, which give a double movement. Our remarks, therefore, regarding the front forks of a rear-sprung machine will not apply in this case.

## A Cure for Clutch Slip.

THAT clutches sometimes slip is a truism, and hardly worth repeating but that this fact has led to the production of a clutch which can be locked with dogs if any suspicion of a slip occurs. The clutch itself is of the self-contained cone type, the actuating spring being between the clutch members. There are, however, also dog teeth, which are normally

out of engagement and controlled by a fork, free to slide on the shaft, by means of which the teeth are brought together when required, and the whole clutch locked in a positive engagement. Those of our readers who wish to know more of this device are referred to our sister journal, *The Light Car*, in which a sketch appeared on October 11th.

## An Instructive Experiment.

A READER of *The Motor Cycle*, who writes whilst at sea on board H.M.S. *Diana*, mentions a case where water was injected accidentally into the intake pipe of an oil engine. Instead of stopping it, a decided improvement was immediately noticeable in the running, all smoking and misfiring ceasing, besides a noticeable increase taking place in the revolutions of the engine. He asks if the experiment has ever taken place on a motor cycle of injecting small quantities of water into the intake tube whilst the engine is running, with a view to removing the carbon deposit?

We have frequently heard of the experiment, and

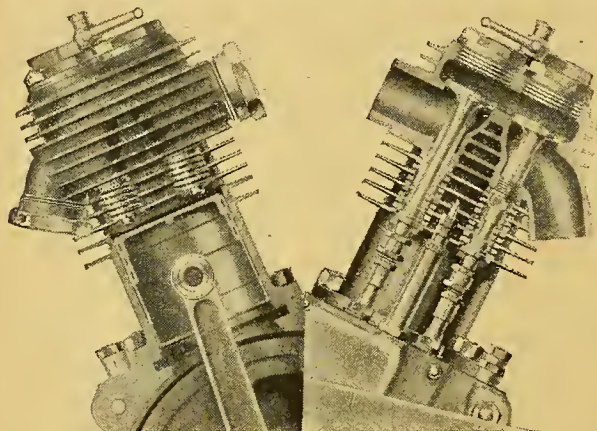
when injection of water takes place there is always a decided difference in the running. The explosions are less fierce, and more like a steam engine. Existing carbon deposits cannot be removed, but if steam is mixed with the gases continuously little or no deposit occurs.

In the case of stationary oil engines adapted to run on paraffin it is quite customary for water to be injected with each change of gas, in order to prevent the unpleasantly harsh knock always associated with the use of this fuel in an internal combustion engine when working under a heavy load.



## NOTES CONCERNING J.A.P. TWIN MOTOR CYCLE ENGINES.

**M**ESSRS. J. A. PRESTWICH and Co. have been manufacturing motor cycle engines longer than most firms, and consequently they have devoted considerable attention to details,



Sectional view of the two cylinders, showing the exhaust valve lifter, the valve stems and springs in section, the adjustable tappets in the right-hand cylinder, and in the left-hand cylinder the piston in section.

and have evolved a particularly fine production. Unlike some makers, they are especially careful to see that the fullest possible information goes out concerning their engines, so that either the private owner of average intelligence or the repairer can obtain such knowledge as will enable him to keep his engine up to the mark.

We have been fortunate enough in obtaining some very fine photographs showing details of these famous engines. Much of the matter has been dealt with previously in these pages, but we offer no apology for referring to it again, as it cannot but be of extreme value to the numerous users of twin-cylinder J.A.P.'s.

### Induction Pipe Unions.

As recently as the issue of October 12th, our contributor, "Ixion," makes reference to the lack of a suitable inlet pipe for twin-cylinder engines. Now the J.A.P. inlet pipe gives a perfectly gas-tight joint. The pipe is a very light casting, and all three leads are turned inside and out. The brass cone A is a sliding fit on the pipe, and the top portion of the nut B is bored tapered to correspond exactly with the cone. In fitting, the nut is first slipped on the pipe and then the cone, the pipe is held in place, the connections are put tightly up against the cylinder, and the nut is screwed up. The result is that the thin edge of the cone is so tightly pressed to the inlet pipe that air is entirely

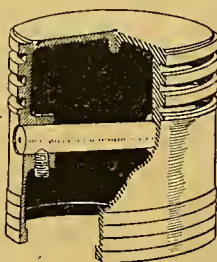
excluded and a perfect fit is made. This pipe is absolutely interchangeable with other engines of the same make, and is equally suitable if another cylinder is fitted. The whole idea is most ingenious, and does away with the necessity of binding the union nuts with insulating tape.

### Valve Gearing.

The valve gear has been made as simple as possible. There are only two gear wheels, the valves being operated by means of two cams. The exhaust valves are raised by a double cam, which is inserted between two heels on the exhaust rockers. The cast iron guides in which the valve stems work have a series of internally cut grooves, allowing a total clearance of only .02in. These grooves serve to collect the oil which lubricates the

valve stems, and at the same time act as a seal to prevent air leaks past the stem.

While on the subject of valves, the question of timing is one of great interest, in view of the numerous correspondents who write and ask us how best to time their engines. In the case of the J.A.P. the valve timing is a simple matter, as the single cam wheel carries the inlet and exhaust cams and actuates all four valves. When



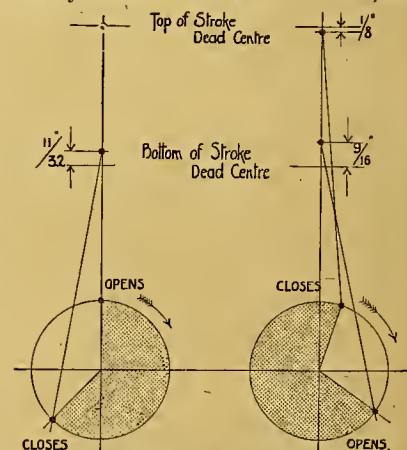
J.A.P. piston, showing gudgeon pin fixing.

issued from the works the corresponding teeth are indicated with a punch-mark. It should be noted, the pinion has been removed it does not always screw back into the same position in relation to the crank pin, and consequently, when resetting the timing, if any error is found it should be corrected. The accompanying diagram shows the exact moment of opening and closing of the valves,

from which it will be seen that the inlet valve opens at the top of the stroke and closes  $\frac{1}{8}$ in. past the bottom of the stroke, while the exhaust valve opens  $\frac{7}{8}$ in. from the bottom of the stroke, and closes  $\frac{1}{8}$ in. past the top of the stroke. This timing gives the maximum amount of power with a minimum fuel consumption. The dead centre indicated in the diagram represents the top and bottom of the stroke.

### The Magneto Timing.

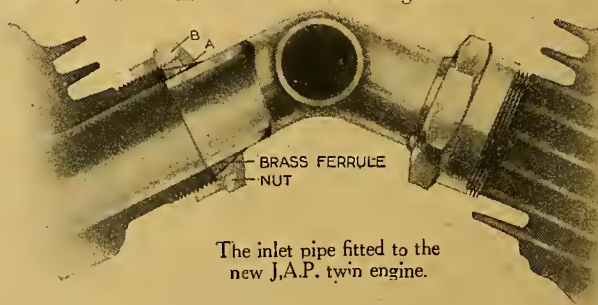
The magneto is timed so that the points should be just separating when the piston is  $\frac{7}{8}$ in. from the top of the compression stroke with the ignition fully advanced. There are two cams in the contact breaker of the magneto. These are usually numbered 1 and 2 to correspond



Showing the positions of the crank for the opening and closing of the J.A.P. valves. Exhaust on the right, inlet on the left.

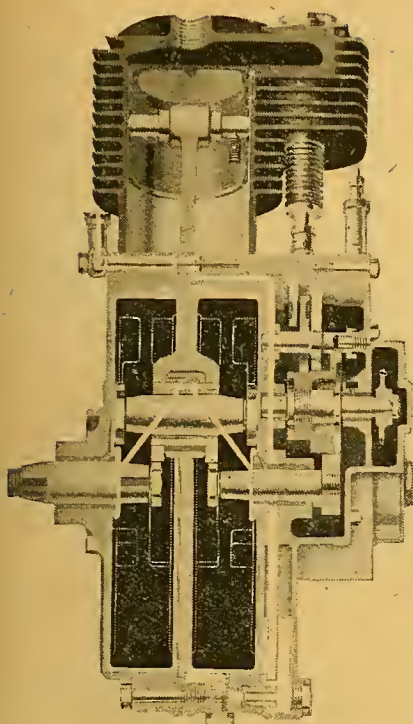
with their respective cylinders. In the case of the J.A.P. engine, No. 1 cylinder is the right-hand one when viewing the engine from the pulley side. This is usually the back cylinder when the engine is mounted in the frame.

When an engine is used for cycle car work, the magneto is driven by a bevel. This is the arrangement in use on the



The inlet pipe fitted to the new J.A.P. twin engine.





Section of cylinder and crank case, showing method of lubrication.

Morgan. With this method of transmission the magneto works in a clockwise direction, whereas with the usual chain drive employed on motor bicycles and sidecar combinations an anti-clockwise magneto is fitted.

#### The Big End Bearing.

An excellent outstanding feature of J.A.P. engines is the type of connecting rod employed. The great difficulty with

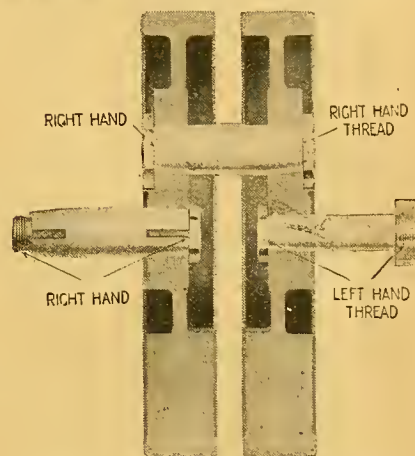
which designers have had to contend in designing big end bearings is to obtain a sufficient bearing surface with the small amount of area available to withstand the thrust of two powerful cylinders. Messrs. J. A. Prestwich and Co., however, fit a steel bush passing through one side of the fork rod to the other, which is held by being shrunk into position. The centre rod is bushed with phosphor-bronze, and takes its bearing on the outside of the steel bush, which is lined with phosphor-bronze and takes the bearing of the crank pin, so that by this means the maximum bearing surface is obtained, lubrication being ensured by forcing the oil direct to the centre of the crank pin. When replacing the rods, it is necessary to see that the forked rod operates in the front cylinder.

#### Lubrication.

We now come to the interesting question of lubrication, which is carried out in the case of the J.A.P. engine in an effective and ingenious manner, pressure feed being employed to all the main bearings, and, in addition to this, oil is fed directly into the wall of the front cylinder from two sources—one from the pressure system and the other from the apex oil union, which is supplied with lubricant by means of the semi-automatic hand pump. This ensures the front cylinder getting an ample supply.

The pressure is provided by the descending force of the piston. This forces a quantity of oil through a hole at the base of the crank chamber into a passage, and past the non-return valve into a box or reservoir cast upon the exterior of the crank case. The reservoir gives a sufficient head of oil to allow of a continuous flow. The only means of escape is a pipe through which it leaks into a recess under the main bearing bush into the flywheel, the oil being then led unto a semi-circular recess on the flywheel boss, which presses tightly

against the side of the crank case and registers with the oil channel, so that this recess is filled with oil under pressure, which flows through a hole in the flywheel to the centre of the crank pin, thus adequately lubricating the big end bearing. From the crank pin it descends again to the main bearing on the pulley side. There is also a passage for the oil from the main bearing to the hollow bolt running through the top of the crank case, where there is an outlet to the front cylinder. The non-return valve, which controls the supply from the crank case to the oiling system, is merely a flat steel disc.



Method of fixing the crank pin and main shaft journals.

From these few notes concerning the J.A.P. engine the reader may gather some idea of the care taken in its design and manufacture, while those who possess machines fitted with these engines will undoubtedly have gained a good deal of knowledge which cannot be otherwise than of great service to them.

### A D.S.O. MOTOR CYCLIST.

MR. RICHARD LAMBERT, who is the only actor to whom the Distinguished Service Order has been awarded, first of all joined the Army as a motor cycle despatch rider. Later on he became an officer in the Intelligence Corps, owing to his familiarity with both French and German. The most amusing part of Mr. Lambert's career is that when joining up (like a good many other people, we are afraid) he represented himself to be an experienced motor cyclist, when he had never been on a machine in his life. "It was at the beginning of the war," he said, "when we so badly wanted men, and what odds if I did draw the long bow in the matter of age and qualifications?" He was duly sworn in one Sunday morning, and spent the remainder of the day at Regent's Park endeavouring to become accustomed to his machine, so that he might make some kind of a show at the test the next morning. While practising he smashed up one machine, and when asked to do a figure eight he had a nasty fall; then, after being passed by a fluke, he set out for Southampton on the way to the

Front. "You can judge the sort of motorist I was," he told a daily paper correspondent, "when I tell you I started from London at two o'clock, and was due at seven in the evening for dinner, and I landed there at a quarter to one the following morning. Everything happened to me on the way. I got lost, and went miles and miles off my road, my engine broke down, and several times I had to take the thing to bits. It was an awful ex-



Mr. Richard Lambert.

perience." Mr. Lambert comes of a military family, in which there are two D.S.O.'s and one Military Cross, while the head of the family, Lord Cavan, is a Lieutenant-General, and is soon, we understand, to be head of an Army Corps.

### THREE ADJUSTMENTS IN 32,000 MILES.

THERE is nothing remarkable in the fact that the Coventry Chain Co., Ltd., frequently receive testimonials respecting their chains, but one they received from Messrs. H. Collier and Sons, Ltd., is more than usually interesting. The famous Matchless firm speak of a Coventry noiseless chain fitted to a "track" motor cycle, which had been driven by a large number of different persons. The mileage recorded to the credit of this machine was 32,000, during which time the chain called for adjustment only three times. At the last time of overhauling the chain was found to be in good condition, and did not call for renewal.





### TIMES TO LIGHT LAMPS. GREENWICH TIME.

Nov. 2nd	...	...	5.1 p.m.
" 4th	...	...	4.57 "
" 6th	...	...	4.54 "
" 8th	...	...	4.51 "

### Overseas Opinions.

Many interesting observations and comments are contained in the letters published in the present issue from motor cyclists Overseas.

### A Twelve-year-old Tricar.

Last week-end, in the neighbourhood of Derby, we saw a Raleighette on the road—running very well, too. The incident recalled pleasant memories of such a machine we owned in 1905

### An Australian Engine.

Mr. F. W. Johnston, the manufacturer of the motor cycle engine in Western Australia referred to on page 352, has asked us to state that he was formerly with the West Perth Garage and not with the firm mentioned.

### Contest for the Victorian M.C.C. Cup.

The cup offered in the twenty-four hours reliability contest held by the Victorian M.C.C. in August was won by J. Flece on an 8 h.p. J.A.P.-engined single-gear sidecar. The course was from Melbourne to Geelong, through Camperdown and Castlemaine.

### The B.S.A. War Fund.

The employees of the B.S.A., Birmingham, have issued a balance sheet in connection with their war fund, which shows that no less than £15,781 has been subscribed for charitable purposes.

Amongst a few of the grants are: Prince of Wales's Fund £1,481, Dependents of B.S.A. £4,274, Cigarettes £418, Prisoners of War £450, Serbians £250. The balance in hand is £6,357.

### Our Constabulary.

We continue to hear of strange cases in connection with the much revised lighting regulations. At East Ham police court recently a motor cyclist was fined for riding without either front or rear lights. The defendant said that a "special" constable had stopped him and told him to put his lights out as there was a Zeppelin raid taking place. Later he was held up by a police-sergeant, who said that lights must not be put out. "How am I to act in face of such contradictory orders?" asked the defendant. "There is no pleasure in driving a motor cycle in darkness!" He was fined 6s., the Stipendiary remarking that it was a mitigated penalty.

### Spring Frames.

The eighty-second design of spring frame is published in this issue—proof that *The Motor Cycle* campaign has succeeded in focussing attention upon this important subject. No doubt the fruits of the campaign will be seen immediately peace returns.

### Aluminium Alloy.

In the brief description of the Wisconsin aero engine in our issue of October 26th we mentioned that this engine is constructed almost entirely of aluminium alloy. This alloy, we understand, is known as magnalite. It is lighter in weight than pure aluminium, while, weight for weight, its tensile is equal to that of steel at 80,000 lb. per square inch. This alloy is largely used in America for pistons, and even connecting rods in both aero and car engines.

### A Lighting Regulation Laxity.

Referring to our remark in a recent issue regarding the illumination of the overhanging trunks of trees when being transported at night, a correspondent (Mr. W. P. Cooke) remarks that the regulation compelling a red lamp to be carried on any load projecting more than six feet to the rear has been compulsory in all districts since 1907. The point we wished to raise was that very often, in spite of this regulation, loads of trees, timber, etc., are allowed to be carried without any sign of illumination—an extremely dangerous proceeding in these days of reduced lighting.

### SPECIAL FEATURES.

ANOTHER R.A.F. HILL-CLIMB.

MORE SPRING FRAME DESIGNS.

OVERSEAS OPINIONS.

### From "On Service."

EXTRACT FROM AN INSPECTION REPORT.  
—"Engine missing—tow rope missing."

### A Flooded Road.

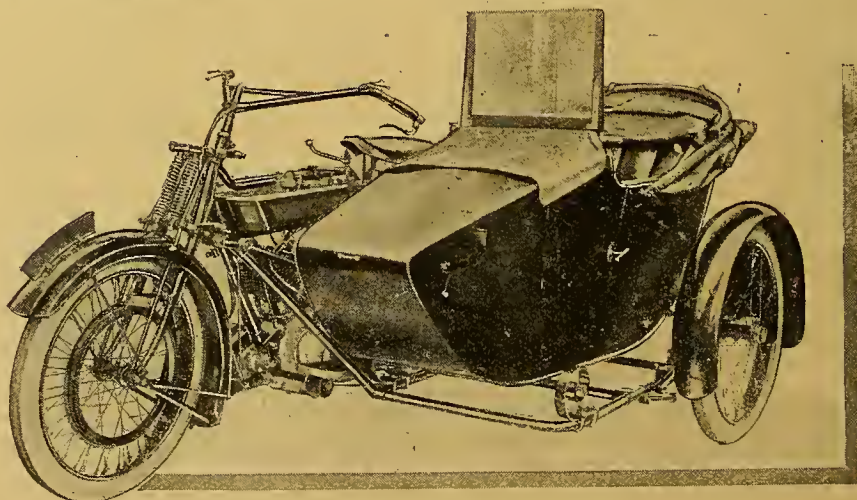
We hear that the road at Colyford, between Newton Poppleford and Lyme Regis, was flooded at the week-end to a depth of about a foot for a distance of 150 yards.

### Motor Cyclists required for the National Motor Volunteers.

It is proposed to form a squadron of motor cyclists to operate with the National Motor Volunteers, under the command of Major-General D. C. F. Macintyre, C.B. Platoons will be formed in the various London districts, according to the number of recruits.

Motor cyclists wishing to join should make application as soon as possible to Mr. G. E. Copley, 56, Harpenden Road, South Wanstead.

Mr. Copley advises us that he showed General Macintyre *The Motor Cycle* of October 12th containing the illustrated account of the inspection of the N.M.V., and told that officer that he hoped with our assistance to be able to get the men wanted.



The latest Enfield sidecar combination fitted with a hood and screen, which are now standardised fittings. An improvement in the design of body is noticeable, the scuttle dash being higher and giving better protection to the passenger.



**The National War Funds.**

At the week-end the principal war funds stood as follow:

The National Relief Fund (£3,474,475 distributed)	£5,968,051	0	0
The British Red Cross Fund	4,536,858	0	0
Tobacco Fund	116,440	0	0
Ritchie Memorial Fund (over)	347,000	0	0
The Queen's Work for Women Fund	170,801	5	0

**Semi-steel Pistons.**

The inflated prices of aluminium in America have led American engineers to tap new channels. At the present time, according to the American correspondent of our sister journal, *The Light Car*, interesting experiments are being made with what are known as semi-steel pistons, cast in metal moulds, and finished with very fine walls.

**The New Shop Closing Order.**

The Amended Closing of Shops Order fixing 8 p.m. as the closing hour for shops on every day other than Saturday or the weekly half-holiday adds an exemption for the sale of motor supplies and accessories for immediate use so long as the shop is kept open and lighted only for such time as is necessary for serving the customer. This news is, of course, of interest to all travellers by road.

**A Strenuous Contest.**

The Keystone Motor Cycle Club, Harrisburg, Penns., held their annual endurance contest on October 7th and 8th over a course of 408 miles. This contest is one of the most important ever held in the U.S.A., and this year the course proved to be an exceptionally severe one, including no fewer than eight mountain tracks. Only one motor cycle and one sidcar completed the course and obtained full scores. Both of these were 1917 Harley-Davidson three-speed electrically-equipped outfits. Neither of the machines experienced the slightest trouble, coming through without even a puncture.

**The National Motor Volunteers.**

On Sunday last some excellent work was done by the National Motor Volunteers, who conveyed eight hundred volunteer infantry in one hundred cars and motor cycles from a station in the South to the trenches which are forming part of the national defences. Numerous journeys were made, each occupying about fifteen minutes. An enormous amount of time was saved by transporting the men by motor vehicles, otherwise if they had to march they would not have reached their destination until about noon. The speed of transport is a very important item now that the days are so short.

**The Second-hand Show.**

The date of the second-hand show organised by Messrs. William Glass and Co., Lincoln House, 296, High Holborn, W.C., is rapidly approaching. The show will open on Friday next week, 10th inst., and will remain open until the following Saturday week. Mr. Glass, the principal organiser of the show, informed us, in an interview, that up to the present time about 100 motor bicycles had been entered, and that many more were expected. Entries, he said, were coming in very rapidly now. An interesting feature concerning the motor cycle entries is that most of the machines are of very recent date.

**News!**

Another hill-climbing competition has been held by employees of the Royal Aircraft Factory, Farnborough, and the event is described and illustrated in this issue. Incidentally, *The Motor Cycle* is the only journal that deals with week-end events in the succeeding issue.

**"The Autocar" 21st Birthday Number.**

Congratulations to our parent journal, *The Autocar*, which celebrates its twenty-first birthday on Saturday next, the 4th inst. The issue of *The Autocar* bearing this date is a special one, considerably enlarged, the greater portion being devoted to reviews and notes upon some of the leading events which have taken place in the motor world during the last twenty-one years. There is a series of reminiscences by such well-known men as S. F. Edge, A. J. Wilson, F. W. Lancaster, Col. Lord Montagu of Beaulieu, Claude Johnson, and Sir David Salomons, Bart. *The Autocar* is a year older than the British automobile movement itself, as it first saw the light on November 2nd, 1895, when it was not lawful to use a motor car or motor cycle at above four miles an hour, and unaccompanied by a man and a red flag. Until *The Motor Cycle* enjoyed a separate existence in the spring of 1903, our parent journal dealt with motor cycle matters.

**A-Problem of the Future.**

At the annual meeting of the Rudge-Whitworth, Ltd., the Chairman (Mr. C. Vernon Pugh) made some remarks which applied not only to the Rudge firm, but to motor cycle manufacturers generally. Speaking of his own company, he said that the volume of business being done for the Government was daily increasing, and had reached a very large and very important figure, and that the output of the company's own natural trades—cycles, motor cycles, and motor wheels—had correspondingly shrunk, and was now almost at vanishing point. Continuing, he thought it would be a problem, which the directors would regard with a considerable amount of anxiety, how the output of those natural products would be resumed when the present urgent necessity for Government needs slackened and, as they hoped, disappeared. Mr. Pugh went on to give a slight idea of the increased volume of business by mentioning the numbers of employees operating for the company in the last week before the war and at the present time. In the last week of July, 1914, the total employees of the company were 1,817, and in the week ending October 13th this year the total number of their employees was 5,770. That, of course, would illustrate, as well as any money figures could, the great growth of the responsibility which the company had undertaken. A dividend of 6% is being paid on the preference and 10% on the ordinary shares.

**Young Men on Home Service Work.**

Among the score of letters bearing upon military matters received by *The Motor Cycle* last week was one from a lance-corporal, twenty-two years of age, who seeks a transfer. He mentions that he is only one of twenty young fellows who have been stationed on the coast for a period of over two years, and he is keen to get to one of the fighting fronts.

**Twenty-eight Inch Wheels on Triumphs.**

Pte. S. Barnett, writing from France, says that some of the despatch riders with the 1st Canadian Division have been fitting 28in. x 3in. tyres and tubes on the rear wheels of their countershaft model Triumphs, and get reliable service from them. He thinks this information will interest many of our readers, and asks "Ixon's" opinion.

We should imagine that there would be very little clearance with 28in. x 3in. tyres, and it would be instructive to know the make of tyre fitted.

**Rural England and the War.**

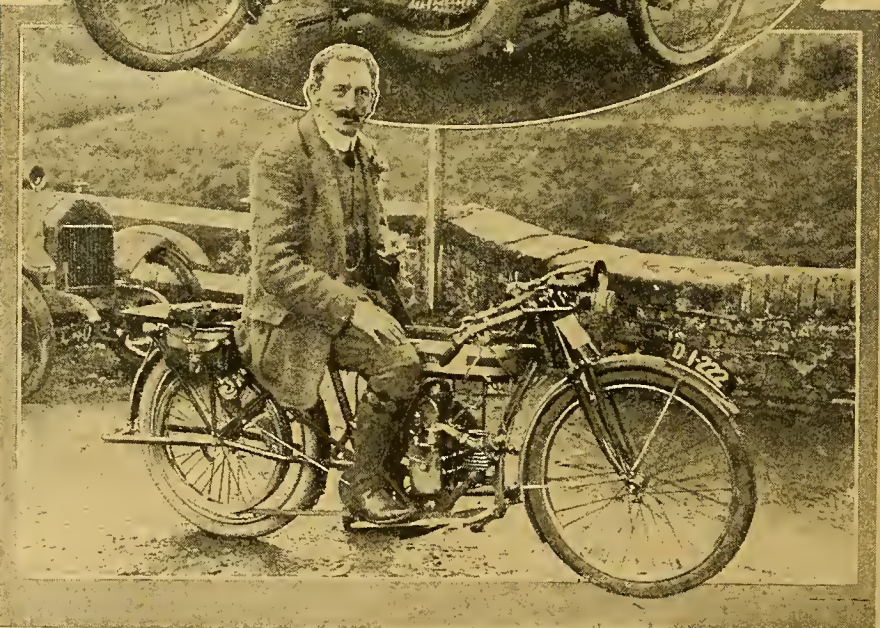
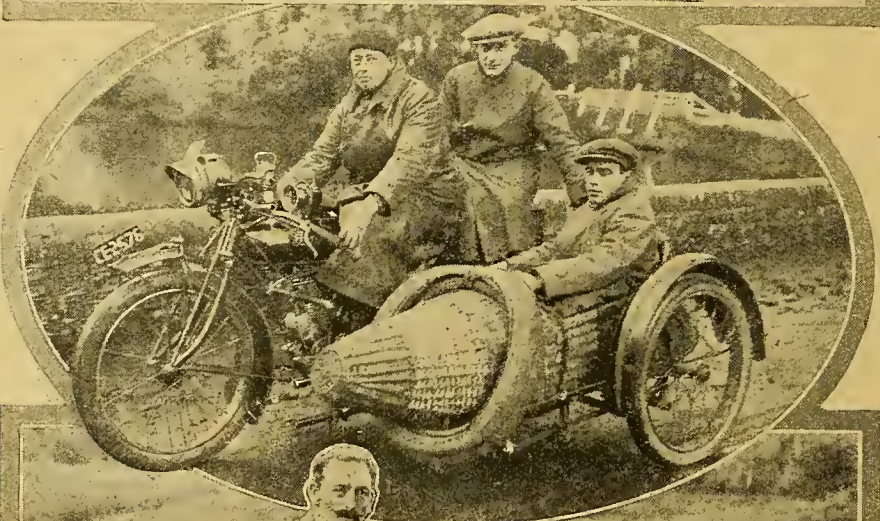
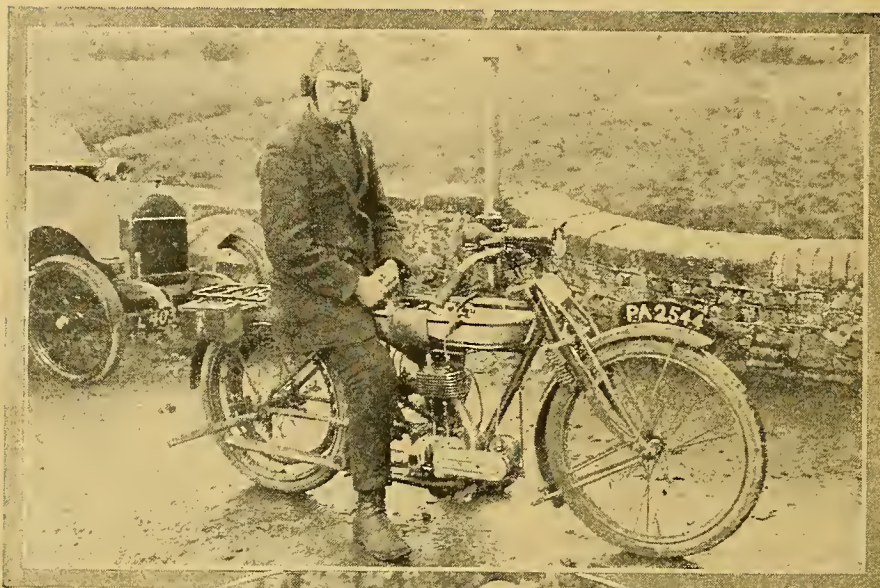
Many a village in this country of ours has a record in the war of which it may be justly proud. In some cases the percentage of its able-bodied men who have donned khaki in the national cause is truly astounding. Some villages, recognising their big share in the war, have already erected crosses to the memory of their brave sons who have fallen. In yesterday's issue of *The Light Car* is the first of a series of articles dealing with this subject.

**Average Prices.**

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within four weeks.

Make.	Year.	H.P.	Average for last week.	Latest average obtainable
A.J.S.	1915	6 3-sp. sidcar	£80	—
"	1914	6 3-sp. sidcar	—	£60
"	1916	2 3-sp. sidcar	—	£51
Alldays	1915	2-stroke 2-sp.	£29	—
Bradbury	1914	4 2-sp. sidcar	£35	—
B.S.A.	1916	4 3-sp. sidcar	£63	—
"	1915	4 3-sp. sidcar	£54	—
"	1914	4 3-sp. sidcar	£44	—
Calthorpe	1915	2 2-sp. sidcar	£27	—
"	1915	2 2-stroke 2-sp.	—	£24
Clyno	1914	6 3-sp. sidcar	£56	—
"	1912	6 2-sp. sidcar	—	£31
Connaught	1914	2-speed 2-stroke	—	£24
Douglas	1915	2 2-speed	£42	—
"	1915	2 3-speed	£44	—
"	1914	2 2-speed	£35	—
"	1913	2 2-speed	£31	—
"	1912	2 2-speed	£24	—
Enfield	1916	6 2-sp. sidcar	£76	—
"	1915	6 2-sp. sidcar	£65	—
"	1915	3 2-speed	£40	—
"	1916	2 2-stroke 2-sp.	—	£35
F.N.	1912	4-cylinder	—	£37
H.-Davidson	1915	7-9 3-sp. sidcar	£69	—
"	1916	7-9 3-sp. sidcar	£83	—
Henderson	1915	8 4-cyl. sidcar	£72	—
Indian	1916	Powerplus sidcar	—	£88
"	1916	Powerplus	£60	—
"	1915	7 3-sp. sidcar	£69	—
"	1915	5 3-speed	£50	—
"	1915	5 3-sp. sidcar	£63	—
James	1914	4 3-sp. sidcar	—	£40
"	1916	4 3-sp. sidcar	—	£71
"	1915	2 2-stroke 2-sp.	—	£34
Lea-Francis	1915	3 3-sp. sidcar	—	£70
Levis	1915	2-stroke	£23	—
Matchless	1914	8 2-speed	—	£49
"	1913	8 sidcar	—	£44
"	1915	8 sidcar	£70	—
New Hudson	1915	4 3-sp. sidcar	£53	—
"	1915	2 2-stroke	—	£21
New Imperial	1916	2 2-speed	—	£32
P. & M.	1914	3 2-sp. sidcar	£40	—
Premier	1914	3 2-sp. sidcar	—	£42
Quadrant	1916	4 3-sp. sidcar	£65	—
Radco	1915	2 2-stroke	—	£24
Rex	1914	6 3-sp. sidcar	£45	—
Rover	1914	3 3-sp. sidcar	£42	—
Rudge	1915	3 multi sidcar	—	£45
"	1913	3 multi	£29	—
Scott	1914	3 2-sp. sidcar	—	£49
Sunbeam	1914	3 3-sp. sidcar	—	£62
Triumph	1914	4 3-speed	£38	—
"	1914	4 3-sp. sidcar	£44	—
Williamson	—	8 3-sp. sidcar	—	£52
Zenith	1914	6 Gradua sidcar	£55	—





SOME OF THE SUCCESSFUL COMPETITORS.

- (1) One of the best performances was made by E. Mannings on a 3½ h.p. Norton, who won the 560 c.c. class.
- (2) Second in the sidecar class, F. W. Hartt, on his 7 h.p. Indian.
- (3) Winner of the 350 c.c. class, E. Perrott (2¼ Douglas)

## Another

### Informal Competition

IT is only a few weeks ago that the Aircraft Factory ran off a successful little hill-climb on the leading to Newland's Corner, which was duly reported in the issue of October 14th. Last Saturday G. Department of the R.A.F. organised an event of its own on a hill near Farnham. The start was outside the southern entrance to Waverley Abbey military hospital, two miles from Farnham on the Gilling Road. The course lay straight and was off the main road, and had a rather stiff hill, with a maximum gradient of about 1 in 8, through Scotch firs on Crooksbury. The day was excellent, but the road was rough enough to make the competitors with caution and to prevent fast being made.

#### The Wrong Hill.

A rather amusing incident occurred before the start. Officials spent a good deal of time and a considerable amount of care in marking the course and making arrangements for flagging before it was discovered that they had been working on the wrong hill. In fact, G. Department could hardly be called expert competitors, as this was their first attempt, but they did their best, and, most important of all, competitors and officials alike enjoyed themselves.

As regards the machines, there were a few points of interest. Mannings's Norton was fitted with one of the new mechanical Best and Lloyd lubricators, which, however, was connected neither to the engine, nor handle-bar control. Perrott's Douglas was equipped with sparking plugs fitted with aluminium radiating fins to the plug.

The weather was fine but cold, and the one little shower which fell towards the end in no way interfered with the event. The strong south-westerly wind was, if anything, in the competitor's favour, but was little felt owing to the sheltered position of the hill. All classes except the last, which was purely a speed event, were run off on the

Motor Cycle formula  $\left( \frac{C \times T^2}{W} \right)$

CLASS I.—TWO-STROKES UP TO 300

Two Levises only competed, both of which made excellent ascents. Results:

1. Mairies (2¼ Levis).
2. Edwards (2¼ Levis).

## ANOTHER FLAT TWIN

The latest Flat-twin Matchless 6 h.p. 350

OUR recent descriptions of the new Indian and Humber opposed to the Matchless have evoked considerable interest in motor cycling circles, and doubtless the announcement of the latest machine of this type will be similarly received.

By the introduction of a 6 h.p. flat-twin by Messrs. H. Collier and Sons, one more motor cycle concern of repute has joined the fast increasing number of supporters of this type of engine. The new Matchless has a bore and stroke of 70×95 mm. respectively, which gives a total capacity of 732 c.c. The lubrication is by an automatic forced system.



# Hill-climb.

Waverley Abbey, Farnham.

CLASS II.—LIGHTWEIGHTS UP TO 350 C.C.  
Cotterill's Douglas, which was a 1912 model, came up in first-class form for a four-year old; while Perrott's, which was a later pattern, made a good climb.  
Result:

1. E. Perrott (2 $\frac{3}{4}$  Douglas).
2. W. Cotterill (2 $\frac{3}{4}$  Douglas).
3. S. Tarr (2 $\frac{3}{4}$  A.J.S.).

CLASS III.—MOTOR BICYCLES UP TO 560 C.C.

Incidents in this class were few and far between. The outstanding feature of the class was the performance of Mannings's Norton, which was excellent, and was clearly the fastest machine there.  
Result:

1. E. Mannings (3 $\frac{1}{2}$  Norton).
2. E. Ambrose (3 $\frac{1}{2}$  Triumph).
3. H. Whitty (4 $\frac{1}{4}$  B.S.A.).

CLASS IV.—UNLIMITED.

There were several little items of interest to record during the running off of this class. Hambrooke (8-10 Matchless) was travelling well, but at the last moment his kick-starter pedal struck the ground and might have thrown him. Hart (7-9 Indian) got into the gutter on the left side of the road, swerved badly, made several desperate wobbles, and then made an excellent piece of riding recovered himself. Whitty (B.S.A.) was baulked by a taxicab. Result:

1. E. Perrott (2 $\frac{3}{4}$  Douglas).
2. W. Cotterill (2 $\frac{3}{4}$  Douglas).
3. T. H. Reeves (4 $\frac{1}{2}$  Bat-Jap).

CLASS V.—SIDE CAR COMBINATIONS.

W. Hartt (7-9 Indian) made a good climb. Another competitor, we are informed, changed up too early and stopped the engine. Result:

1. E. A. G. Langridge (7-9 Harley-Davidson).
2. F. W. Hartt (7-9 Indian).

CLASS VI.—FASTEST TIME.

There were no incidents in this event.  
Result:

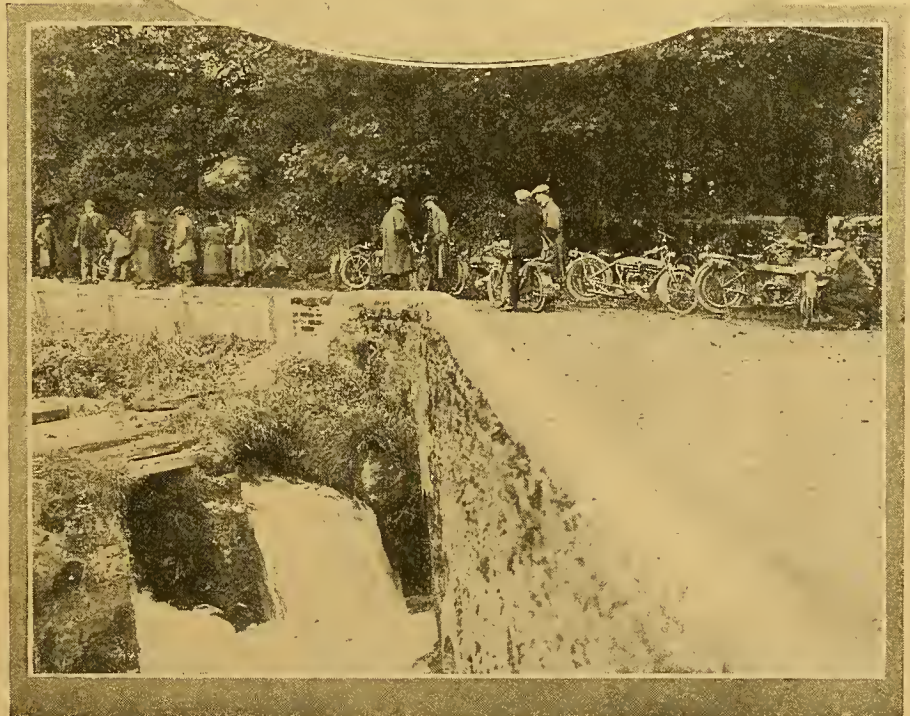
1. T. H. Reeves (4 $\frac{1}{2}$  Bat-Jap).
2. S. R. P. Hambrooke (8-10 Matchless).
3. F. W. Hartt (7-9 Indian).

The principal officials responsible for the organisation were Messrs. J. N. de la Couche, honorary secretary; W. B. Mason, starter; T. Keyte, treasurer; and J. Lees. Previous to the event a collection was made to provide the spectators from the hospital with cigarettes.

## WELL-KNOWN CONCERN.

stroke, 95 mm.; capacity, 732 c.c.

It will be noted that the engine has a longer stroke than is usual with the flat twin, and its performance no doubt will be watched with interest. The new Matchless has many features in addition to its engine, among which may be mentioned a spring frame, exceptionally large tank with a capacity of two and a half gallons petrol and half-gallon oil, 700 75 mm. tyres, and primary transmission by silent chain, thence to rear wheel by roller chain. The gear box has three speeds, and embodies a kick starter, while the wheels are interchangeable and quickly detachable.



SCENES AT CROOKSBURY HILL.

- (1) Wounded "Tommies" interested in E. Mannings's start for the 560 c.c. class.
- (2) A Levis two-stroke climbing the hill in good style.
- (3) A picturesque spot near Waverley Abbey, with the competitors' machines in the background.



# THE FLAT TWIN AT THE BAR.

By "IXION."

SO long as the horizontally-opposed type of twin was practically confined to a single make, it was accepted largely on its proved merits; but now that it is threatening to dominate the motor cycle industry, various interested or prejudiced people have begun to spread all sorts of criticisms upon it and rumours about it. Such attacks as I personally have knowledge of are all without foundation—in fact, even when they masquerade as expert criticism in technical journals; and I shall be serving a good cause if I unmask some of these deceptions or delusions.

## Efficient Only in 350 c.c. Size?

Imprimis, it is stated that the flat twin, for some mysterious reason, can only succeed up to a capacity of 350 c.c. This allegation is apparently a spurious deduction from the difficulty of perfecting large air-cooled two-strokes, though the connection between large two-strokes and large flat twins is not obvious. At any rate, it is a pure invention. The Government are at present buying flat twins in three sizes exceeding 350 c.c., namely, 500 c.c., 1,100 c.c., and 2,300 c.c. The Censor will not allow me to state the purposes for which these engines are employed, though the Germans know all about them. But the fact of their service adoption, in the teeth of keen competition from the V and vertical twins and four-cylinders, disproves the above allegation. The 1,100 c.c. develops 22 b.h.p., and the 2,300 c.c. develops over 50 b.h.p., and is regarded by some technicians as being very possibly the most efficient petrol engine of its weight and size ever constructed. The acceptance trials of these engines, by the Government department concerned, include several ten hour days at full throttle, with examination of parts for wear at the conclusion of the test. In actual practice, the main shafts and bushes of these engines evince no wear perceptible to an ordinary micrometer after the acceptance test; if any wear at all is found, it will be in the valve gear, tappets, etc., and is not allowed to exceed  $\frac{1}{1000}$  in. even there, after a trial equivalent to a hard season on the road. The current idea that big flat twins are a failure is simply nonsensical.

## Spoilt by Overhead Valves?

Secondly, it is stated that the flat twin does not lend itself to overhead valves, and can never share the extra efficiency so obtained by rival types of engines. The contours and lengths of the piping are cited as a pseudo-technical justification of this view. This is a very curious accusation, seeing that the first 500 c.c. machine in the world to beat 80 m.p.h. on Brooklands was an overhead flat twin; that the only standard  $3\frac{1}{2}$  h.p. machine sold with a guarantee of 80 m.p.h. is of the same type; and that the 2,300 c.c. 50 b.h.p. engine, above mentioned as claiming all world's efficiency records, is also an overhead valve type. In sober fact, the length of exhaust pipes is a matter of no importance, and the length of inlet pipes ceases to matter within reason when the air supply is heated, as a moment's reflection upon the inlet manifold of a six-cylinder car will soon show. The pipes need not be sharply curved when either or both valves are mounted overhead—not more so than on a vertical single-

cylinder, for example. Many people consider that the A.B.C. practice of fitting an overhead exhaust above a normally placed inlet valve is of great value, as it relieves the cylinder of a "hot side," and so reduces the tendency to distortion under heat. This system is practically inapplicable to a touring vertical single or V twin, because the exhaust pipe is so hard to arrange; it is as neat as it is efficient on a flat twin.

Other alleged "problems" of the flat twin include lubrication, central thrusts, cooling, bearing areas, and housing. Of these, the topical "housing problem" is certainly very real when sizes exceeding 1,100 c.c. are considered; up to that point they have already been solved, *vide* the Williamson; and no larger engine of any type has ever yet been successfully "housed," nor is such a need likely to arise.

The sphere of lubrication is a peculiarly unfortunate selection for criticism, seeing that the 4 h.p. Douglas and  $3\frac{1}{2}$  h.p. A.B.C. both possess oiling systems far superior to those commonly standardised on motor cycles. These systems were not devised because the flat twin is specially exacting in point of oil, but simply because the designers of these engines possessed original minds, and tried to improve every detail.

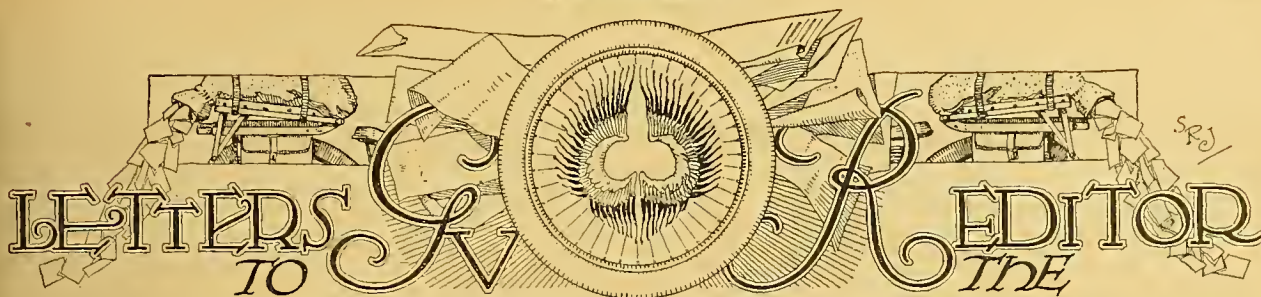
## Generous Bearing Surfaces.

The question of bearing areas is too complex for full treatment here; suffice it to say that, in workshop experience, three-year-old "flat" twins with roller bearings show less wear when taken down than is allowed as clearance for brand new phosphor bronze bearings on more conventional engines. The Hoffmann Co., who know more than most people have forgotten about bearings and their loads, affirm that the bearings which they supply for flat twins are ridiculously large in proportion to the loads they carry.

So far as central thrust goes, it is not found on the Douglas, which does not appear to suffer in any perceptible way for the want of it; but it is to be found on the A.B.C. and the new Humber, and may be quite simply arranged for, when a designer has a preference for it. At the same time, by employing roller bearings, the pistons may be kept very nearly in line, though not absolutely so, as on the V twin. The superior balance and bearing durability of the flat twin suggest that the working of pistons in parallel planes, instead of in the same plane, is a matter of no importance. After all, the pistons of nearly all motor car engines work in parallel planes.

The plain facts are that the flat twin offers better balance and better torque than previous types of motor cycle engine, in conjunction with a reduction of weight and an increase of efficiency for a given c.c. For example, a 22 lb. engine of 249 c.c. will develop over 4 b.h.p. for a full throttle, full load bench test of 150 hours, and show no perceptible wear at the end; a 60 lb. engine of 1,100 c.c. will develop 22 b.h.p. for a similar test; or a 500 c.c. will develop over 12 b.h.p. under the same conditions. It would puzzle any manufacturer in the world to produce a trio of engines, either single-cylinder, vertical or V twin, or four-cylinders, to reach these standards, viz., power curve, weight, and durability.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

### Running on Paraffin.

Sir,—Mr. F. A. Holward would greatly assist riders of "two-strokes" like myself if he would kindly inform us: (1.) What proportion of oil he used to the paraffin? (2.) Whether the same sized jet will do for paraffin as is used for petrol? My engine is a 1915 2½ h.p. Sun-Villiers two-stroke, two-speed.

F. LEWIS.

### A Poser.

Sir,—In *The Motor Cycle* for October 26th there appears, on page 370, an article entitled "A Poser." I have heard of such a thing happening on a V twin, the owner of which fitted a piece of wood into the hole for the plug and inserted a piece of copper wire through a hole in the centre of the wood, and bent the wire to come within ¼ in. of the cast metal. This did all right until the wire was burned, but to remove a piece of rubber and push the wire a little further in was the matter of a few seconds. I would have tried this myself, but I have had no time.

D. BAYACH.

### American Motor Cycles.

Sir,—Replying to "Prospero," in your issue of the 5th inst., surely it is rather far-fetched to argue that, because "to the best of his knowledge" railway engines of American manufacture in 1900 are scrapped in 1916, American motor cycles of 1916 are not worth investing in!

"Necessity is the mother of invention" even in 1916, and this explains the superiority of British and French aeroplanes.

"Prospero's" admitted restlessness scarcely presupposes a lengthy experience of American motor cycles, and it is hardly fair adversely to criticise without such experience.

Again, if "Prospero's" example of buying is typified in his Ariel transaction, surely that is hardly the course a fair critic would adopt with any machine.

Now for the dogmatical part of his letter. He says, "Time is the test, and the prices of British and American second-hand machines tell the tale." Being a confirmed student of your second-hand tables week by week, I felt convinced "Prospero" was wrong, so went to the trouble of getting out the following table, founded on your "Buyers' Guide" for 1915 (for original costs), and your "second-hand tables for the last three weeks available, viz., September 14th, 21st, and 28th respectively:

Date of Issue.	Make and H.P.	Year.	Original Price.	Sale Price.	Depreciation.	Near Average Depreciation.
Sept. 14	Enfield (6) .....	1915	£84	£70	£14	£15
" 21	" .....	"	£84	£68	£16	
" 28	" .....	"	£81	£69	£15	
" 14	Matchless (8) .....	"	£92	£74	£18	£18
" 21	" .....	"	£92	£74	£18	
" 28	" .....	"	£86	£75	£11	
" 14	Harley-Davidson (7-9) .....	"	£86	£70	£16	£15
" 21	" .....	"	£86	£69	£17	
" 28	" .....	"	£88	£62	£26	
" 14	Zenith (8) .....	"	£88	£62	£26	27
" 21	" .....	"	£88	£60	£28	
" 28	" .....	"	£98	£70	£28	
" 14	Williamson (8) .....	"	£98	£52	£46	£37
" 21	" .....	"	£98	£52	£46	
" 28	Indian (7-9) .....	"	£88	£69	£19	

It is not "the restless motor cyclist who is always changing machines" that is capable of judging the merits of any particular make. If, say, a rider of at least two years' riding experience of an American motor cycle will weigh in with a detailed dissatisfied account of his ownership, I shall

perhaps begin to think that my meagre intelligence has been at fault in investing in my Harley-Davidson J.W.

### Automatic Inlet Valves.

Sir,—With reference to "E.J.C.'s" reply to my query re automatic inlet valves, might I point out that in my case loss of compression is not caused by a leak between the valve case and the cylinder, but between the valve itself and its seating. To prove this, I put a circle of thin rubber between the face of the valve and its seat, and then the compression was as good as desired.

Repeated grinding in of the valve has made very little difference, the valve face and seat are perfectly smooth and bright, and three garages I have taken it to say it is in good condition, and cannot see why it leaks.

Can any reader enlighten me as to what to do, or where I might be able to obtain a new valve case? (It is a very old engine, and I do not know the maker's name.)

London.

L.F.I.

### Vibration.

Sir,—This question was touched upon twice in *The Motor Cycle* for October 19th—first by Lt. Davison, who stated that he had ridden a 4 h.p. single, geared low (5½ to 1), under all conditions in Flanders, and that vibration was not noticeable; and "Ixion," who is of opinion that "twins" only are vibrationless. I should very much like to see an article on this subject written by one of your experts—a medical man for preference—and covering the following points:

1. Single v twin—power and gears
2. Correct position of handle-bars and saddle.
3. Springing, handle-bars frame and footboards.
4. Pace.

This information (up to date) would be very useful to men like myself who are getting above middle age and use a motor cycle day after day on business. Apart from vibration, motor cycling seems more and more to be becoming an old man's pastime. I often see two grey-haired old men, who must be close on seventy, thoroughly enjoying themselves on the country roads on Douglas machines, albeit taking all corners very carefully.

W.S.T.

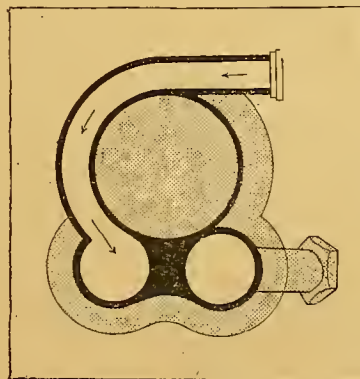
Reading.

### A Hot Induction Pipe.

Sir,—I have noticed several times in your journal that a heated induction pipe is really necessary for the successful vaporisation of paraffin in a motor cycle engine.

I think if manufacturers of motor cycle engines were to cast an induction pipe *en bloc* with the cylinder, as shown in the sketch, the paraffin would enter the engine in a more vaporised form.

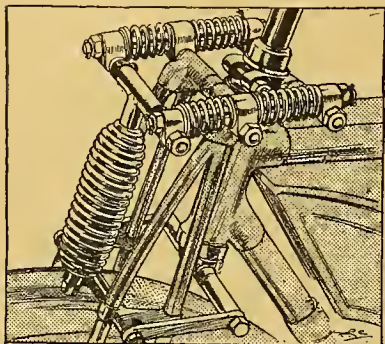
A FIFTEEN YEAR OLD READER.





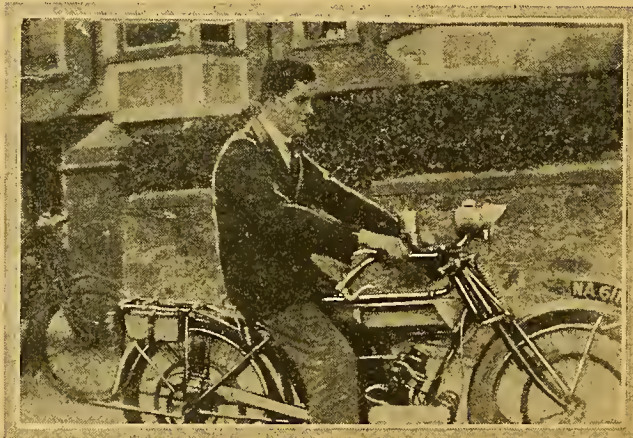
### Compound Spring Forks.

Sir,—The account of a trip which I made on my 3 h.p. Enfield may interest your readers. Starting from Newcastle-



The new design Enfield spring fork fitted to the writer's machine.

on-Tyne, I passed through Hexham, Alston, and Penrith, reaching Keswick on the first evening. On the second day I crossed Dunmail Raise, and proceeded *via* Windermere, Kendal, Lancaster, Garstang, and Preston to Liverpool, where I stayed the night. Next morning, having crossed the ferry to Birkenhead, I took the mountain road to Holywell, Abergelle, Colwyn Bay, and Llandudno. During the whole trip I had no cause to use a spanner, my only stop being due to a puncture near Penrith. I find the extra springs at the top



"3 H.P." seated on the Enfield twin, the forks of which are fitted with the special spring mentioned in his letter.

of the forks a great improvement over my last mount, a 2½ h.p., as they take all the road shocks from one's hands. The usual disclaimer. 3 H.P. Rockferry.

### Will the Single-cylinder Survive?

Sir,—As time goes on, I marvel more and more how this question can still be repeatedly raised, and how there can be any doubt about it in the minds of motor cyclists when the war has proved so conclusively that the "single" will not only survive, but that it will do so upon the merits of reliability, durability, simplicity, and economy, upon which it stands supreme.

My riding experience extends over a mileage of 35,000, ridden on various machines, twins and singles, and latterly 7,300 miles on a 4 h.p. countershaft Triumph, in all over 42,000 miles. Briefly put, I may say that no twin in existence would tempt me for solo use, and only for sidecar touring work would I give the preference to the twin at all, and that a heavily built twin. With the usual disclaimer, SINGLISSIMUS.

Sir,—"Ixon's" opinions on the question of single *v.* twin are quite interesting. They, however, leave me with the impression that he is only arguing on singles with inside flywheels, and that in his vast experiences he has not really tested the one with the outside flywheel, viz., the Blackburne. My experience of this has been quite satisfactory, viz., 20,000 miles mostly with a sidecar, original bearings still good, and 9,500 miles before the big end was touched. The vibration

B22

he complains of is a "negligible quantity," and after some experience with twins I am very dubious if there are any that can approach this for reliability with long life. As regards the bearings on the connecting rods, there is need for much improvement in twins in connection with the lubrication, which, until perfected, does not tend to a large mileage. C. E. SYDENHAM.

Sir,—Mr. K. V. Chidley misquotes my letter on the subject of single *v.* flat twin rather badly. I did not say that running an engine on a low gear would wear it out any more quickly than a high gear; nor did I advocate "thumping up hills" at low speeds on a high gear. It is being forced to do fast hill-climbing on a low gear because the engine is incapable of doing it on a high gear that I object to.

If Mr. Chidley's Brough climbs Dashwood Hill at 25 m.p.h. on a 4½ to 1 gear this is a very good performance for a flat twin, but what does he do if he wants to make a faster ascent? Changes down, I guess. On the other hand, there is not much difficulty in finding a 500 c.c. single which will nearly double the speed he mentions, with a 4½ to 1 gear, on Dashwood Hill.

The reason why I "imagine that a flat twin with worn chains, sprockets, gear box, and with the engine getting slack will make more noise than a single in like condition" when doing fast hill-climbing is that the twin will have to do about double the engine speed of the single, in my experience, for the same road speed. For slow hill-climbing let us use a low gear by all means.

I contend that, however well balanced an engine may be, it is most unpleasant at very high rates of r.p.m., which are only tolerable at very high road speeds, when one has other things to think about than the racket of the engine; and, further, that existing systems of transmission, involving chain drive from the engine, will not stand these high rates of r.p.m. without rapidly becoming exceedingly noisy.

A portion of the modern motor cycle which is in much more urgent need of improvement than the engine is the transmission. A. C. HUSKINSON.

### The Scott Sociable.

Sir,—I have been greatly interested in the letters appearing in *The Motor Cycle* criticising the Scott Sociable.

Mr. F. Greenwood is most certainly in error in stating that the sociable has difficulty in mounting the camber of the road when on the near side. I have driven this machine many thousands of miles, and have never had the troubles referred to, not even when the camber was abnormal and the surface very greasy.

From Mr. Greenwood's remarks, that "However the steering wheel was turned the front wheel refused to right itself," it would appear that the steering wheel was independent of the front wheels, which would be hardly conducive to traffic driving.

The most probable solution of Mr. Greenwood's impression is that the engine was cold and (similarly to the majority of cars) developed little or no power when just started up, or possibly the near wheel was jammed against the kerb, necessitating pushing the machine.

I have no hesitation in stating that this machine steers easier and has less side pull than any sidecar combination on the road. It also possesses a feature which will appeal to many sidecarists, that is, it is impossible to lift the near wheel, even when no passenger is carried. As for comfort, both the driver and the passenger are kept clean, dry, and warm, and the riding is more luxurious than any sidecar I have ever been in. The starting up from the seat is always sure and effective.

When the machine is standing it is hard to turn the wheel; this gives the sidecar machine a slight advantage, but as this stiffness is usual with all cars, it is not noticeable.

If Mr. Greenwood is in Bradford in the near future, I shall be pleased to arrange a trip (time permitting) in this machine, and overcome his objections.

H. O. WOOD,  
The Scott Engineering Co., Ltd.

### Mending Punctures.

Sir,—If J. D. Robinson will use properly prepared patching and good quality solution he will not need to resort to the push bicycle method of clamping as sketch. In any case, if a patch needs treatment of that sort, it shows it has been put on too wet WM. TURNER.

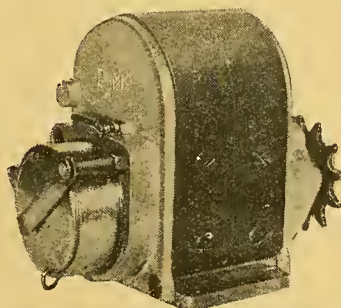


# ANOTHER BRITISH MAGNETO.

## Details and Illustrations of the P. M. Magneto.

WE are able to give a few details concerning a new motor cycle magneto which is now being manufactured in this country. Messrs. Phillips Magnetos, Ltd., Birchett Road, Aldershot, the firm responsible for its production, have specialised at the outset on magnetos for motor cycle engines. The types constructed at the present time are made to run in a clockwise or anti-clockwise direction for single-cylinders, 50° twin-cylinders, and the horizontal type of engine. While examining a magneto in its various stages of manufacture, we noted that the workmanship was good throughout, the parts being well made and well finished. The production of the magneto has not been rushed through, the firm having been engaged upon evolving an efficient machine ever since the war started, and the subject is being tackled

in a thoroughly businesslike manner. Messrs. Phillips hope soon to extend their plant so that their weekly output will run into four figures.

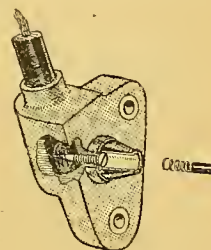


Contact breaker end of the P.M. magneto.

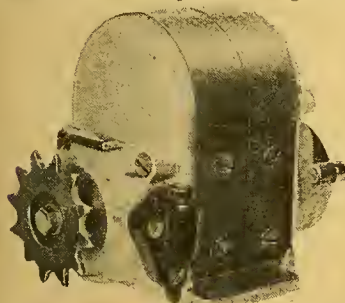
Externally, the P.M. magneto does not differ greatly from the types to which the motor cyclist has been accustomed from the beginning of his career, but the following details will prove interesting. The end plate on the spindle side is so manufactured that the same end plate will do for a single or a twin, the flat side thereof opposite to the high-tension terminal being left so that it can be bored and drilled in order to take an extra terminal and carbon brush holder. Following standard practice, the condenser (in the manufacture of which much care is exercised) is carried at the end of the armature, while the method

of fixing the armature-shaft is also worthy of mention. The armature-shaft is squared and tapered, and is fitted into the brass end plate of the armature so that the largest end of the taper is inside, and is so rigidly fixed that it cannot possibly be pushed out.

In addition to this method of fixing the end is burred over, thus making it doubly secure. The magneto, of course, runs on ball bearings, the bearings on both sides of the armature being of the same size. The high-tension wire is fixed in the brush holder by a sharp pointed brass screw, the point of which penetrates the insulation and thus makes good contact with the high-tension wire. With this fixing the wire is just pushed into the socket, and, provided it is home, it is only necessary to insert the screw and screw it up tightly. The magnets, as are all other parts of the machine, are made entirely at Messrs. Phillips's works. We saw one magnet holding some scrap iron which weighed 17 lb. The platinum points are of ample dimensions and welded to the screws.



Section of the brush holder, showing method of securing the high-tension wire.



The new British P.M. magneto.

## ALUMINIUM PISTONS.

FOUR samples of aluminium pistons made by the Aluminium Alloy Pistons Co., 6, Great Marlborough Street, Oxford Circus, W., are shown in the accompanying illustration. They are composed of special aluminium alloy, and are made for the principal makes of motor bicycles. They are intended to be supplied direct to the manufacturers and not to private owners. The pistons manufactured by this firm range in size from 62 mm. up to 8in. in diameter, and no less than fifty different types of all shapes and sizes have been supplied to various well-known firms.

From the samples illustrated, it will be noticed that there are two for two-stroke engines, one of which is in an unfinished state—a piston with a broad groove in the centre for the purpose of oil retaining, and an ordinary flat top

four-stroke piston. It will be apparent that the latter has tiny holes, which are drilled through a small groove running below the edge of the bottom ring groove. One at least of the pistons is to be used as an experiment by a leading motor cycle manufacturer. The advantages offered by aluminium alloy pistons are—lightened reciprocating parts, and consequently better balance and higher engine speed.

## A STARTING TANK.

FOR starting when using heavy fuel the small tank device which we are about to describe has lately been provisionally patented. Particulars have been sent to us by Mr. H. P. Baker, 1, Camden Villas, New Street, Westerham, Kent, on behalf of the inventor, Mr. Baxter.

The device consists of a small tank about 3in. in diameter and about 6in. high, which is designed to be screwed into the induction pipe in the manner



The tank referred to by Mr. Baker, which is screwed on to the induction pipe.

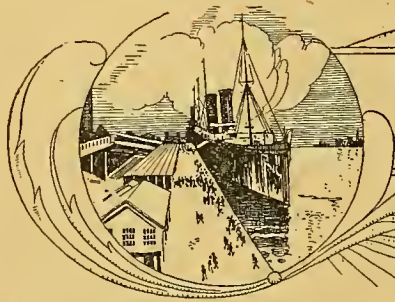
- E. Filler cap.
- B. Needle valve.
- C. Valve seating.
- I. Inlet pipe.

shown in the illustration. The tank is supplied with a needle valve and a small filler cap. When it is required to start the engine, the needle valve B is unscrewed and a few drops of petrol allowed to drip into the induction pipe. The engine will then start, and the heavy fuel may be turned on. It is claimed that the tank holds sufficient petrol to enable an engine to be started and to warm itself up on petrol about five hundred times.

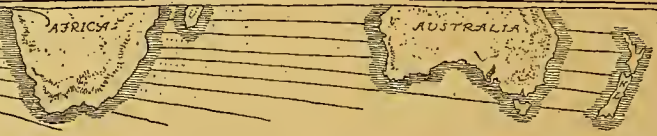


Specimens of aluminium alloy pistons for four-stroke and two-stroke engines. The one on the extreme left is a rough casting of a two-stroke piston as it comes from the sand mould.





## OVERSEAS OPINIONS.



IT seems strange, now that the weather conditions here are approaching a stage so dismal that articles discussing the most suitable equipment to ward off rain, wind, and snow are deemed necessary, that our brothers of the wheel Overseas—and particularly those in the Antipodes—are looking forward to summer awheel. Of course the requirements of the Army must make a good deal of difference to the amount of riding possible in the British Dominions this year, though motor cycles long ceased to be vehicles of pleasure only. They have, indeed, become so much a part of our daily routine that, robbed of their utilitarian value, many of us would be almost stranded. Apart from that motor cycles have become such a dependable method of travel that thousands of men over military age—and family men at that—have been won over by their attractions.

During the past month our Overseas mail bag—despite the unpleasant attentions of enemy submarines—has arrived regularly with accounts of sporting motor cycling events in the different parts of the globe where motor cycles are popular.

In the race meeting of the Goldfield Motor Club, held on September 3rd on the dried up bed of Lake Perkollilli, it was satisfactory to note that British motor cycles figured very prominently, not only in proportion to the machines represented, but in the results.

The result of a South African competition reaches us from Mr. T. J. Chester. It was the Pietermaritzburg Club's annual trophy run—157 miles of rough roads. We notice several points of interest. The winner was mounted on an A.B.C., which lost eight marks in a thousand, all for being slightly out of count at the secret checks. Thirteen out of twenty-three machines were big American twins—this in a British colony. A little  $2\frac{3}{4}$  h.p. Sun, with no gear but a Philipson governor pulley, managed to finish and to beat two American 7-9 h.p. twins.

One of the most important Australian events of the year was the Victoria M.C.C. "night to night" trial, as it was called. Full details had not reached us when going to press, but a photograph is to hand of the winner, J. Fleece, who, it appears, was mounted on an 8 h.p. J.A.P.-engined single-gear sidecar outfit. We doubt not that there has been great discussion since this remarkable success, in view of the lack of a gear or clutch on the sidecar in question. It seems to upset many arguments, but it is not really so. Evidently Mr. Fleece is a rider of rare skill. Even in our own Scottish trials a single-gear twin-cylinder sidecar outfit has been taken round

one of the worst courses ever selected, but only by dint of much athletic work on bends and hills.

### Other Motor Cyclists' Views.

Appended we quote a number of extracts from Overseas letters, many of which harp upon the old topic of the desirability of spring frames. Those who support such pleas will be interested in this issue, in which a number of spring frame designs appear as a result of the campaign *The Motor Cycle*, has waged for many months past.

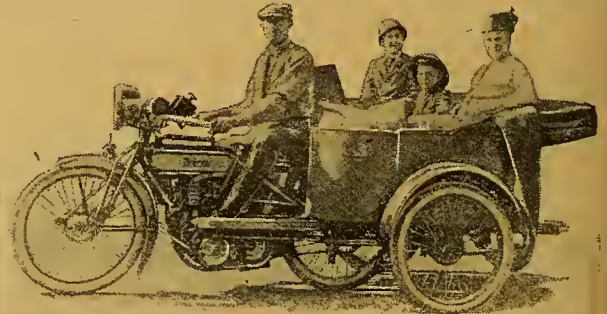
We frequently, as will be seen from the extracts quoted, receive letters from readers serving with the Overseas Forces. These letters as a rule are of a most interesting nature. Overseas riding conditions undoubtedly require an even running engine and plenty of ground clearance, two points in which the "flat" or horizontal twins render themselves most suitable. It is, therefore, interesting to see the two new makes of this type, which have been described and illustrated in this journal recently; the flat twin Humber should undoubtedly prove an attractive "after the war" Overseas machine.

### An American Rear Car.

Mr. W. T. COOPER, Toronto, Canada: "I take this opportunity to draw your readers' attention to a new American machine of unusual design. I enclose a picture of it.

"The Cygnet, as it is called, takes the form of a rear car. It has two wheels, and fastens to the rear of the motor cycle, making the outfit a four-wheeler three-track vehicle. The driver is still exposed to the elements and with the same old back-breaking saddle. The passengers are three times the distance from one as in a sidecar outfit. Do you think this is an improvement on the sidecar? Would you buy this in preference to a two-track side-by-side seating cycle car, which would cost no more to keep up?

"If Mr. S. L. Burnard calls the Scott Sociable an ugly, clumsy thing, what would he call this? The Scott Sociable is an improvement, but the Cygnet seems to be bought only because it is something new. It is built by the Cygnet Rear Car Co., Buffalo, New York."



Cygnet rear car attachment referred to by W. T. Cooper, the writer of the accompanying letter.



## Overseas Opinions.—

## Road Dangers.

Mr. S. A. AUSTIN, Stanford Merthyr, N.S.W.: "I now ride a 5-6 h.p. M.A.G.-engined Rover, which cost me £110 without lamps or speedometer. The sidecar cost me a further £19. So you see motoring out here is rather expensive fun. I think my machine would be better with two exhaust pipes extending to the rear axle instead of the aluminium silencer which is now fitted, and is so near the ground that it often fouls the humps. Most of the riding is through bush country out here; no brick walls, like in London. The only thing is one has to be careful that rabbits or hares do not dive across the road into the front wheel."

## The "Bunyip."

Mr. C. HARDING, Parramatta, N.S.W.: "A short time ago I was spending a holiday in the Illawarra district, and had a very amusing experience. There was a spot where the track passed near a water-hole, which, according to the stories told by the local 'blacks,' was inhabited by a 'bunyip.' Now, the 'bunyip' is the aborigines' idea of a ghost or spook. For instance, if a spot is supposed to be haunted, the aborigines will say that a bunyip lives there. This imaginary creature is supposed to inhabit swamps and water-holes, and is greatly feared by the natives. I was passing this particular spot one very dark night on my way back to the station where I was staying. As I drew near the water-hole I heard a strange shuffling noise ahead of me. I had a splendid lamp (a very big P. and H.), and as I looked ahead I saw what seemed to be a mass of glittering stars, stretched across the road and into the bush on either side. I promptly lowered the Zenith's gear, and let the machine crawl slowly forward; at the same time I got out my Colt's .44, which I had in my hip pocket. The 'mass of stars' started jumping about as I got closer, and I began to feel 'a wee bit queer.' I listened intently for any sound which might give me a clue to the meaning of the strange phenomenon. The glittering mass was now only about twenty-five yards ahead

of me, and as I stood beside my machine I could almost feel my hair standing up. Not a sound could be heard. Suddenly a loud 'Baa' broke the ominous silence, and relieved my suspense. It was only a flock of sheep standing in the darkness, with their eyes glittering in the light of my lamp. I felt rather sheepish, I can tell you. In a country like this (Australia) motor cyclists often have very novel experiences. I have had a Brooks saddle almost eaten by a cow who suddenly developed a taste for leather, and, again, I have had tyres eaten through by a cockatoo."

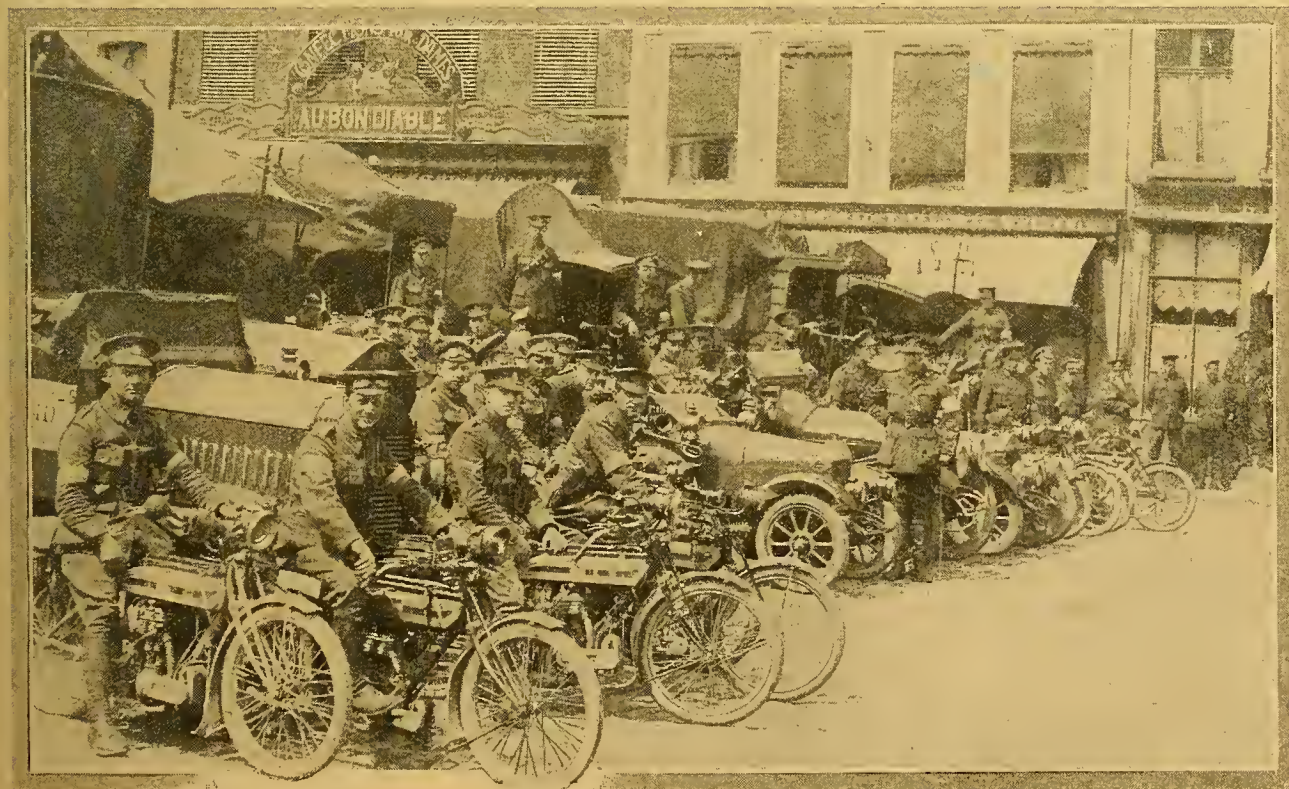
## Motor Cycles for India.

Mr. F. GOODWILL, Bangalore: "Good makes of English motor cycles seem to do well generally in South India, both solo and sidecar; but greater cooling surface for cylinders is very desirable in view of the high temperature of the atmosphere. The 3½ h.p., suitably geared, will take a sidecar with a reasonable load, but sometimes one wishes for a little more power to cope with heavy roads and strong monsoon winds, seeing that repair shops are often far from the trouble, and almost every motorist one meets grumbles at the carelessness and inefficiency of the Indian workman."

"A 6 h.p. twin came, through me, into the market lately. The engine was in perfect order, but its low clearance spoiled trade to the tune of £15 to £20. It was positively unsafe for the ruts of country roads. It was a 1913 model with about 3½ in. clearance."

"I have been interested in Colonial reports of prices charged for new machines and spares. The matter needs attention of an urgent, pushing nature here in South India. A Madras firm was lately advertising itself as agent for not less than twelve different makes of motor cycles. I think it a pity that trade should be put so entirely into the hands of one firm."

"Thanks for your campaign on rear sprung frames. I lately went twenty-six miles out and home with sidecar on a country road, yet a main road. Before ending the return journey I vowed that my next *must* be rear sprung. But my average speed was only 16 m.p.h., and that with most careful watching of pot-holes."



SIGNAL SECTION IN A FRENCH MARKET SQUARE.

An interesting official photograph of the Indian Army Corps signals, lorries, cars, and motor cyclists on their way to the Front. The picture well shows the fit state of the men, who are mounted on W.D. Triumphs, the officers having Singer light cars.



**Overseas Opinions.—**

"Then, for India, every nut ought to be castellated or spring-washed. A friend of mine has shed most possible items from his machine in the course of about 3,000 miles; but he lives in a country town and gets little city driving. For myself, I ought, if you can permit such a direct testimony, to say that my Rover has run 7,000 miles in India, town and country, and has shaken but one nut loose, and dropped not an atom of metal to date."

**British v. American in Australia.**

"GUNNER," A.I.F., France: "The controversy at present raging in your paper regarding the merits of British and American machines interests me. I can truthfully say that so far as Australia is concerned British machines are becoming less popular. It is not due to design, workmanship, or anything else concerning the machines themselves, but to the agents, who charge exorbitant prices both for machines and parts."

**More Difficult Riding Conditions.**

"GUIDE WARBRICK," Gisborne, Australia: "I have been a subscriber to your journal for so long now (upwards of ten years) that I seem to know you quite well. I am sure I do; and I write you these few lines in the hope that a Colonial motor cyclist's views may interest you. From time to time I read in *The Motor Cycle* the views of New Zealand motor cyclists on the question of Colonial models, but most of them appear to have regard to the conditions existing in the particular district in which the writer lives, the result being that we have the ideal Colonial mount presented in many different forms. In some of the provinces here, Canterbury and Hawke's Bay for instance, the roads are really good, and the enthusiastic rider will use his machine the whole year through, while in Poverty Bay the conditions are simply appalling in winter. Gisborne is the largest town by far in this latter district, and for five or

six months in the year one may get bogged within two or three miles of the town, and, except for about twenty miles on one road, progression on a motor cycle is impossible. There are other provinces in which similar conditions exist, though to a lesser degree. Now a motor cycle to be of real use here must be built to meet our most adverse conditions, conditions such as will be met with by any rider undertaking a serious tour—rough roads, rougher hills, and stretches of sand. Ten years of motor cycling in New Zealand have taught me the value of plenty of power. I plump for a 6 or 8 h.p. twin with three-speed every time, particularly if a sidecar is used. My present mount, a  $3\frac{1}{2}$  h.p. Scott, is the smallest powered machine I have used for three or four years, and, while I find it a splendid machine on good roads and hills, it is a little unsuitable under other conditions, and I intend replacing it with a big English twin this summer. Mudguards are the worst feature of the ordinary machine. Some of the guards are splendid on wet roads, but when one gets into the thick mud they cause the wheels to stick and progress ceases. I have been pulled up in low gear on an 8 h.p. twin with mud in the guards and wheels. The only way to keep going in these circumstances is to ride through all the pools and keep washing the mud out, but this is not always safe. So let us have wide, almost flat guards, the wider the better, and do not have any guards which encircle the rims. Then we should have good clearance. (I have seen two Clynos, excellent machines in other respects, with punctured crank cases.) Totally enclosed chain drive (or shaft). Four speeds in the gear box are better than three, with a large clutch and a very low gear. A good spring frame would do more than anything to popularise motor cycling, and it has given me great pleasure to follow your campaign in this direction. In the interests of the pastime, I hope you are entirely successful. Sidecar connections should be stronger, likewise mudguards. Apart from new sidecars, you rarely see one with a mudguard. Connections are constantly breaking; frames occasionally."

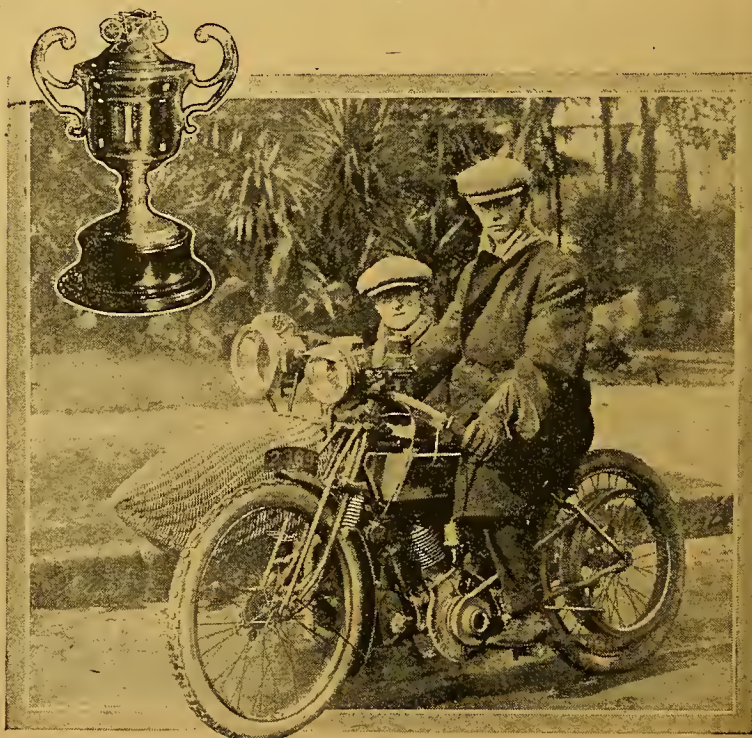
## A TWENTY-FOUR HOUR CONTEST.

### A BRITISH MACHINE WINS THE VICTORIAN CUP.

WE are glad to see that the prestige of the old country is being upheld in the Colonies, and though we cannot hold competitions as in pre-war days, it is good to observe that when it comes to a strenuous test the British mount still retains its supremacy. In Victoria, during August, a "night to night" trial took place, J. Fleece winning the motor cycle cup given for sidecars over 600 c.c. It will be seen from the illustration that his sidecar outfit has an 8 h.p. J.A.P. engine, and is belt driven and single-gear.

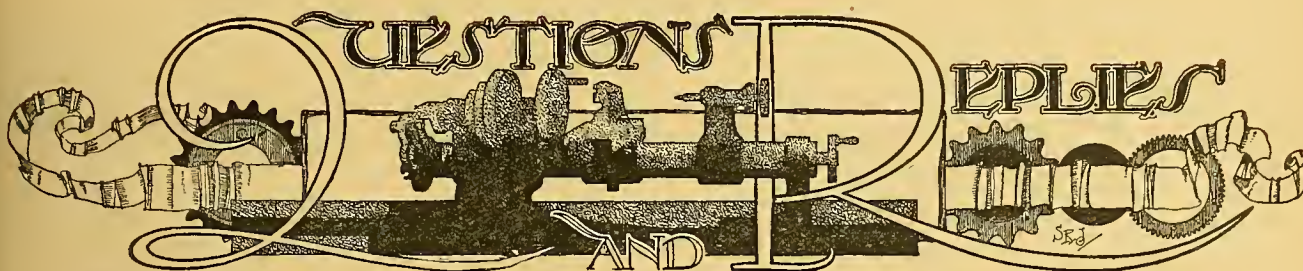
**The Route.**

The Western district of Victoria was chosen for the scene of the contest, the route being from Melbourne to Geelong, through Camperdown, and continuing the main road to Warrnambool, thence to Koroit and back to Warrnambool. The direction then followed was to Mortlake, Skipton, and Ballarat, then across to Wearyborough and Castlemaine, thence to the city by the main Bendigo road. The trial was a thorough test for machines, and for human endurance also, as competitors in our own reliability contests will agree if they know the country traversed.



The winner of the Victorian Motor Cycle Cup—J. Fleece. A remarkably efficient lighting set is shown, a car head light being fixed to the forepart of the sidecar, in addition to the usual head lamp on the bicycle. Inset, the handsome silver cup which he won in the twenty-four hour contest.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Double Belt Drive.

**?** In *The Motor Cycle* of September 9th and 16th, 1915, I saw letters on double counter-shaft pulleys, with gear ratios of 5 to 12 to 1. Can you give me the address of the manufacturers? Also, can you give me any information as to efficiency, durability, and simplicity?—E.H.

We do not think the pulley you mention is at present on the market. Most of those in use are made privately. The contrivance is simply a double pulley with the central flange, that which is in contact with both belts, slidable on the axle, the whole mounted in such a way that it can be moved backwards and forwards. It is quite satisfactory in itself, but the front belt wears badly, as it is so short.

### Loss of Power.

**?** I have been taking down my motor cycle for cleaning, etc., but cannot have put it together correctly. When the machine is on the stand it will run all right, but when I get astride the saddle on the road the engine has no power and stops. I can now pedal engine round on the stand without using the valve lifter, which I could not do before overhauling. (1.) Do you think the valve timing is wrong? (2.) When I was putting in the piston I broke a piece out of the skirt. The valves are at the side of cylinder, and there is only one piston ring. Do you think the piece being broken out is the cause of the loss of power?—C.F.B.

(1.) Carefully examine your valves and see that they are closing properly. If they are not this is obviously the cause of the loss of compression. You can easily check the valve timing, which should be as follows: Set the exhaust valve to close just after the completion of the exhaust stroke. It will then commence to open when the piston is about one-seventh of the length of the stroke from the bottom of the firing stroke. The inlet should commence to open as the exhaust closes, and remain open for rather more than one complete stroke of the piston, or while the fly-wheels turn through 190° or 200°. (2.) We do not think the small piece broken out of the bottom of the piston will appreciably affect matters. It would be better to have a new piston, but, on the other hand, we do not think there will be any objection to running your present piston until the new one arrives.

### Single Gear and Sidecar.

**?** I have a 1909 3½ h.p. Triumph, free engine, no gears. It is on the point of being returned by the makers with the engine re-fitted with new parts. It has previously been used as a solo machine. Do you think it will take a sidecar up a hill on its present fixed gear? I do not want to go to the expense of speed gear. Passenger's weight, 9 st. 10 lb.; mine, 15 st.—T.S.R. (Scr. R.A.M.C.)

You do not say whether your Triumph has an adjustable pulley, or what the gear is; but, if suitably geared, say 5 or 5½ to 1, it should be quite satisfactory in any but a hilly district.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD

### Accumulator Charging.

**?** In *The Motor Cycle* for September 28th you gave instructions for charging accumulators from house lights. Will you kindly inform me whether the voltage of the lamps matters, e.g., whether the voltage of the lamps subtracted from the voltage of the supply mains should equal the voltage of the accumulator? Also the number of metal filament lamps, thirty watts at 200 volts, required in resistance to charge two volts two ampere hour accumulators?—H.V.C.

When charging accumulators it is necessary that the voltage of the supply should exceed the voltage of the accumulator, and unless you are using the lamp for lighting purposes while charging a high voltage is extravagant. Beyond these points the voltage does not matter. Accumulators should not be charged at a higher speed in amperes than is marked on them (this varies with the size and output), but they may be charged at a lower rate. The little accumulator you mention should not be charged at a higher rate than .2 ampere. As watts equal volts × amperes, the thirty watt lamp on a 200 volt circuit will require .15 ampere; and one lamp will be sufficient.

### Magneto Sprocket Slipping.

**?** The sprocket wheel which drives my magneto, fixed to the magneto on a taper screwed tight home, is constantly slipping slightly, and so upsetting the timing of the machine. The fit by contact alone and tightly screwing up seems in my case scarcely sufficient, although I am aware other users of magnetos do not often get this difficulty. Can you suggest a remedy?—E.D.H.

The taper fitting is in most cases quite satisfactory. What has probably happened is that the taper has become worn. Get a good mechanic to verify this and refit the sprocket, and we think the trouble will cease.

### Skidding of Back Wheel at Starting.

**?** I have a 3½-4 h.p. combination fitted with Armstrong three-speed gear. A kick-starter is fitted, but I have never used it, but have preferred to push to get a start. Lately, however, when starting, some difficulty seems to have arisen, the back wheel skidding along for a considerable distance. When a start is ultimately obtained no further trouble arises, neither does the skidding always occur.—W.F.D.

The trouble, we should say, is due to your not having the exhaust valve lifter adjusted so that it raises the valve sufficiently. Also, you may be advancing the spark too much when you attempt to start.

### Lamps used near the Coast.

**?** The glass of my motor cycle head lamp measures 4½ in. in diameter. I have been repeatedly warned by the constable in one district in the West of England. He is the only complainant. Kindly inform me if it is or is not necessary to dim a head light of such dimensions.—W.G.S.

The diameter of the glass must not exceed 6 in. Within six miles of the sea anywhere in the United Kingdom, or within six miles of navigable waters of any estuary, the glass must be dimmed with one thickness of ordinary white tissue paper, or ground-glass, or a disc of other uncoloured material. Over the glass must then be placed a cap or disc of opaque material, and in it there must be six ½ in. holes, spaced approximately evenly round the disc so that no portion of any of the aperture is nearer the centre of the disc than one-quarter the diameter of the effective front of the lamp.



### Acetylene Generators.

**[?]** I am always having trouble with my acetylene lamps. Is it possible to have one generator for the front and back lamp? I mean a large one. What is the difference between a Low generator and a Rushmore?—G.B.

One generator will usually supply the front and back lamps, but you should have a Y connection so as to branch off from the generator to the two lamps. The Low generator is a self-generating system of compressed acetylene. The Rushmore is a generator designed more or less on standard lines, but with a shaking grid, which shakes down dust to the bottom of the generator, leaving only the unconsumed carbide to be attacked by the water.

### Carburettor Trouble.

**[?]** (1.) My machine is a new 1916 5 h.p. twin, ridden solo. When opening up gently off the pilot jet the engine nearly always chokes, necessitating the throttle being closed again before the engine will recommence to fire. This occurs no matter what amount of extra air is given either at the pilot jet or main throttle. The only variation is that sometimes the engine can be induced to fire again by opening the main throttle wide (again irrespective of the amount of extra air being given), but this, of course, produces an enormous and violent acceleration, accompanied by great "snatchiness" in the drive. Can this choking be remedied? (2.) On anything like a poor surface the front fork spring clatters very violently between the two rubber stops. The same thing occurred on a second-hand 7 h.p. T.T. model of the same make which I previously owned, and I then put it down to wear, but that cannot be the reason in the present case. Can this noise be stopped? (3.) Can you inform me whether I should get satisfactory results if I fitted another carburettor in place of the semi-automatic now fitted? (4.) I contemplate reducing the gear and lowering the compression for winter running. If I fit a plate between the cylinders and the detachable heads, shall I have to obtain new and longer holding-down bolts, and will the existing provision for adjustment at the inlet rockers be sufficient or will longer rods be required?—A.G.T.

(1.) We can only think that the main jet is partially stopped up. Carefully overhaul your petrol system and see that there are no obstructions. Perhaps the sudden opening of the throttle causes part of the obstruction to be drawn through and the choking is temporarily remedied. Until the engine has warmed up keep the extra air closed. (2.) Carefully examine the spring and note if any part is broken. If this is the case it should be replaced. See that the head is tight. Any looseness in the head of course will aggravate the chattering. Also see that both rubber buffers are in good condition. (3 and 4.) We do not think you will get any better results by changing your carburettor nor by reducing the compression. If you raise the cylinder heads by fitting a washer underneath the cylinders this will alter practi-

cally everything. As to whether the existing inlet rockers, etc., will suffice depends upon the degree by which the compression is reduced; in other words, it depends upon the thickness of the washer you fit and upon the amount of adjustment afforded on the rods. If you should decide to alter the compression we would advise you to place the packing under the cylinder base and not under the detachable head.

### Failure to Start.

**[?]** I had the spindle of my timing wheels break, and had it repaired and fitted it up again, but I could not get the engine to start.

I have set the exhaust valve to close at the top of the stroke, and the inlet to open immediately after, which, I think, is right; but I cannot understand the magneto. The points break and keep open until it has nearly turned right round. Would you be good enough to give me your advice on the matter?—C.P.

The valve timing seems to be correct, but you have to set the magneto so that the points are just about to break when the piston is on the top of the compression stroke with the spark two-thirds retarded. We think that if you set the magneto timing correctly the engine will give no further trouble.

### Storing a Motor Cycle.

**[?]** I should be very much obliged if you would inform me, through your valued paper, the proper way to prepare a motor cycle for storing it over the winter season. I mean, should the tyres be removed?—J.S.P.

We do not think that you need remove the tyres for storing for the winter, but if you should decide to do so the covers and tubes should be stored in a dark, damp place, such as a cool cellar. The tubes should be slightly inflated, or else carefully rolled up. With regard to the rest of the machine, you should

thoroughly clean it, and then paint all bright parts with either grease or thick lubricating oil. If the machine is stored with the tyres on, keep them blown hard and both wheels jacked up off the ground.

### READER'S REPLY.

#### Overheating.

With reference to overheating in a 2 h.p. Humber, in your issue of October 12th, "C.B." will probably find a long open exhaust pipe the best remedy. His jet, as you say, is too large and his gear too low.—C.D.S.

### RECOMMENDED ROUTES.

CARDIFF TO CODDENHAM (SUFFOLK).—T.E.S.

Cardiff, Newport, Chepstow, Newnham, Gloucester, Cheltenham, Northleach, Witney, Oxford, Thame, Aylesbury, Tring, St. Albans, Hatfield, Hertford, Bishops Stortford, Great Dunmow, Braintree, Colchester, Capel, Coddenham.

CHELTENHAM TO LYME REGIS.—J.H.G.

Painswick, Stroud, Nailsworth, Bath, Shepton Mallet, Ilchester, Crewkerne, Lyme Regis. Distance, 99 miles.

BOURNEMOUTH TO CHELTENHAM.—J.H.G.

Wimborne, Blandford, Shaftesbury, Warminster, Westbury, Melksham, Chippenham, Malmesbury, Cirencester, Cheltenham. Distance, 106 miles.

WINDSOR TO SEAFORD.—H.N.H.

Windsor, Staines, Hampton Court, Surbiton, Ewell, Tadworth, Reigate, Crawley, Horsham, Cowfold, Hurstpierpoint, Hassocks, Keymer, Ditchling, Westmeston, Plumpton, Lewes, Seaford.

BIRMINGHAM TO SALISBURY.—W.B.

Birmingham, Stratford-on-Avon, Moreton-in-the-Marsh, Stow-on-the-Wold, Burford, Lechlade, Highworth, Swindon, Marlborough, Pewsey, Rushall, Amesbury, Salisbury.



Some of the men who handle the now famous armoured car "tanks." Their experiences in the battle zone would fill a book. The print was sent us with wishes for the "best of success"; our readers will join us in sending out such a message to the boys of the H.S., M.G.C.



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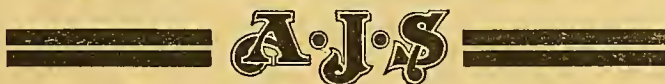
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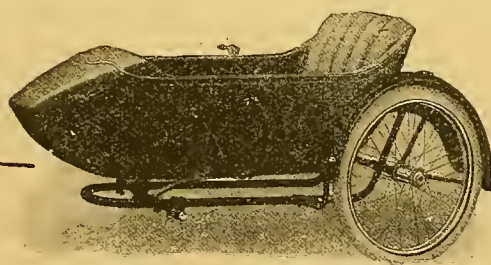
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# Tyseley.

B.H.B.



## The Canoelet

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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

ADVERTISEMENTS in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

1914 A.B.C. with Montgomery coach sidecar, in splendid condition; what offers?—Hancock, 43, Hill St., Hockley. [X0440]

### A.J.S.

1916 A.J.S., 2½ h.p., in stock; £55.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X0406]

RARE Opportunity.—1916 A.J.S., 4 h.p., and sidecar, just delivered; first cheque £96.—Taylor's Garage, Falmouth. [3267]

A J.S. 4 h.p. Combination, just delivered from works.—Prices and particulars, W. Brandish, Triumph Garage, Coventry. [X9653]

A J.S. 3-speed, Gloria coachbuilt sidecar, with wind screen, all accessories; £65.—Appleyard, 97, Elwick Rd., West Hartlepool. [X0323]

PETROL Free with 1915 A.J.S., 2½ h.p., 3-speed, handle-bar clutch, kick-start, perfect order; 39 gns.—Troward, 78, High St., Hampstead. [4118]

1916 2½ h.p. A.J.S., 3-speed, latest model, ridden 700 miles only, condition genuinely as new, specification as list; £55.—Robinson's Garage, Green St., Cambridge. [3994]

### Alldays.

ALLON, 1916, 2-speed, hand clutch, perfect; £35.—6, Montague Rd., Handsworth, Birmingham. [3875]

## SECOND-HAND BARGAINS

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N.A.G., 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set ..... £300  
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G.W.K., 1915, 9 h.p., detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £160  
DEEMSTER, 1914, 9.5 h.p., 2-seater, all accessories; a bargain at ..... £100  
OVERLAND, 1916, 12 h.p., 5-seater, dynamo and self-starter equip., as new ..... £185  
FORD, 1916, 20 h.p., 5-seater, shop-sold ..... £125

### SIDECAR OUTFITS.

REX, 1914, 6 h.p., 2-speed, modele de luxe ..... £38  
TRIUMPH, 3½ h.p., 2-speed countershaft, Sidecar ..... £32  
INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame ..... £42  
ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ..... £60  
RUDGE, 1913, 5-6 h.p. Multi, with Rudge Sidecar ..... £46  
INDIAN, 1916, 5 h.p. Combination, 3-speed ..... £63  
ZENITH, 1914, 8 h.p., clutch, and Sidecar, all access. ..... £68  
ENFIELD, 1912, 6 h.p., 2-speed twin, Enfield Sidecar ..... £29  
RUDGE, 1913, 3½ h.p. Multi, coach-built Sidecar ..... £33  
B.S.A., 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidecar, only done 500 miles ..... £68  
SCOTT, 1914, 3½ h.p., and Scott Sidecar Chassis ..... £45  
B.S.A., 1915, 4 h.p., 3-speed, chain drive, C.B. Sidecar ..... £50  
ZENITH, 1915, 3½ h.p., twin, clutch, and C.B. Sidecar ..... £52

### SOLO MODELS.

NEW IMPERIAL J.A.P., 1915, 2½ h.p., 2-speed ..... £26  
DOUGLAS, 1911, 2½ h.p., 2-speed, spring forks ..... £20  
CALTHORPE, 1914, 2 h.p., 2-speed ..... £18  
RUDGE, 1913, 3½ h.p. Multi, T.T. bars ..... £33  
IVY, 1915, 2-stroke, single-speed ..... £18  
NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine ..... £34  
REX, 1913, 3½ h.p., 2-speed, and clutch ..... £28  
RUDGE, 3½ h.p., Philipson pulley, 1915 improvements ..... £37  
BROWN, 3½ h.p. model, Bosch mageto ..... £14  
INDIAN, 1915, 5 h.p., 3-speed twin ..... £52  
ROVER, 1912, 3½ h.p., T.T. clutch model ..... £20  
DOUGLAS, 1912, 2½ h.p., single-speed ..... £16  
ALLDAYS ALLON, 1915, 2-speed, 2-stroke ..... £32  
NEW HUDSON, 1915, 2-stroke, as new ..... £24  
TRIUMPH, 1914, 2 h.p., 2-speed, 2-stroke ..... £31  
INDIAN, 1914, 7-9 h.p., 2-speed, electric equip. .... £17  
ENFIELD, 1910, 2½ h.p., twin, Grado gear ..... £44  
HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, twin ..... £56  
LEVIS, 1914, 2½ h.p., 2-stroke, countershaft ..... £18  
HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, as new ..... £53  
INDIAN, 1914, 7-9 h.p., T.T. clutch model ..... £41  
F.N., 2½ h.p., 2-speed, lightweight ..... £17  
IVY, 1915, 2½ h.p., 2-stroke, 2-speed, as new ..... £21  
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ROYAL ENFIELD 6 h.p. Combination ..... £94 10  
ROYAL ENFIELD, 3 h.p., twin, 2-speed ..... £57 15  
ROYAL ENFIELD, 2½ h.p., 2-speed, 2-stroke ..... £44 2  
B.S.A., 4½ h.p., 3-speed, all-chain, H ..... £64 0  
B.S.A., 4½ h.p., 3-speed, chain-cum-belt, K ..... £62 0  
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INDIAN, 7 h.p., Powerplus, model G ..... £75 0  
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Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### Alldays.

ALLDAYS Matchless, speedometer, lamps; £20.—Warren's, 386, Enston Rd. Museum 3081. [4223]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

PETROL Free with Alldays Matchless, 4 h.p., 1915, clutch; 24 gns.—Troward, 78, High St., Hampstead. [4116]

1914 3½ h.p. 2-speed Alldays Matchless, enamelling and plating excellent; £33.—Parker and Son, St. Ives, Hunts. [4167]

1916 Allon, 2½ h.p., 2-stroke, condition as new, hardly been ridden; accept £37, no offers.—Cricketers, Downs Rd., Clapton. [3879]

PETROL Free with Alldays Allon, 2-speed, new January, perfect order; 27 gns.—Troward, 78, High St., Hampstead. [4115]

2½ h.p. Alldays Matchless, Villiers engine, 1915 2½ model, splendid condition; £18.—107, Wargrave Av., Stamford Hill, N. [3933]

1915 Alldays Matchless, 2½ h.p., very little used, like new; £20, or near offer.—Charlton Villa, Staines Rd., Bedfont, Middlesex. [4074]

ALLDAYS Allon, 1915, 2-speed clutch model, with accessories, £36/10; also 1915 single-speed, £29/10; liberal deferred terms.—Lamb's, 151, High St., Watlington, and 50, High Rd., Wood Green. [3951]

### Ariel.

ARIEL 3½ h.p., 2-speed free engine, in perfect condition; £12 cash.—Pudney, Walton-on-Naze, Essex. [X0390]

ARIEL 3½ h.p., mag. low frame, tyres, condition excellent; £18; after 3.—50, Fountain Hill, Stoke Newington. [3982]

1915 3½ h.p. Ariel, decompressor, lamps, horn, usual accessories, perfect condition; £27 cash.—Lloyd, Welland House, Spalding. [X0362]

ARIEL Combination, 3½ h.p., 3-speed, kick start, excellent condition; £35, or near offer.—A. Greenfield, 16, Temperley Rd., Balham. [4145]

1917 5-6 h.p. Ariels for immediate delivery; also 3½ h.p., with or without sidecars; deferred payments arranged.—Jones Garage, Broadway, Muswell Hill. [4199]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

F. J. WATSON'S 1916 5-6 h.p. Twin Ariel Combination, in almost new condition, 3-speed gear box, h.b.c. clutch; £75.—30, Harvist Rd., Queen's Park. [4031]

2½ h.p. Ariel Motor Bicycle, very low, comfortable 24 little lat, mag. ignition, B. and B. carburettor, good throughout; sacrifice £13/10.—Beale, Chemist, 13, Crownhill Rd., Harlesden. [3986]

1916 5-6 h.p. Ariel Combination, almost new, all black finish, done 2,000, all possible accessories, in splendid order and condition guaranteed; £80; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [3822]

### Arno.

ARNO, 1914, lamps, all complete; £20.—Warren's, 386, Enston Rd. Museum 3081. [4218]

### Auto-Wheels.

1914½ Auto-Wheel, very good condition, powerful; £7/10.—19, Stockwell Park Crescent, S.W. [X0158]





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**Flat Twins.**

**W**E offer no apology for reverting to the subject of flat twins. This type of engine has lately come in for a good deal of prominence at our hands. Though a few years ago our references to the engine were just as enthusiastic as they are now, the amount of consideration given to the horizontal twin was not so pronounced as it must necessarily be to-day by reason of the attention it now commands at the hands of important manufacturers. Within the last month we have published detailed descriptions of three entirely new designs of horizontal twin-cylinder machines, but the majority of motor cyclists will not realise the full significance of this until peace returns.

We consider the present an opportune time for a review of current design, and in this issue illustrate no fewer than twelve different examples of flat twin-cylinder motor cycle engines of the four-stroke type, each accompanied by short specifications setting forth their particular features. The twelve specimens include all current types obtainable at the outbreak of war and the several recent additions, and particulars are also given of a thirteenth specimen representing the very latest arrival. To those anxious to become versed in the design and construction of the different types of flat twin-cylinders now on the market, we commend this review to special attention. As will have been gathered by observant readers, the flat twin is the most promising type of engine of the future. Important firms of long standing are now adopting it as their standard, and consequently it will not be out of place to recapitulate a few of the inherent advantages the flat twin possesses over other types of engines, though, of course, it has its counterbalancing disadvantages. It is a feature of flat twin engines that they seldom gum up. They are the easiest of starters, wonderfully flexible and efficient, and undoubtedly a good deal of this is due to the outside flywheel and its large diameter ren-

dered possible by reason of the fact that it is outside the crank case. Their perfectly even firing is well known, and is referred to in the article, whilst the mechanical balance is as good as can be with a twin. The early types of large flat twins seemed to possess a real weakness in the crankshaft, but latterly this objection has been overcome, and it is interesting to observe in this connection that, even in the small sizes, there is a growing tendency to offset the cylinders, so admitting of a straight thrust on the cylinder walls and at the same time much wider big-end bearings. The flat twin is usually of the square type, i.e., the dimensions of the bore and stroke are practically the same. The latest addition to the ranks of flat twins has, however, a comparatively long stroke, the ratio being approximately 1.35 to 1. As a result the performance of this new arrival is bound to create a good deal of attention, particularly in comparison with other engines of similar size in which a practically square (or 1 to 1) bore-stroke ratio is employed.

It is curious that the flat twin, which is one of the very oldest types of engines in use (we illustrate in this issue a flat twin made in 1895), should have jumped into popularity so suddenly. Its virtues were well known; and indeed the only representative of the type has for several years shown up very conspicuously in competition work both on road and track. For all that the design did not definitely attract other manufacturers until the last year or two, but now, as we have said, there are thirteen different designs before the public. Though never really in doubt, its future is now definitely assured, for the several leading manufacturers who have adopted it have demonstrated that it is regarded as one of the engines of the future. The various new arrivals bear added significance in view of the controversy in these pages on single v. twin. Undoubtedly the flat twin is a proved success, and will more and more command the attention of the motor cycling public.



## THROUGH FEMININE GOGGLES.

Autumn and Winter Riding Attire for the Lady Motor Cyclist.

**H**OW to clothe oneself most suitably to face the winter winds is a subject which must crop up periodically in the feminine motorist's mind, for with the approach of the colder seasons dust coats are ineffectual to safeguard us against the freezing temperature of the short dark days. I have during the past winters tried many of the motor clothing manufacturers' so-called "ideal garb," but my own experience teaches me that many costumes still leave much to be desired. One finds that dress for the lady rider is still only a partially solved problem, and is likely to remain so whilst its designers are not themselves practical motor cyclists. When motor cycling for women becomes as popular as it deservedly should, and the fashion artists are among the devotees, we shall be bewildered by the chic yet practical costumes from which we have to choose, but at present it is difficult, especially in winter, to obtain exactly the dress one would choose to wear.

### Feminine Love of Change.

Since, as we are told, the eternal feminine characteristic is love of change, one's ideals of last year are replaced by newer ones. For instance, last year I liked a stout cloth costume, an oilskin, a woollen cap and veil, and a pair of boots; but is always one to be so limited? This year I feel that the most practical outfit is one of the fashionable short skirts, a fur or fleece-lined coat, no longer than any woman would dare to wear at the present time, a little fur cap, the type to remind one of school days, and, instead of boots, a comfortable pair of stout brogued shoes and a pair of soft leather cloth-lined gaiters, reaching from shoe to knee. In such a garb one could defy the bitter cold, and on wet days one would only need to add a loose oilskin coat, a belt, and an oilskin hood such as I have described before. This should make one almost regardless of weather conditions.

### Ladies' Lined Leather Gaiters Wanted.

Most of our wants are catered for, but the cloth-lined soft leather gaiters I can find in no motor clothier's list, so until

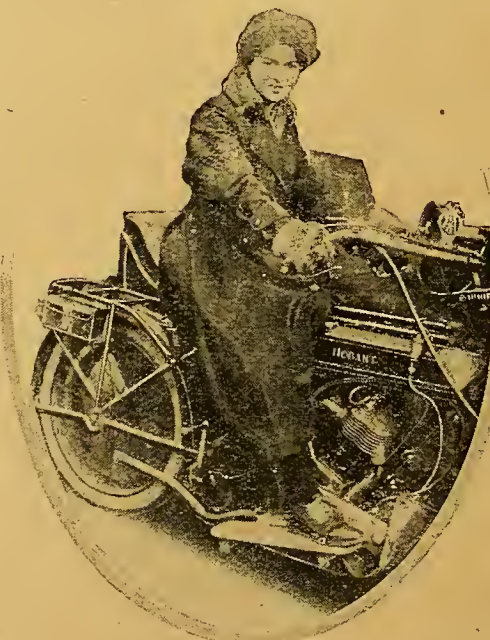


front would be an advantage when riding a diamond-framed mount.

### A Useful Tip.

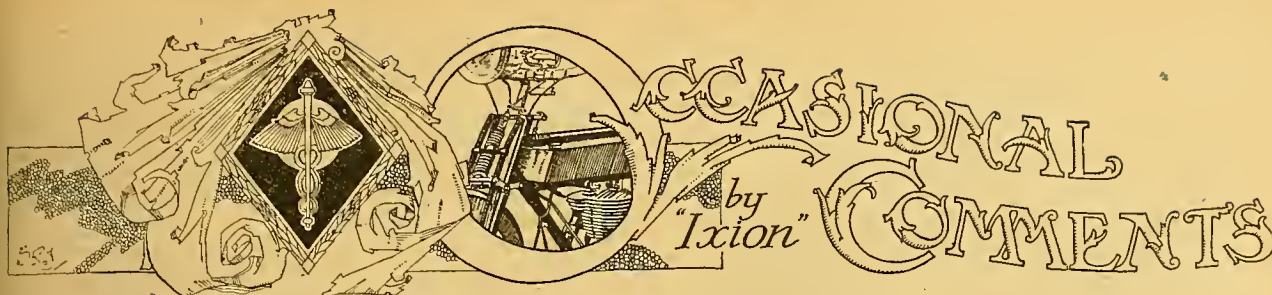
I remember in the old trial days on the occasion of one of the Woolwich Club's reliability tests amid the hills of Kent, Mrs. Hardee, of P. and M. fame, showing me how by a few buttons or snap fasteners at front and back she had converted an ordinary skirt into a most useful motor cycling dress, and I very much doubt now whether anyone has invented anything to beat it for simplicity and usefulness. Each winter we have heard much of the lady rider who puts her machine away carefully until the spring, but perhaps now that war work and more ardent duties are producing a hardier type of womanhood, this will be a thing of the past. There are many wintry days clear and bright for motor cycling. My own plan is to smear a little vaseline on the plated parts and then to use the machine all the winter through, giving it a good clear up again when the days begin to lengthen and the mud and slush are less plentiful. Now that a more generous petrol allowance is obtainable it would be indeed a sad and even foolish thing, from an economical point of view, to lay up one's steed in these days of few pleasures and scanty and poor train services even during the winter.

MAY WALKER.



A practical and becoming lady's riding outfit, consisting of a fur-lined coat, fur cap, fur gloves, and sensible yet fashionable short skirt.





### More about Two-strokes.

A Colonial reader complains that we are publishing very little two-stroke matter, and wants to know whether the British trade is going to follow the Hendee example, and jettison the two-strokes in favour of the miniature four-stroke twin. I should be mightily surprised if we did. We have had no serious trouble with baby two-strokes, barring overheated sparking plugs, and the new Sphinx igniter seems to have settled that hoodoo. *Pour moi*, I am still riding a baby two-stroke James, purchased in 1915, and if I say little about it, it is partly because it behaves so decently, and partly because summer roads tempt one to give the preference to heavier and faster mounts. As the mud comes out and the corners grow more permanently slippery the baby two-stroke gets the preference more frequently. Its handiness and slow speed make it an ideal winter mount; it needs no holding up, and it does not tempt one to go fast enough to freeze one's marrowbones. Above all, it possesses excellent engine balance up to thirty miles per hour, and balance is a point on which I have become a perfect maniac. I rather expect we shall hear a good deal about two-stroke twins in rather large capacities when the war is over; and the baby types should retain their popularity for all purposes where speed is not demanded. I daresay the new lilliputian flat twins of the A.B.C. and Hendee type will want watching, but none of the public can yet know how they will turn out in hard wear.

### My Candid Friend.

A candid friend has been "telling me off" on the subject of single-cylinders. He knows I keep a map with a red ink chart of my season's riding, and he asked to see it. After studying it, he remarked that it was easy to account for my predilection for the best balanced types of engine, because so much of my riding is fast work and on bad hills; and even he, though a pronounced single-cylinder enthusiast, does not profess to love either a one-lunger or a V twin raced hard on a low gear with a rigid form of drive. His arguments appealed to me so logically that I took out a belt-driven single-speed single-cylinder and an all-chain three-speed single-cylinder, and tested both very carefully on tolerably normal roads, both being types which I had tried in the balances and found wanting, so far as daily work in my usual district is concerned. I cannot say that I particularly appreciated the chain-driven three-speeder even on decent undulating roads, though it is a good example of its kind; but I must confess that I thoroughly enjoyed the belt-driver on Midland highways, and I am now ready to make the *amende honorable*, and confess that the nature of one's

locality is a weighty factor. In other words, a single-speeder is no good for a Lake District rider, and in such districts a three-speed single is tested at its very worst, because one is so often compelled to rev. it hard on the lower gears. If these conditions do not apply to a majority of British riders, they nevertheless apply to a fair percentage of those resident in the north and west, and they apply to perhaps the bulk of Overseas enthusiasts. Therefore they may have been worth stating.

### Coloured Lights for Cattle.

It will all depend on the "waving" or "swinging!" When I heard a wild rumour that the Government was about to compel cattle drovers to carry lights at night, I jumped on to my 16-20 h.p. Brooklands ported o.h.v. J.A.P. and simply hurtled to the office, where all the staff in turn wept tears of joy on my neck. We have never dreamt that any British Government could become so sane and logical in our lifetimes; and if it is honourable and all that to labour nobly for posterity, it is more satisfying to get one little slice of fat for oneself. After the preliminary enthusiasm had simmered down, I enquired anxiously, "What colour?" A perceptible chill fell visibly on the room. "Not *white*?" I murmured incredulously. But it was so. "They're to be 'waved' or 'swung' at the approach of any vehicle, you know!" reassured the chief. It is really too bad. How much waving or swinging will the average drover be capable of after rising at 4 a.m. to tramp to a market, loafing round the yard and surrounding pubs till about 6 p.m. and then padding the hoof with rather a fractions drove for another four hours or so? You cannot blame him, but I know the breed. He will give his beastly white lamp just one tiny waggle when I am a millimetre off impaling myself on the crumpled horn of—ugh! Gentlemen, they really might have made those lamp glasses blue or green; or I wouldn't have grumbled if they'd used the heather mixture which Mr. Solomon J. Solomon invented for the "Tanks." I speak feelingly, because only the other day I all but rammed a herd of bullocks which filled the widest of our British main roads from hedge to hedge; and I know that drover hadn't a waggle left in him, or he'd never have stood what I said to him, for I was angry and fairly fluent.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.



## FLAT TWINS.

Some Observations and Comparisons in Design of the Various Specimens of Horizontally-opposed Twins fitted to Motor Cycles.

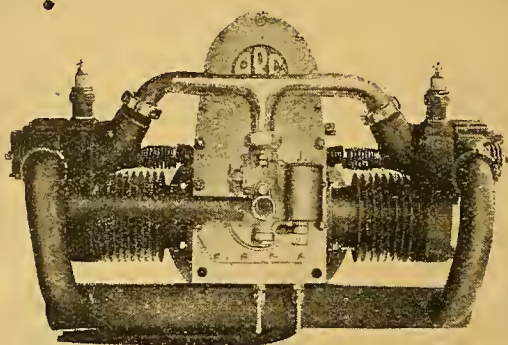
THE horizontal twin seems to be coming so much to the fore of late (*vide* the issues of *The Motor Cycle* for October 5th and 12th) that some observations and comparisons of the better-known makes will not be out of place. Two-stroke horizontal twins are not included in the present article, as they were separately dealt with on Feb. 17th, 1916; moreover, the flat twin is in its nature more suited to the four-stroke cycle, for this type of engine gives excellent torque, having one impulse in every revolution, and exceptionally good balance. In the case of the two-stroke, either both cylinders must fire together, necessitating a special magneto, or the balance must be sacrificed by utilising a single-throw crank instead of the 180° cranks invariably used, so making the pistons move together instead of in opposite directions for the sake of obtaining the more frequent firing impulses which constitute one of the advantages of a two-stroke.

There is, of course, no novelty at the present day about the horizontal motor cycle engine. The Holden motor cycle, one of the earliest designs, had an engine of this type, the connecting rods of which drove the small rear wheel direct, *i.e.*, without gearing. Later came the Fée, in 1905, afterwards called the Fairy, which was the forerunner of the Douglas, the machine to which the largest amount of credit for popularising this type must be given.

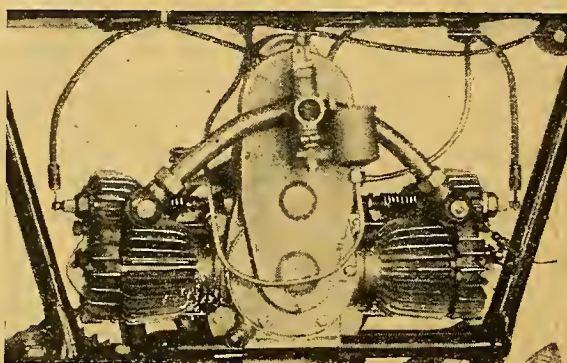
We have already mentioned the excellent balance of the horizontally-opposed engine. Readers who are interested in this subject are referred to three articles on "The Mechanics of Balancing," which appeared in *The Motor Cycle* on May 4th, May 25th, and July 6th; the instalment referring more particularly to the flat twin will be found in our issue for July 6th. It will be sufficient to remark here that the primary balance is well nigh perfect, but that a small couple exists in engines as usually constructed. This couple can be eliminated by fitting a three-throw crank to avoid off-setting the cylinders, but this adds complication. We may remark, however, that the less the cylinders are off-set, the smaller will the couple be. We will now deal briefly with some of the more popular flat twins in alphabetical order.

**A.B.C. 3½ h.p.,** THE A.B.C. engine, the design of Mr. 70×64 mm., G. W. Bradshaw, bristles with novelties and ingenious points. The cylinders are steel turned out of the solid,

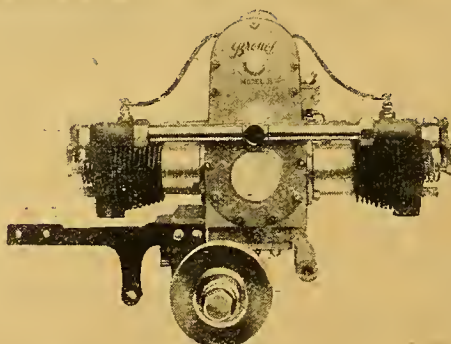
with the fins placed circumferentially; the cylinder heads are cast iron. Contrary to usual practice, the exhaust valve is placed overhead instead of the inlet, the objects of this being to improve the cooling of the exhaust valve and to remove the exhaust port further from the cylinder, and thus give it a better opportunity of dissipating its heat into the atmosphere and the cylinder less cause for warping. Provided that this engine is properly lubricated (and lubrication is



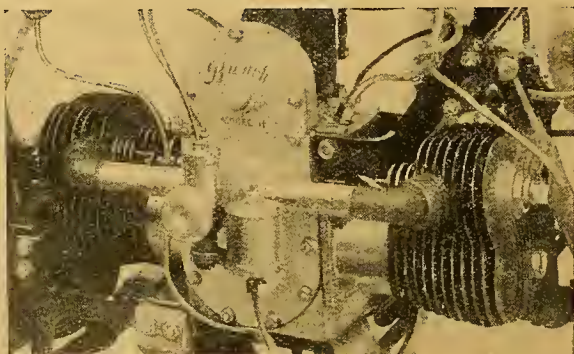
3½ HP ABC.



3½ H.P. BRADBURY.



3½ H.P. BROUGH.



6 HP BROUGH.



**Flat Twins.—**

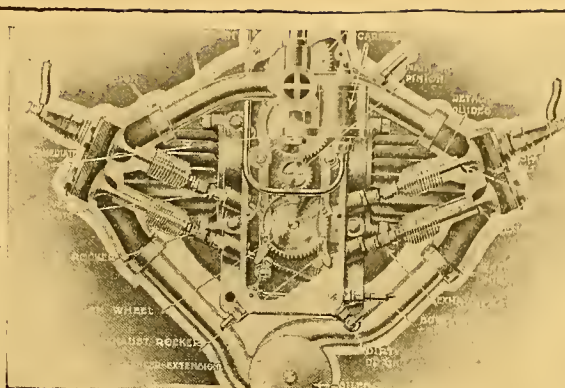
carried out by a mechanical pump) it is impossible to make it konk. Aluminium pistons are sometimes used. A Claudel-Hobson carburetter is fitted as standard, and the air entering this is effectively warmed by a pipe from the exhaust. The crank is in one piece, and yet the big ends are not split, for they consist of a specially designed roller bearing; these are threaded over the crank and the rollers placed in position afterwards.

**A.B.C. 2½ h.p.,** THIS is the smallest flat twin at 60×44 mm., present on the road, and weighs 14 lb. exclusive of the flywheel, magneto, and carburetter, which bring the complete weight to 27 lb. The general design is very similar to that of the 3½ h.p. A.B.C., and the exhaust valves are placed overhead as in the larger engine, but the cylinder head differs slightly, and the exhaust pipes are taken from the bottom of the exhaust ports instead of from the side. The pistons are of aluminium alloy. On a low gear of 11 to 1 it is claimed that this engine can attain a speed of 37 m.p.h., which means 5,500 r.p.m. The lubrication is by means of a mechanical pump. This little engine has been made principally for Government purposes, but it has been tested in a motor cycle with excellent results, and will be marketed after the war.

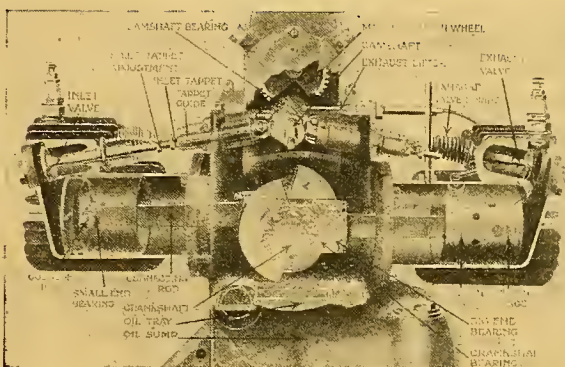
**Bradbury 3½ h.p., 68×68.7 mm., 499 c.c.** THE cylinder heads of the Bradbury are detachable, which enables the whole of the cylindrical part of the cylinder, including the horizontal cooling flanges, to be machined. The cylinder is then nickel plated to prevent rust. This gives it a very distinctive appearance. The valves are side by side and operated by adjustable tappets. A B. and B. carburetter is employed, and Best and Lloyd semi-automatic lubrication. The Bradbury flat twin was introduced just prior to the war, and only a limited number are in the hands of motor cyclists.

**Brough 3½ h.p., 70×64.5 mm., 497 c.c.** Two models of the 3½ h.p. Brough engine are manufactured, one being the racing engine, which is fitted with steel pistons and racing cams, but in other respects resembles the standard model. Both inlet and exhaust valves are placed in the head and operated by outside tappets and rockers. The valves are of large size with detachable ports; the exhaust port being provided with cooling flanges. The two-throw crankshaft is provided with balance webs, and carries a steel flywheel. The engine is secured in the frame by three bolts, and is easily removable, but the cylinders can be taken off without disturbing the engine when desired. Lubrication is by Best and Lloyd drip feed, and the oil is forced under high pressure to the big end bearing; the carburetter is an Amac.

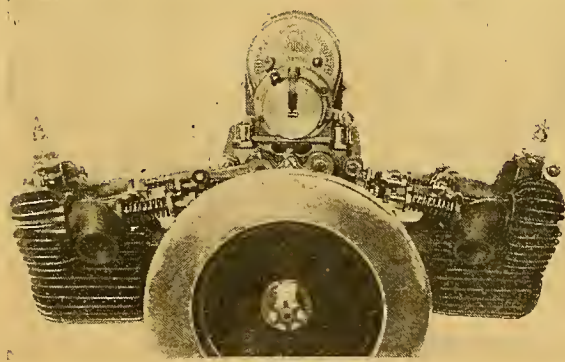
**Brough 6 h.p., 70×90 mm., 692 c.c.** UNLIKE the 3½ h.p. engine of the same make, the larger Brough has side by side valves arranged above the cylinders—in fact, the cylinder is very similar in design to that of the 6 h.p. V twin previously made by this firm, from which it may be gathered that the cooling flanges are vertical. Roller bearings are used throughout, and not for the crankshaft only, the



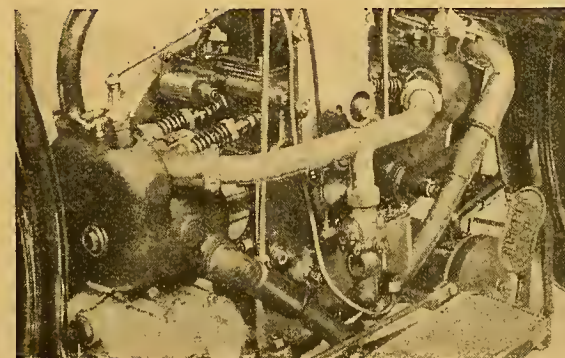
2¾ H.P. DOUGLAS.



4 H.P. DOUGLAS.

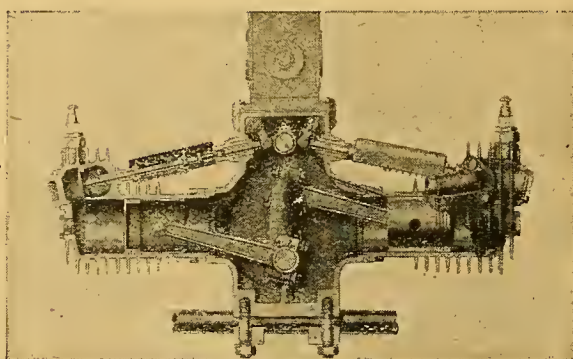


4 H.P. HUMBER.

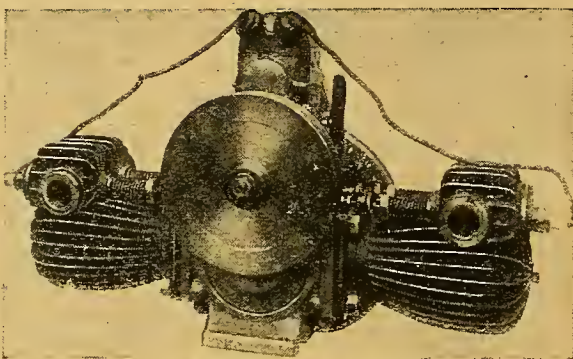


6 H.P. HUMBER.V.V.C.

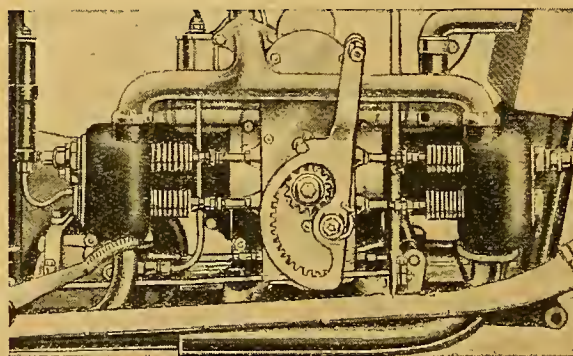




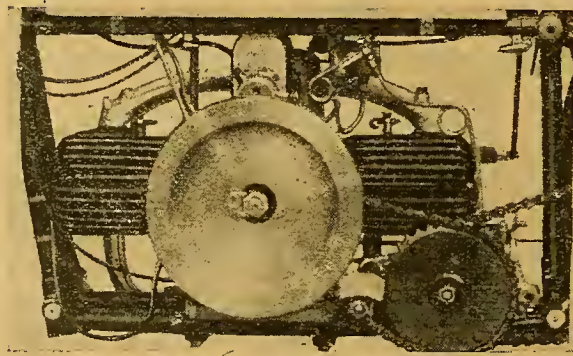
2 1/4 H.P. INDIAN



6 H.P. MONTGOMERY.



8 H.P. WILLIAMSON W.C.



8 H.P. WILLIAMSON A.C.

result being a very smooth-running engine. Like its smaller brother, it is possessed of unusually silent valve gear. The 6 h.p. Brough is a war-time innovation, and has been designed to meet the demands of those who desire an efficient double-purpose mount. After the war the 6 h.p. Brough is bound to attract.

**Douglas 2 1/2 h.p.,** THE smaller Douglas has undoubtedly been the pioneer of "flat twins," and 60.5 x 60 mm., 345 c.c.

has been so successful for years that very few alterations have been required. Mechanically-operated inlet valves were fitted in 1912. The valves are now side by side and placed in a slanting position at the side of the engine and operated by adjustable tappets. The cooling flanges are cast longitudinally on the cylinders, and the crankshaft is balanced. One of the difficulties which have to be overcome in engines of this type is the lubrication of the front cylinder; in this engine it is accomplished partly by splash and partly by a small duct which is drilled in the crank case and cylinder base; this is situated just below the oil lead from the drip feed, and carries the oil straight to the front piston. A Douglas or Amac carburetter is usually fitted; the latter is provided with a jacket which can be heated by the exhaust gases.

**Douglas 4 h.p.,** THE larger Douglas model differs in 72 x 68 mm., several points of design from its smaller brother, the most noticeable being the mechanical lubrication system in which oil is carried in a sump below the crank case and supplied by a pump to the bearings and cylinders. This sump is provided with a window, through which the level of the oil may be readily ascertained. - The valve ports are of streamline form internally, which, of course, allows the gas to enter and escape with the utmost freedom, and the valves are placed side by side above the cylinders. The carburetter is a jacketed Amac heated by exhaust gases which are taken by a pipe from a point near the exhaust port and carried by another pipe to the silencer.

**Humber 6 h.p.,** WATER-COOLING is a prominent feature of the Humber sidecar engine. For 78 x 78 mm., 746 c.c.

for the sake of obtaining large bearings for the big ends and central bearings on the gudgeon pins the cylinders are placed rather more out of line than is usual. Another point of interest is the method of attachment of valves. These are side by side and carried in detachable pockets, which, when in position, are held firmly by a forked yoke, and a single bolt placed between the two valves. The advantage of being able to remove the seating and valves complete for cleaning and grinding purposes is very obvious. The carburetter is the Claudel-Hobson automatic.

**Humber 3 1/2 h.p.,** WE have described this entirely new engine fully so recently (October 12th) 68 x 68.75 mm., 497 c.c.

that a detailed account will be unnecessary here, and a few notes will suffice. No specimens are yet in public hands, though the model has been selected by one of the Allied Governments. Like its big brother, the 3 1/2 h.p. type has valves (inclined at an angle from the crank case to the cylinder heads) which are removable with their



**"Flat Twins."**

seatings, and large adjustable tappets are used. The starting handle operates through the camshaft. A Longuemare-Hardy carburetter is employed. The radiating fins are horizontal and very finely cast. The cool running of this engine can be ascribed very largely to the absence of valve caps which harbour heat.

**Matchless 6 h.p.,** This engine is the very latest addition to the ranks of flat twins. It is to appear on the 1917 model Matchless, but at present no illustrations are available. The length of the stroke of this engine is noteworthy (the usual flat twin is not far removed from the square). The lubrication of the engine is by an automatic forced system.

**Indian 2½ h.p.,** LIKE the 3½ h.p. Humber, the little 50.8×63.5 mm., Indian, introduced for 1917 and representing the only flat twin at present on the American market, has been dealt with in our pages within the last few weeks (October 5th). Up to the outbreak of war there were not many makers of the "flat twins" in this country, and they are even rarer in the States. In this case the valves are sloping, as in the 4 h.p. Douglas and Humber models, and neatly covered to exclude the

dirt. With the object of attaining equal lubrication in both cylinders, an oil duct is drilled from the crank case to the front cylinder.

**Montgomery 6 h.p., 75×78 mm., 688 c.c.** THE Montgomery was produced essentially as an engine for a sidecar outfit. The valves are placed over the cylinders, and are side by side. The cooling flanges are horizontal and nicely shaped. The split big ends are of rather unusual construction, being divided only on one side. The crankshaft and camshaft both run on Skefko ball bearings, a belt pulley of large dimensions taking the drive from the latter. The pistons are fitted with two rings, and the gudgeon pins are held in position by brass end cages. Lubrication is by splash.

**Williamson 8 h.p., 85×85 mm., 964 c.c.** THE last engine we have to describe is the largest flat twin at present on the motor cycle market. The Williamson engine is made by Douglas Bros., but it differs from the smaller Douglas engines in the fact that it is water-cooled, though air-cooled Williamsons have also been supplied. The valves are side by side, and placed at the side of the cylinder in a horizontal position. Either a B. and B. or Amac carburetter can be fitted.

## THE POST-WAR QUADRANT.

Some Advance Particulars of a Machine to embody Aero Engine Practice.

IF any confirmation were required of the recent articles in *The Motor Cycle* wherein we referred to the way in which war-time developments in aeroplane engine design might have a bearing upon the future design of motor cycle engines, we cite a recent conversation we had with Mr. T. Silver, of the Quadrant Co. The Quadrant firm is one of several motor cycle manufacturers who have been engaged for some time past on aircraft engine parts, and will, it is hoped, be able to give motor cyclists the benefit of these experiences hereafter.

Like other motor cycle firms, the company is wholly employed on Government work, but intend as soon as pre-war operations are resumed, to introduce a new engine, the point of which will be the embodying of experience gained in the manufacture of aeroplane engine parts. This applies more particularly to the design of the cylinder and piston. These components will be extremely light; the cylinder walls, for instance, will in parts not exceed 2 mm. in thickness. Experiments have been made with an aluminium alloy piston provided with bushings for the gudgeon pin, also with the top webbed, but it is not yet settled whether this will be standardised.

### A New Pattern Gear Box.

Exhaust and inlet valves will be constructed of special nickel steel combining extreme lightness and long wearing qualities. Of other details, a new design of three-speed countershaft gear box of the Quadrant Co.'s own manufacture will be introduced for this model, and the experience gained with the patent vaporiser recently described has led the firm to standardise it and to be prepared to fit it to all models. The usual size of jet used on the Quadrant

single-cylinder is a No. 40, but it has been found that, in conjunction with the vaporiser, a No. 29 jet passes quite sufficient fuel, with the result that 25% greater distance can be covered on the same quantity of petrol and without any loss of power.

Although the firm expect to produce this machine at a price to meet the demand for a low-priced reliable mount, it is advisable to point out to our readers that it will be useless for them to write to the company at present for either prices or particulars. The above is merely an outline of an enterprising post-war policy.



### MOTOR CYCLIST CONSTABULARY.

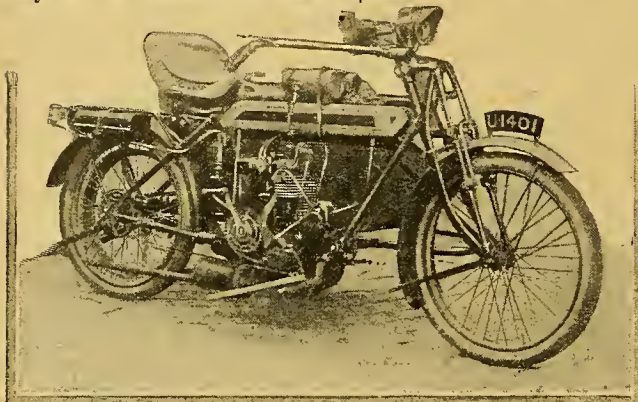
E. H. Self and his colleagues in the blue uniform of the London Special Constabulary. The sidecar (an 8 h.p. Chater-Lea) has frequently been requisitioned in the execution of duties, and often carries a load of four or five passengers at those times.



# A HOME-MADE SIDECAR OUTFIT.

Design and Details described by the Builder.

FROM time to time I have noticed and been immensely interested in motor cycles built at home. Encouraged by the successful attempts of others, I have produced a sidecar outfit which gives the greatest pleasure, some of which is contributed by the knowledge that the machine was practically all "home-made." There is a particular sense of satisfaction in accomplishing something which thousands never attempt and willingly pay for dearly, and possibly the details I give of my machine may interest readers with shallow purses.



S. Holt's home-made sidecar outfit.

It is my own design, and took me in my spare time, from the commencement of making the drawings, making patterns, and fitting together, some eighteen months.

This has been made possible by having a small lathe and workshop at home in the cellar, and also the use of a larger lathe for some of the heavier work.

I made patterns for all the frame lugs, which were cast in steel, bored them out, and brazed the tubes in. All the tube bending I did myself, including the front forks. The wheels I built on Chater-Lea disc hubs, the wheels being fitted with 2½ in. Palmer Cord tyres. The links on the front forks are fitted with eight Hoffmann ball bearings in order to reduce wear to a minimum. The front brake (horseshoe) and the back brake (band) are also of my own make and design.

The band of the rear brake can be parted at the back to allow of the easy withdrawal of the back wheel without disturbing the operating mechanism, the brake being operated by a pedal on the right-hand footboard. The shoes of the front brake, by simply unscrewing two nuts, can be slipped down the front fork, on which they slide, and swung round, thus allowing the easy withdrawal of the front wheel without detaching or disturbing the horseshoe.

The tank I made myself out of 20 gauge tinned steel, but had it enamelled at a shop, as I did not feel equal to making a decent job of the lining, although I enamelled the rest of the frame.

## Boring the New Cylinder.

The engine was an old Excelsior engine of, I believe, M.M.C. make, which I had previously run solo in an old Rex frame. The old cylinder being somewhat badly worn, and the exhaust valve seating cracked, I designed a pattern for a new one, making it as big as possible to fit the old crank case. The engine is now 89 mm. bore x 86 mm. stroke. I got this cylinder cast by a well-known firm in Birmingham which specialises in this class of castings. I bored it out myself and made the piston and rings for it. Although the cylinder was only bored out and finished off the tool, and not ground out, after I had run it about fifty miles I could not pull the engine over compression.

The gear is of the variable type, and consists of a double expanding countershaft pulley, which can be moved toward or away from the engine as desired, thus altering the gear, as has been frequently illustrated.

The gear in itself works very well, but I cannot get a belt to stand on the front owing to its short length (12 in. centres). I am now, after twelve months, abandoning this gear in favour of a four-speed gear box, which I have designed and am now making. I have already cut all the gear wheels, and had to rig-up the tackle myself for doing it on the big lathe before mentioned. The drive will be chain-cum-belt, and I shall fit a Coventry silent chain on the front and a 1½ in. belt on the back. I am going back to the old-fashioned cone clutch, as I think this type gives the most satisfaction for hard and constant wear.

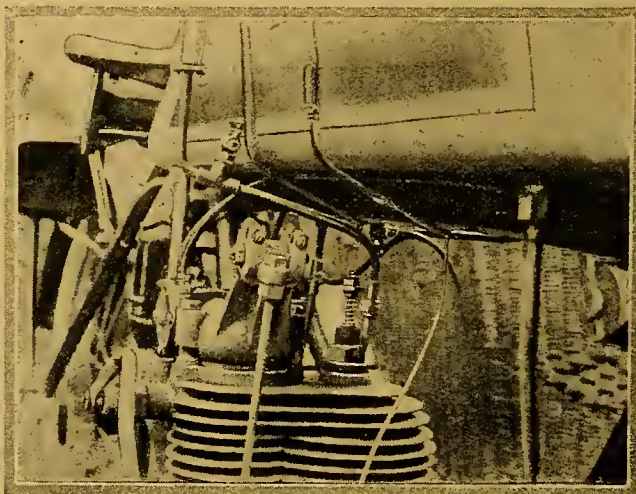
The handle-bars are of the V shaped type, with all the control wires enclosed, all the control levers being made by myself. Both tool boxes are made of 20 gauge tinned steel and lined with felt to prevent rattling.

The sidecar chassis, also of my own design and make, has a four-point attachment, and is attached to lugs integral with the frame. The sidecar wheel has an outside support, the hub being a Chater-Lea disc hub with hollow spindle and a bolt.

## A New Fuel—Paraffin and Water.

It will be observed that there are two temporary tanks on the main tank, and motor cyclists will be interested to hear that I am successfully running on paraffin and water, with petrol to start up on. I bring all the air to the carburetter (Senspray) through the exhaust box. A pipe (1½ in. diameter) enters the exhaust box, passes through and out of it, and is taken to the carburetter, the portion between the carburetter and the box being lagged to prevent any cooling of the air. By this means all the air taken in has to pass through the exhaust box, and in a few minutes I can hardly bear my hand on the carburetter. I naturally found that the engine knocked on hills when using paraffin—and knocked badly, too. A friend of mine suggested the injection of water into the cylinder, so I made a small automatic inlet valve (½ in. diameter) to take the place of the usual compression tap fitted in the top of the cylinder. From one of the tanks on the top (filled with water) a pipe is led to this small inlet valve. The flow of water is regulated by means of a needle valve fitted on the side of the tank. The engine, when using paraffin, does not knock on the level, but on going up a hill it starts knocking. As soon as I turn on the water the knocking ceases, and the engine is very much more flexible than with petrol, the engine pulling away on top gear, similarly to a steam engine, without any sign of labouring. So successful is it that my friend and I have protected its use on cycles and cars, and intend getting it put on the market.

S. Holt.



M.M.C. engine with m.o.i.v. and automatic valve for the admission of water. This latter takes the place of the compression tap, which can be seen higher up on the pipe.



## NOTES ON NEW MODELS.

### IVY NEW MODELS STILL FAR DISTANT.

THE Ivy Motor Cycle Works of Mr. S. A. Newman, Lichfield Road, Birmingham, are still wholly occupied upon munitions at the present time, and no motor cycle work at all is being done. Developments which the makers have in mind only for a later period have not reached the experimental stage, so that even an outline of a new model might be very far from the mark and even misleading.

### AN IMPROVED NORTON CYLINDER.

IMPROVEMENTS in the cooling and construction of air-cooled cylinders are always of interest. Therefore, when a drawing of a cylinder which Mr. J. L. Norton, of Norton Motors, Ltd., has designed, was shown to us recently, we obtained permission to give readers of *The Motor Cycle* an outline of its principal features. Briefly described, the new Norton cylinder for the big four and the 3½ h.p. will have radiator ribs, which, in the horizontal plane, are set slightly eccentric to the cylinder barrel. This will allow a greater depth of rib where the cylinder is likely to get hottest, thus preventing distortion.

To prevent ringing the horizontal ribs will also be joined up vertically, i.e., the interstices between the ribs will be filled up at certain points by vertical ribs of the same thickness as the horizontal ones. Where the horizontal ribs are intersected by the valve springs the ribs will be extended partly to encircle the springs, so that, by revolving the engine to lift a valve and then inserting a small tool which lodges between the ribs, a valve spring can be held up while the valve cotter is extracted.

The port design will be altered, and the combustion chamber of the 3½ h.p. model will be slightly modified to give a more even flow to the gases.

With regard to the development of piston design, the model which will be adopted is that having six webs at the top. In our sketch we have shown diagrammatically how first of all four webs were tried, but as this design caused distortion of the piston top it has been decided to adopt six ribs to prevent any inequality in contraction or expansion of the metal. Two or three different designs were tried before the six rib model was finally adopted. Mr. Norton explained to us that the success in power and speed of the Norton engine has been brought about almost entirely by strict

attention to what appear to be minor points in design, but which really affect the power output of the engine to an enormous extent. Riders of Norton machines may rest assured that no stone will be left unturned to effect these engine improvements, which are the production of an engineer who is always endeavouring to provide a little more power and efficiency by detail alterations in design.

### A.J.S. TWINS FOR THE FUTURE.

MESSRS. A. J. STEVENS and Co., Ltd., of Wolverhampton, have obtained a great reputation for their three models—the 2½ h.p. single and the 4 h.p. and 6 h.p. twin—but they have always shown a marked preference for the twin. It will be recalled that the single-cylinder machine ridden by Eric Williams won the Junior T.T. Race in 1914, yet the firm have never looked upon the single as a permanent feature of their programme, and we were not, therefore, surprised to hear that they will discontinue its manufacture after the present stock of parts is exhausted, and concentrate upon twins.

The 2½ h.p. mount has many admirers who will express disappointment at its disappearance. This decision is in accordance with the belief, which the makers firmly hold, that the twin engine is an infinitely better mechanical proposition, and will undoubtedly supplant the single-cylinder in public favour in time to come. This opinion is interesting in view of the recent articles in this journal, emphasising the fact that the single-cylinder, whilst being quite satisfactory in every other way, cannot compare with a well-balanced twin engine for comfort and smoothness of running. An expert rider with youth in his favour, it is pointed out, will put up with the snatchy action of the single to obtain a little greater efficiency, but the average rider appreciates the steady pull of the

twin engine, and it is to the "average rider" that we must look for the future.

As regards the 4 h.p. and 6 h.p. models, Messrs. A. J. Stevens and Co. do not propose to effect any striking alteration to the 1916 design, and it is expected that prices will remain unaltered. Government work occupies practically the whole of their time at present.

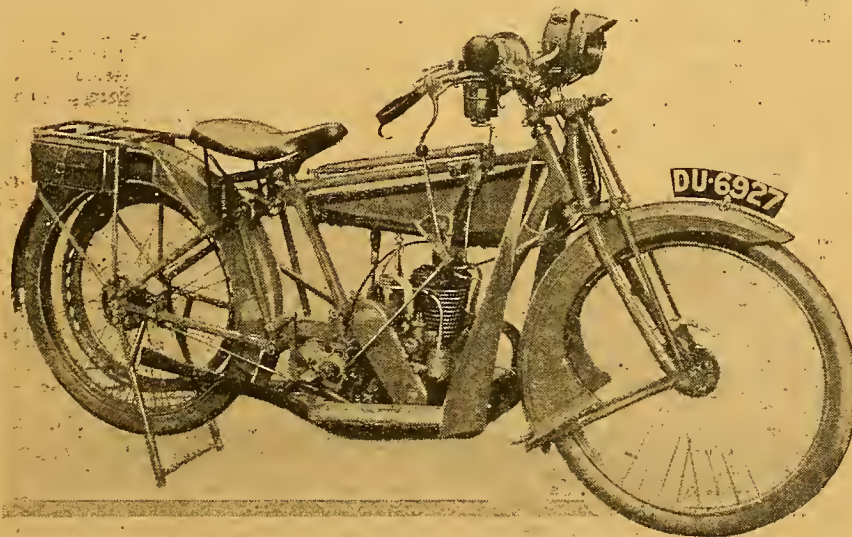
### A SPRING-FRAMED TWO-STROKE LIGHTWEIGHT.

ONE of the smartest lightweights we have seen is the two-stroke Allon de Luxe model, illustrated herewith. It has been completed to the order of a doctor at Wincanton, Somerset, who will use it as a tender to his four-seated car. The most interesting feature—the spring frame—was described and illustrated in our last issue, page 381.

The two-stroke engine has a bore and stroke of 70×76 mm., 292 c.c., whilst a two-speed countershaft gear, box and a handle-bar controlled clutch are embodied in the design. The mudguarding is well carried out, and the leg-guards should be very efficient. It is hardly necessary to emphasise the importance of a doctor having a motor cycle that is well guarded; next to reliability this is most important.

The detail work is well thought out, an example being provided by the small guards over the front and back drums. Finished in grey and lined to match, the *tout ensemble* is very pleasing.

This machine has been purchased—as the direct result of the splendid running of a standard model Allon in the hands of another member of the same family. The standard model has stood gruelling Government work without a murmur for some months past, and is still going splendidly. Naturally, the spring frame machine is more comfortable, and the owner of the original, who took it down by road to Wincanton, found it compared very favourably with the standard machine to which we have just referred.



A fine example of a British two-stroke design—the new Allon de Luxe, with spring frame and special mudguarding.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelopes, and should be kept distinct from questions bearing on technical subjects.

### Magneto Angle.

**?** I have a twin engine with cylinders at 50°, and a magneto which is at 48°. Would you kindly let me know if they will run together?—A.E.C.

It is better to have a magneto of the same degree as the cylinders, but a 48° magneto will run a 50° twin quite well.

### Auto-wheel Licence.

**?** I have a tandem cycle and a juvenile sidecar attached, and find I want a little help on hills. Do you consider an Auto-wheel would be of any service to me, and also would the cycle tax of £1 be legal; having four wheels?—W.H.P.

An Auto-wheel should be of assistance to you. The licence would be £1, payable on the Auto-wheel, a 5s. driving licence, and 5s. for registration, but in some districts a four-wheeler tax may be demanded.

### Overheating.

**?** I have a 2½ h.p. two-stroke, and would be grateful if you would tell me the reason why, when I run a few miles and the engine gets heated up, it begins to lose power, and in taking a hill will stop, but will easily climb almost any hill starting cold. I may mention that it is lubricated with an oil and petrol mixture.—J.B.R.

The trouble is overheating, which may be caused by the use of too large a jet, or through using an unsuitable plug, thus causing pre-ignition; this might also be caused by carbon deposit. Possibly you do not mix sufficient oil with your petrol.

### Lightening Pistons.

**?** I have got a 1914 3½ h.p. New Hudson and three-speed hub gear. I find that at present the piston is very heavy. I wish to lighten it so as to obtain the fastest speed without weakening it too much. (1.) What weight ought I to take out of the piston? (2.) Should I lighten the flywheels correspondingly? (3.) What timing would be suitable for fast work solo, and occasionally with sidecar?—D.G.D.

You are not likely to be able to lighten the piston sufficiently to make much difference to the speed. (1.) All you can do is to drill some holes in the skirt, but this must not be weakened too much. (2.) Yes, the engine must be properly balanced by an expert. See special article in "Motor Cycles and How to Manage Them." (3.) We should advise you not to alter the maker's timing, as you require the machine for two purposes.

### Petrol on a Four-stroke.

**?** I have purchased a 1913 Douglas. Last leave I filled a two-gallon petrol tin with a 50% petrol and paraffin mixture with oil, as I was then riding a petrol lubricated two-stroke. (1.) Can I use this petrol mixture on my Douglas? (2.) Will it make any difference to the plugs, lubrication, carburetter, etc.? (3.) Are exhaust whistles any good as row-makers?—E.E.S.

(1.) The mixture could be used all right on your machine. (2.) It would make the outside messy—but would not necessarily affect the plugs or the lubrication, except that you might do with a little less oil through the lubricator. It might be desirable to use a larger jet. (3.) An exhaust whistle is quite good as a means of giving "audible and sufficient warning."

### Mysterious Refusal to Start.

**?** During last winter I had the cylinders, carburetter, etc., down and gave them all a thorough clean out, also the tank. After I had put it together again I could not get a sound out of it. I went carefully over everything again. Eventually I took off the top of the carburetter and took out the float, and tried it again. It went off the first turn of the handle. On putting the float back and screwing the top on, silence reigned supreme again. I have had this trouble more or less during the whole of this year, and so far have not been able to cure it. I have tried bending the petrol pipe, so that all the curls in it slope downwards. I have made the little dome on top of the carburetter, in which the top of the needle goes, perfectly smooth, so that there are no ledges for it to jam against, and yet it behaves as if the needle gets stuck in two positions. Without any apparent reason it will suddenly begin to lose power and quickly stop, unless I slam the throttle wide open, when it will pick up again, and I can then usually put the throttle and air levers in the normal position, and it will run steadily for a few miles, and then start slowing up again. On the other hand, occasionally in making a stop, if I do not turn the petrol off, the petrol will run out of the main air intake.—N.A.P.S.

Your trouble is undoubtedly a very curious one, and without actually seeing the machine is difficult to explain. It certainly looks as though the trouble is in the carburation. See that the carburetter is perfectly clean, and also that the air vents in both the float chamber

and the petrol tank filler cap are quite clear. These being choked might account for the machine running when the float chamber cover is removed. See that the collar on the needle valve which regulates the petrol level is quite tight, and does not permit the level to vary, sometimes being too high and sometimes too low. Is the needle bent by chance? It might also be well if you went carefully over all ordinary adjustments, such as seeing whether the valve clearances are correct, valves closing properly, contact breaker points making proper contact, plug in good order, and so on.

### Misfiring when Warm.

**?** My mount is a 1915 W.D. pattern 2½ h.p. Douglas. After riding a few miles at a fair speed, it will suddenly start firing on one cylinder and stop. At a minimum speed of about ten to fifteen miles per hour it is all right. When it has stopped I allow a few minutes to cool, start away, and the engine fires as regularly as clockwork. The plugs have been changed, the magneto, carburetter, and lubrication have been checked, and found to be in order.—J.T.

Evidently you are using a plug which is not suitable for the machine, and possibly the plug you have substituted is equally unsatisfactory. You should use a good single or double-point plug with fairly substantial electrodes. Also carefully examine your valves, and see that they are closing properly. It is possible that when the engine becomes overhot one of the exhaust valve stems may extend and not allow the valve to close. This would account for the misfiring of which you complain.

### Petrol System.

**?** I possess a 2½ h.p. two-stroke motor cycle, with drip feed lubrication to the engine. This I find unsatisfactory, and have taken to mixing the oil with the petrol, but am uncertain as to the amount of oil to mix with one gallon of petrol. I should be obliged if you would inform me; also if this method of lubrication is satisfactory.—C.A.B.

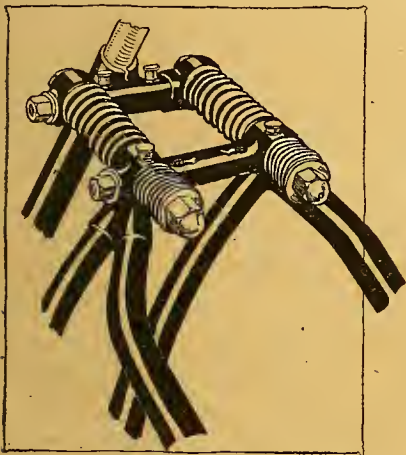
The petrol system of lubrication is probably the most satisfactory way of lubricating a two-stroke. The one disadvantage is its messiness. A good point, however, is that the oil supply increases as the throttle is opened wider, and the engine given more work. The proportion is roughly one part oil to fourteen parts petrol. A half-pint to a gallon should be found about correct. If the engine smokes continually, too much oil is being supplied, and the proportion should be cut down slightly.



## ANOTHER SPRING FRAME.

### ADAPTING FRONT FORK METHODS TO REAR SPRINGING:

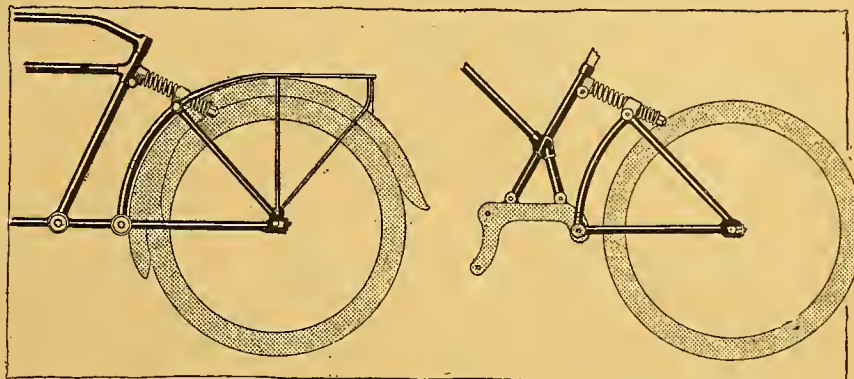
**S**TILL another extremely practical and interesting system of rear springing for motor cycles is shown in the accompanying illustrations. It is the



Details showing double spring coupling.

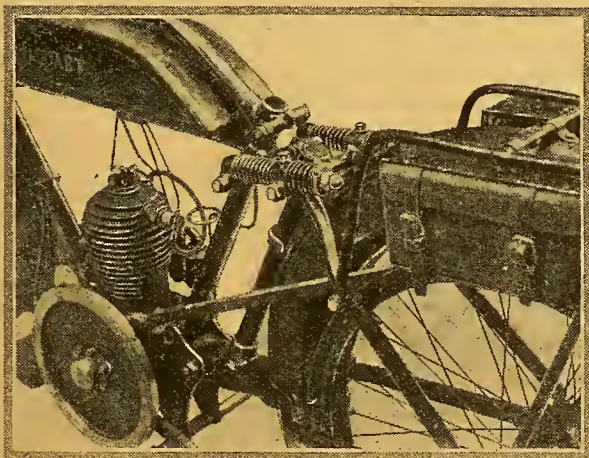
joint invention of Mr. F. J. Richardson and Mr. Downs, both leading lights in the motor cycle trade. It will be seen that the system is practically an adaptation of the Brampton front fork to the rear of the cycle. We are now using a Hobart two-stroke fitted with this form of rear springing, and in the course of a short initial trip have been impressed by the simplicity and light weight of the construction. The springing is neatly adapted to the rear as follows: The top spring links are attached to the uppermost point of the triangulated rear portion of the frame formed by the chain stays and two additional stays. The springs are fitted on the moving top links as in front fork practice, two being arranged to take the main shocks and two the rebound.

One great advantage is that it does not necessitate any great alteration to existing frames, and it is capable of being easily applied to any regular type of frame. The triangulated rear portion of the frame is pivoted at the back of the gear box bracket, while the apex is attached to the centre lug of the spring couplings. This gives a considerable range of movement, whilst side play is practically impossible, owing to the distance apart at which the spring couplings are set, and the width of the lower hinge. It has the peculiar advantage of being also adaptable to ladies' models—a feature which has not been possible with many designs of spring



The new spring frame, shown fitted to a standard and a lady's frame.

frames. This frame is still undergoing tests, having been in use for nearly 1,000 miles, and it is now also being tested by a well-known Midland motor cycle firm. So far it has given complete satisfaction, and no doubt, when certain details have been settled upon, it will come before the public as one of the simplest solutions of the difficult problem of rear springing.



A new type of spring frame which has had a thorough testing on a Hobart lightweight.

## ANOTHER BRITISH MAGNETO.

**A** NEW works solely devoted to the manufacture of magnetos has lately been installed by the Fellows Magneto Co. at Cumberland Avenue, Park Royal, Willesden, N.W. At the present time the factory is engaged purely on turning out magnetos for the Government, but after the war a speciality will be made of motor cycle magnetos of all types.

Messrs. Fellows have been associated with the repair of magnetos and ignition appliances for the past twelve years, and their name is not unknown to readers of *The Motor Cycle*. They started in quite

a small way in Hertford Street, Mayfair, and have gradually increased their business until it has assumed its present proportions. We have inspected the work turned out in the new factory, and can assure our readers that it is of the best and most accurate description.

## PUBLIC SCHOOLS M.C.C.

**W**E had an interesting conversation the other day with Cpl. H. B. Browning, R.E., a member of that very live body in peace time, the Public Schools M.C.C.

Browning joined in October, 1914, having been working with Pauling and Tamplin guarding a certain telegraph wire. Shortly afterwards these men interviewed the C.O. at —, and were taken by him as despatch riders, Browning eventually going to the Front, where he has been for eighteen months. Another man who was with Browning was Bertram Fowke, the rider of a Blackburne, who also became a despatch rider. Another member of the P.S.M.C.C., Victor Dreschfeld, together with some others of the club, enlisted in the Buffs. Dreschfeld was the rider who had a bad spill during the last P.S.M.C.C. speed trials at Brooklands. While at the Front Browning rode a 1915 4 h.p. Triumph, about which he was very enthusiastic. He has come home to train for a commission in the Gunners.

The day after meeting Cpl. Browning we were rung up by the brothers Burney, who both now hold lieutenants' commissions. Alec is in charge of a motor cycle repair base in France, and Cecil is running a repair shop for electric lighting sets attached to a signal station. Many of these outfits are driven by air-cooled horizontal twin engines, which, having to work under a continuous heavy load for long periods, have given a good deal of trouble. The newer sets are provided with flat twin water-cooled engines with much enlarged crankshafts, and these are standing up in the most exemplary manner. Both the brothers Burney are extremely fit, and are very glad to have obtained their ten days' leave at the same time.



## A Circular Route Round London.

A New Road which will link up Existing Main Roads.

**S**INCE it is a recognised fact that after the war the labour market will be flooded, the Government is shortly to be asked to facilitate the preliminary measures for a great scheme of main roads round the Metropolis. The idea is no new one, and has had the attention of the principal motoring organisations for some considerable time. With this scheme in view the Royal Automobile Club made an excellent map of roads round London about three or four years ago, which has been of great value, and will continue to be until some such scheme as that we describe below is carried out. The Road Board has also had the matter in hand.

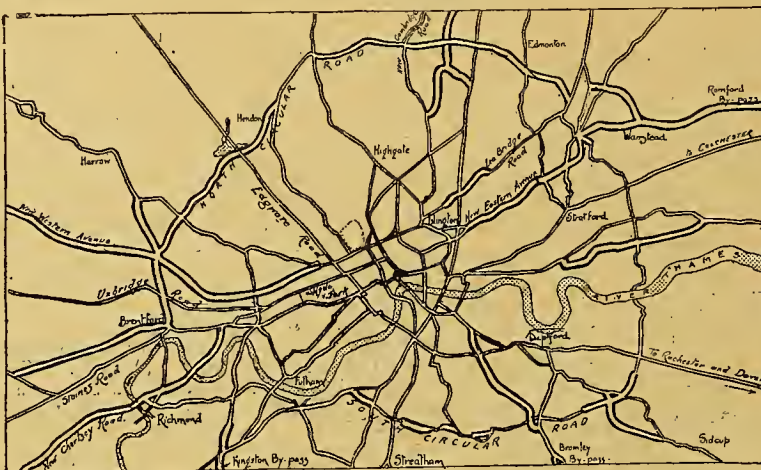
The main features of the proposals are dealt with by Mr. W. R. Davidge, F.S.I., in *Land and Water*. The proposed roads, including 51 miles of existing roads, have a total length of about 130 miles, of which about 109 miles pass through open country and about 21 miles through built-up property.

### Two Circular Roads.

Briefly, the main proposals are: A north circular road round the north of London from Kew Bridge,

round to Leytonstone, *via* Ealing Common, the Welsh Harp, Hendon, Palmer's Green, and Edmonton, linking up all the main roads; and on the south of the river a south circular road, formed by linking up and improving existing roads from Woolwich to Clapham Common, passing on the way Catford, Forest Hill, Dulwich Common, andulse Hill.

Other proposals are: A new main road westwards, a new main road eastwards, a new main road northwards, and another south-westwards to Chertsey. By-pass roads or loop roads at Brentford and Croydon are already arranged for, and other or loop roads are proposed to avoid Romford, East Ham, Eltham, Bromley, Sutton, Kingston, and Kingston Hill.



Proposed circular route round London. The thick double lines show the new plan suggested by the Local Government Board and the Board of Trade, and drawn up by the Royal Automobile Club.

Two important internal improvements are proposed, one from Essex Road to Lea Bridge Road, which will give a badly wanted new outlet to the north-east, and one from City Road to Hackney Road, to connect the proposed eastern and western avenues *via* the Euston Road, and thus form a new way right across London.

## Lubrication and External Cleanliness.

A Plea for a Smooth and Unobstructed Crank Case.

**O**NE objection I have to mechanical lubrication with external pump is that it renders the engine very difficult to clean. Not only do the pump and its connections afford a multitude of nooks and crevices in which dirt and oil can lodge, but it is almost impossible to get at the aluminium casting behind them. If the dirt is allowed to accumulate for any length of time, the oil dries into a hard brown coating over the face of the metal, as difficult to remove as a coat of paint, and the task of thoroughly cleaning the engine is then a matter of an hour or two. Unless the job is done very thoroughly the clean patches merely show off the dirty ones about the numerous inaccessible corners, and one wishes one had left things alone, and gone on pretending the crank case was not made of aluminium at all.

The only way to keep a crank case with these external fittings at all presentable is to scrub it with paraffin once a week, so that the oil has no time to dry on, but we would much prefer a clean, smooth

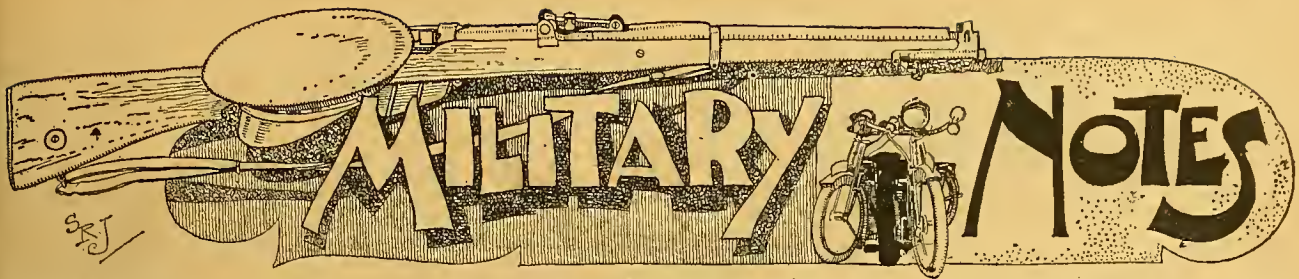
casting which can be neglected for weeks in the knowledge that it will brush up clean and white when, say, the machine is to be sold.

### The Ideal.

There is no doubt that external cleanliness and smoothness of finish influence the mind of the average rider more than he thinks, and though mechanical lubrication is much preferable to the hand pump, the external variety will not, probably, live very long. The proper place for any such fitment is obviously inside the timing case, and personally I look forward to the day when, on our heavy touring machines, we shall simply pour oil into a well, cast integral with the crank case—as on the Velocette, Douglas, and one or two other machines. This system is by far the cleanliest and simplest—no oily accumulation of grit about the tank and lower portions of the machine owing to careless garage boys, and *no curly oil pipes* to look bad and get in the way.

H.M.B.





#### CLASS A MEN IN THE M.T.

WE are advised by the War Office that Class A men are not excluded from the Mechanical Transport Section of the Army Service Corps, as stated in our issue of the 26th ult.

#### Y.M.C.A. IN NEED OF MECHANICS.

A NUMBER of first-class mechanics are urgently needed to aid the work of the supply department of the Y.M.C.A. in France, Salonica, and Mesopotamia. They appeal to discharged soldiers, or any other men over military age, or otherwise unfit for service in the ranks, to help in their great work of keeping the supplies going to help our gallant troops. The address of the secretary is c/o. Motor Dept., Y.M.C.A., Tottenham Court Road, London, W.

#### PHOTOGRAPHS OF THE "TANKS."

THOUGH photographs of the heavy armoured cars—"tanks," "land-ships," "Willies," or whatever the reader prefers to call them—have not yet been published in this country, we are advised that the first real photographs of them reached New York on the 17th ult. An American's comment on them is "that there is something suggestive of pre-historic times about the beasts." Is it not strange that pictures which are banned in this country find their way to America and are exhibited there without restraint? This surely is not the way to keep secret information from the enemy.

#### FROM MOTOR CYCLE TO STEAMSHIP.

DURING the week we had the pleasure of receiving a call from A. V. Sumner, the well-known exponent of Zenith motor cycles in trials previous to the war. He is now, and has been for some considerable time, an engineer on board a transport steamer. At present he is enjoying a few days' leave in England, after a long voyage in the Mediterranean, at the conclusion of which he had the unpleasant experience of being torpedoed. He was in the engine room at the time the ship was struck, but was, however, lucky enough to secure a place in one of the boats, and was just congratulating himself upon his good fortune when the wash caused by the sinking of the steamer capsized the boat. Luckily they were in fairly populous waters and were soon rescued. His new rôle, he tells us, does not include easy work, and he would not much care to continue at it after the conclusion of the war. When not on duty there is nothing left to do but eat and sleep.

#### MOTOR CYCLIST TRANSFERRED.

SEC.-LT. W. D. SOUTH, Royal Warwickshire Regt., T.F., has been transferred to the Royal Flying Corps as a third-class Equipment Officer. South is the well-known Midland motor cyclist who scored successes on Rudge and Scott motor cycles, but latterly seen in competition on a Grand Prix Morgan.

#### A PHOTOGRAPHER WOUNDED.

Pte. L. R. Manner, a former assistant on *The Motor Cycle* photographic staff, who enlisted in the early days of the war, and has been in Gallipoli, Egypt, and France during the last two years, is now lying in the General Hospital, Nottingham, suffering from the effects of a bullet which penetrated his stomach and back.



#### ANOTHER MOTOR CYCLIST HONCURED.

Lt. R. N. C. Usher with a friend about to leave Buckingham Palace on his motor bicycle after being decorated with the Military Cross by the King. Lt. Usher, Wilts Regt., attached to the R.F.C., attacked three hostile machines and drove them off. On another occasion he fought five hostile aeroplanes, and, although hit in the leg, continued to fight until his engine stopped. He then succeeded, under great difficulties, in reaching an aerodrome, where he collapsed through loss of blood. The friend looks as if he were indicating that the front tyre was flat, but gallant officers recently decorated with the Military Cross do not worry about such details.





### TIMES TO LIGHT LAMPS.

#### GREENWICH TIME.

Nov. 9th	...	...	4.49 p.m.
" 11th	...	...	4.46 "
" 13th	...	...	4.43 "
" 15th	...	...	4.40 "

### The Show.

The 1916 show—which opens to-morrow (Friday)—will go down in history as an exhibition for second-hand vehicles. It is an excellent idea, and certainly the only form of exhibition possible in war-time.

### A Progressive Colonial Club.

We have received a copy of the 1916-17 handbook of the East London (S.A.) Motor Cycle Club. It contains an amount of information of interest to local riders, and its compilation reflects credit on the hon. secretary, Mr. H. Whitby. At the time the booklet went to press thirty-five members of the club were on active service.

### The L.C.C. Licences.

Recently a statement was made that the L.C.C. is issuing driving licences at the rate of well over one thousand a week. This naturally upset the newspaper group which published the information, but we give them credit for withholding comment until the facts were verified, though we fully expected to see them publish further comment on pleasure motoring. In 1915 the L.C.C. issued nearly 15,000 more licences than in 1914, but this year the number promises to decrease a little. A representative of the *Daily Mail* was told that the increase was chiefly due to the numbers of women who are learning to drive, and that more cars are used for military purposes, and, in addition, many young officers are buying motor cycles for their personal use.

### Cattle at Night.

The A.C.U. on several occasions has for some years past been urging the various local county councils to make a regulation demanding that all drovers of cattle carry lights, but with the result that they were laughed to scorn. It is exceedingly gratifying to know that such a regulation has now been made law as well as the Order causing all vehicles at night to carry a red lamp at the rear. These were two points which motorists were very anxious to see made law in times of peace, and it seemed well nigh hopeless that they would ever be brought into force. The war has done some good after all, and we sincerely hope that these regulations, which safeguard the interests of *all* users of the road after dark, will become permanent institutions.

### Pushing Unlighted Cycles.

The latest regulation respecting pushing an unlighted bicycle, viz., that such a proceeding is not illegal, provided that the machine is kept on the extreme left-hand side of the road, does not seem to have penetrated to the "West Country," for a cyclist was fined 5s. for this at Crownhill Petty Sessions last week.

### Motor Cyclists immune from Accident.

We read in the daily press that during last quarter 227 accidents to individuals caused by vehicles in the streets occurred in the City of London. The number includes the following: 84 were occasioned by horse-drawn vehicles, 5 by tramcars, 80 by motor cars, 35 by motor omnibuses, 2 by motor cycles, and 2 by ordinary cycles.

### Naphthaline Balls.

A correspondent tells us that in the early and hot part of August he rode from London to Bristol, thence to Liverpool, around Lancashire, and back to London *via* Coventry. On the outward journey he used a mixture of petrol and paraffin and six naphthaline balls to the gallon. At Liverpool, after a successful run, he took down the engine and found very little carbon deposit, and that soft enough to be wiped off with a cloth. On the return journey he used the same petrol-paraffin mixture, but without the balls. The engine ran badly, so much so that he had finally to resort to pure petrol. The carbon deposit was plentiful, hard and brittle, and was only removed with considerable difficulty. The road conditions were more severe on the outward journey.

### SPECIAL FEATURES.

FLAT TWINS.  
AN ILLUSTRATED REVIEW.  
VOLUNTEER MOTOR CYCLISTS.  
THE "SECOND-HAND" SHOW.

### Overseas Motor Cycle Corps.

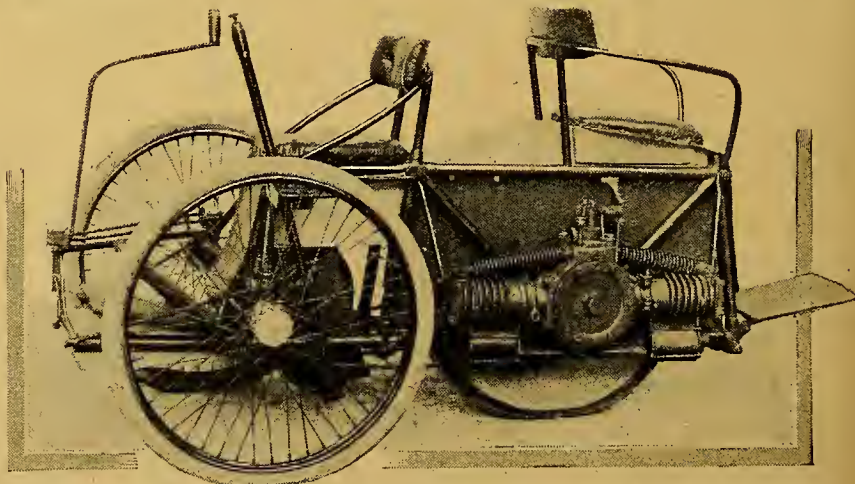
We hear from a reader in Ceylon that a military motor cycling corps has been formed by order of the General Officer Commanding at Kandy, Ceylon.

### Stolen Machine.

An all-black Colonial model 2½ h.p. Douglas, two speed, T.T. bars, year 1915, has been stolen from Chiseldon Camp. Engine and frame number 25,608, C.A.V. magneto, Amac carburetter, with black despatch box on rear carrier. The registration number is AM 6487. On the top tube in yellow paint is painted "W.D., 23,081 G." Any information respecting this machine should be sent to Capt. H. M. Thomas, A Lines, Army Cyclist Corps, Chiseldon Camp, Wiltshire.

### The Lighting Regulations.

A correspondent draws our attention to the reply to "W.G.S." on page 359 of our last issue, wherein it was stated that within six miles of the sea anywhere in the United Kingdom, or within six miles of navigable waters of any estuary, it is required that a cap or disc of opaque material must be placed over the glass in addition to the one thickness of ordinary white tissue paper. This statement does not apply generally. The additional cap or disc is only required in the *Eastern* counties.



A "flat twin" of 1895. The horizontally opposed air-cooled engine is not a recent invention, as will be seen by the illustration, which shows the first Wolseley car built—a three-wheeler.



**Sidecars in Official History.**

In Vol. IX. of "The Times History of the War" there are two photographs taken on the occasion of the sidecar outing into Surrey arranged by the Harley-Davidson Motor Co. for heroes of the Jutland battle.

**No More New Motor Cycles.**

The new Order prohibiting the manufacture of motor vehicles was not entirely unexpected. It must be noted that the assembling of machines is also forbidden.

**A Starting Tank.**

With reference to the starting tank illustrated and described in our last issue, on page 391, a correspondent tells us that a friend of his fitted a similar device to an old machine a year or so ago, but something went wrong, and it exploded. In this case, however, the tank was fitted to the cylinder head, and so, doubtless, became very hot, which probably made all the difference.

**Volunteer Motor Cyclists.**

Motor Cyclist Volunteers had a great time last week-end. Field-Marshal Viscount French inspected one section, and others indulged in manoeuvres. The exclusive photographs in our centre pages this week will interest all supporters of the Volunteer movement.

**Automatic Inlet Valves.**

Several letters have been received in reply to the request of a correspondent for suggestions regarding the leakage of gas past his automatic inlet valve. Some of these appear on another page. Further suggestions, which we have not space to print in full, are that the valve stem may be riding on the guide and thus preventing the valve from closing; that the valve head may foul the plunger in the inlet pipe, with the same result; that the stem may be bent; and, lastly, that the seating should be built up by acetylene welding faced up and reground. One reader offers to cure the trouble if the valve is sent to him.

**Special Features.**

An especially interesting and instructive article in this week's issue describes the many and various makes of flat twin motor cycle engines. A dozen photographs are reproduced by which comparison can be made.

**The Show.**

At the beginning of this week there were sixty-four motor cycles entered for the Second-hand Show at the Agricultural Hall, Islington, which opens to-morrow (Friday), and will remain open until Saturday, the 18th inst.

**The National War Funds.**

At the week-end the principal war funds stood as follows:

The National Relief Fund (distributed £3,474,475) ..	£5,971,911	0	0
The British Red Cross Fund ..	4,954,176	2	9
Tobacco Fund ..	118,012	0	0
The Queen's Work for Women Fund ..	170,852	13	10

**Average Prices.**

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within four weeks:

Make.	Year.	H.P.	Average for last week.	Latest average obtainable.
A.J.S.	1915	6 3-sp. sidecar ..	£80	—
"	1916	2½ 3-speed .....	£50	—
Alldays	1915	2-stroke, 2-sp. ....	£29	—
Ariel	1916	5-6 3-sp. sidecar ..	£78	—
Bradbury	1914	4 2-sp. sidecar .....	£35	—
Brough	1916	3½ 3-speed .....	£55	—
B.S.A.	1916	4½ 3-sp. sidecar .....	£60	—
"	1915	4½ 3-sp. sidecar .....	£58	—
"	1913	4½ 2-speed .....	£31	—
"	1914	4½ sidecar .....	£44	—
Calthorpe	1915	2½ 2-speed .....	£27	—
"	1916	2½ 2-speed .....	£30	—
Clyno	1914	6 3-sp. sidecar .....	£57	—
"	1913	6 3-sp. sidecar .....	£48	—
"	1912	2-sp. sidecar .....	£6	—
Connaught	1914	2-sp. 2-stroke .....	£22	—
Douglas	1915	2½ 2-speed .....	£44	—
"	1915	2½ 3-speed .....	£44	—
"	1914	2½ 2-speed .....	£36	—
"	1913	2½ 2-speed .....	£29	—
"	1912	2½ 2-speed .....	£19	—

Make.	Year.	H.P.	Average for last week.	Latest average obtainable.
Enfield	1916	6 2-sp. sidecar ..	£78	—
"	1915	6 2-sp. sidecar ..	£65	—
"	1914	6 2-sp. sidecar ..	£51	—
"	1915	3 2-speed .....	£40	—
F.N.	1912	4-cylinder .....	£17	—
H.-Davidson	1915	7-9 3-sp. sidecar ..	£70	—
"	1916	7-9 3-sp. sidecar ..	£78	—
Henderson	1915	8 4-cyl. sidecar ..	£80	—
Indian	1916	Powerplus sidecar ..	£88	—
"	1916	Powerplus .....	£61	—
"	1915	7 3-sp. sidecar .....	£76	—
"	1915	5 3-speed .....	£49	—
"	1915	5 3-sp. sidecar .....	£53	—
James	1914	4½ 3-sp. sidecar .....	£46	—
"	1916	4½ 3-sp. sidecar .....	£71	—
Levis	1915	2-stroke .....	£20	—
"	1916	2-stroke .....	£26	—
Matchless	1914	8 2-speed .....	£49	—
New Hudson	1915	4 3-sp. sidecar .....	£53	—
New Imperial	1916	2½ 2-speed .....	£32	—
P. & M.	1914	3½ 2-sp. sidecar .....	£40	—
Premier	1914	3½ 2-sp. sidecar .....	£45	—
"	1914	3½ 3-speed .....	£38	—
Quadrant	1916	4½ 3-sp. sidecar .....	£65	—
Rex	1916	6 3-sp. sidecar .....	£45	—
Rover	1914	3½ 3-sp. sidecar .....	£45	—
"	1914	3½ sp. ....	£38	—
Rudge	1915	3½ Multi sidecar .....	£45	—
"	1914	3½ Multi .....	£30	—
"	1913	3½ Multi .....	£29	—
Scott	1914	3½ 2-sp. sidecar .....	£40	—
"	1913	3½ 2-speed .....	£31	—
Singer	1914	4½ 2-sp. sidecar .....	£38	—
Sun	1915	2½ 2-sp. 2-stroke ..	£25	—
Sunbeam	1914	3½ 3-sp. sidecar .....	£62	—
"	1914	3½ 3-speed .....	£47	—
"	1916	3½ 3-sp. sidecar .....	£85	—
Triumph	1914	4 3-speed .....	£38	—
"	1914	4 3-sp. sidecar .....	£46	—
"	1913	3½ 3-sp. sidecar .....	£34	—
Williamson	1914	8 2-sp. sidecar .....	£52	—
Zenith	1914	6 Gradua sidecar ..	£55	—

**Lighting Regulation Booklet.**

The booklet giving details of the lighting regulations, which has been issued for some time by the Automobile Association for the convenience of its members, has now been revised, and in simple language the lighting restrictions existing all over the country and including the Metropolitan area are now given. Members may obtain a copy free by application to the Head Office, Fanum House, Whitcomb Street, London, at the same time quoting their membership numbers. Any motorist non-member may also obtain a copy upon application if two penny stamps are enclosed to cover cost of postage.

## NO MORE NEW MOTOR CYCLES.

### New Order Prohibiting Manufacture of Motor Cycles or Cars without a Permit.

ON Monday last an important Order was issued by the Press Bureau to the following effect:

The Minister of Munitions hereby gives notice that, in exercise of the powers conferred upon him by the Defence of the Realm (Consolidation) Act, 1914, the Defence of the Realm (Amendment) No. 2 Act, 1915, the Defence of the Realm (Consolidation) Regulations, 1914, and all other powers thereunto enabling him as from the 15th day of November, he hereby prohibits until further notice any person, firm, or company engaged in the manufacture or repair of any vehicle designed for mechanical transport or traction, or any part of such vehicle, from carrying out in any factory, workshop, or other premises without a permit issued under the authority of the Admir-

alty, the Army Council, or the Minister of Munitions, any work consisting in the manufacture, assembling, or erection of any new or unused motor, internal combustion engine, designed or adapted for mechanical traction, or of any new or unused motor cycle, motor chassis, motor waggon, or of any tractor or other motor vehicles of any kind propelled by mechanical means, subject, however, to the following exception:

Work required to complete contracts placed by the Admiralty, the War Office, the Minister of Munitions, or an Allied Government, on or before the date of this Order.

**Commentary on the New Order.**

The new Order does not come as a real surprise to manufacturers, so that it is

not so drastic as at first might appear to be the case. There are very few new motor cycles being assembled nowadays, and the majority of machines made have been despatched Overseas. The references to 1917 models which have appeared in the press are more 1917 models in name than in reality, as in some cases they are no other than 1914 designs masquerading as "new" models. Several entirely new designs have, of course, been produced, but these are usually solitary specimens of the proposed post-war model of the manufacturer concerned. For some time past there has been a good deal of heart-burning in the trade, the works of some firms being controlled by the Government, whereas their rivals were able to produce motor vehicles in small quantities—these remarks apply to the car as well as the motor cycle trade. The new Order will put everybody on a fair basis.



## Motor Vol

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(1) The motor cycle section being addressed by Capt. C. J. Hogan, of the Queen's Royal West Surrey Regiment.

(2) A Douglas rider on a stiff portion of the well-known test hill at Cilcain.

(5) Field-Marshal Viscount  
Warwickshire Volunteers



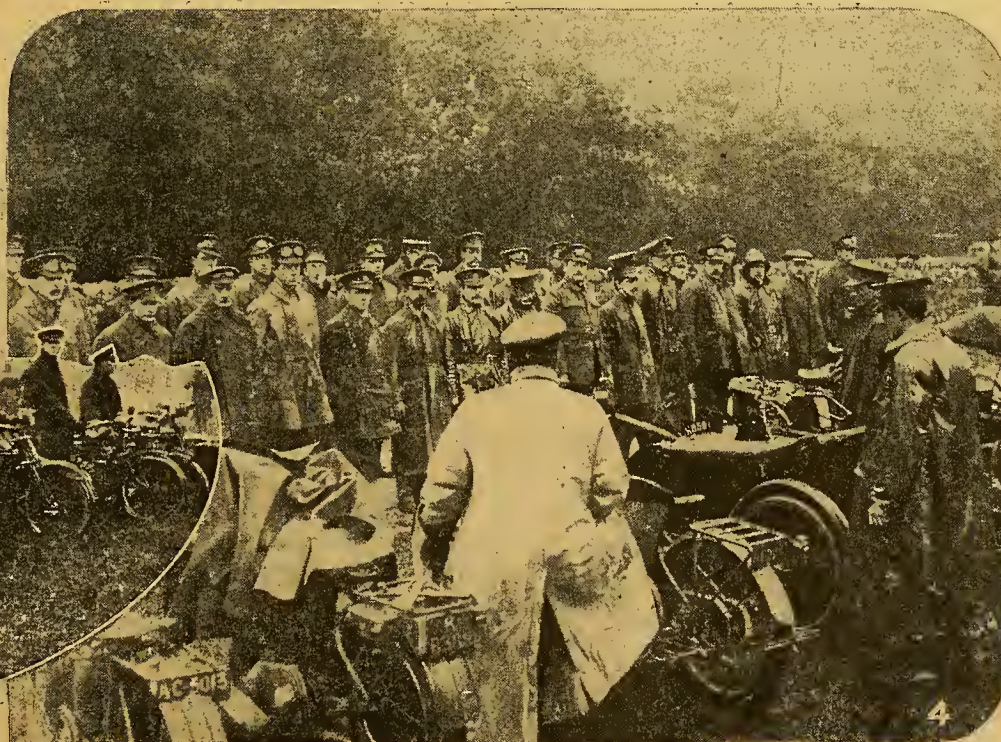
# Manceuvres.

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motor cycle section



Sunday last, inspected the  
e Park, Birmingham.

(3) The men of the H.C.B. on the march near the river Leet.

(4) Capt. C. J. Hogan (in light coat) is seen speaking to the men at Cilcain.



## The Show of Second-hand Motor Cycles.

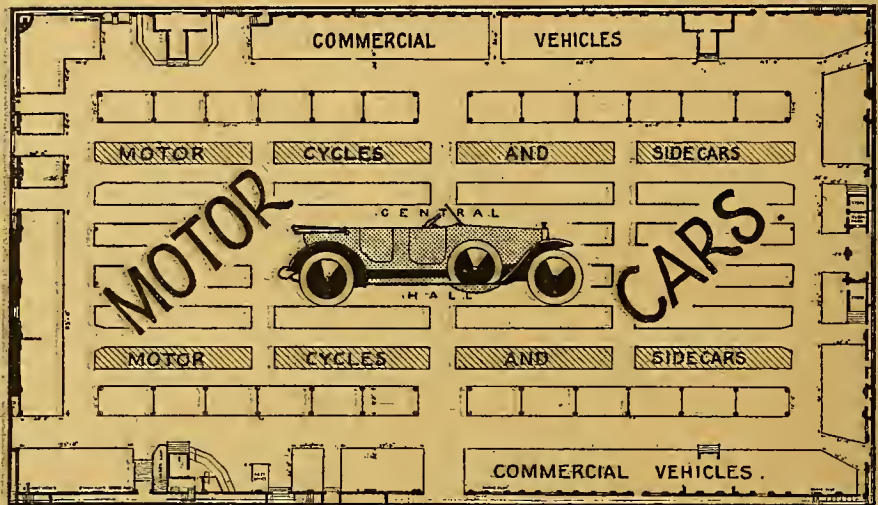
**E**NTRIES are still coming in rapidly for the Second-hand Show. We may remind our readers that the show will be open from November 10th to the 18th. The cost of entering the Agricultural Hall on Friday, Monday, and Tuesday will be 2s. 6d. up to 5 p.m., and after that hour and all other days, including the first Saturday, 1s. The show will remain open from 10 a.m. till 9 p.m.

The motor cycle exhibits will be arranged on the outer ring of the central group of six stands, and will be classified in alphabetical order according to make; for instance, Ariels, Alldays, etc., will form one group, while B.S.A.'s, Bats, Bradburys, etc., will form the next, and so on.

Entries (25s. for motor cycles) will be received up to the day the show opens, between the hours of 8 a.m. and 4.30 p.m., at the Bedford Street entrance, Liverpool Road, Islington, N. All exhibits should be clean. No petrol, oil, or carbide may be brought into the hall, but if an exhibitor desires to reserve the amount of petrol in his tank he should provide a can for that purpose which may be stored for him in a special shed. Spare parts or tools should be placed

by the owner in the store provided so as to avoid loss during the show.

The machines exhibited may be insured against burglary, larceny, and theft at the rate of 3s. per cent. (minimum 3s.) Details of the scheme can be obtained



How the Second-hand motor cycles and cars will be staged at the Agricultural Hall Show, which opens to-morrow.

from Mr. Glass, Lincoln House, High Holborn, W.C.

We learn that the well-known motor cycle expert, Mr. R. G. Mundy, has been appointed to examine and inspect the motor cycle and cycle car exhibits.

### LIST OF MOTOR CYCLES ENTERED FOR THE SHOW.

The list shows the number of the different makes of machines entered, and when a 1916 specimen is to be represented, that fact is stated:

A.J.S.	One 6 h.p. 1916 model.	..	..	3
ALLON	One 2½ h.p. 1916 model.	..	..	2
ARIEL	..	..	..	2
B.S.A.	..	..	..	4
BRADBURY	..	..	..	1
CALTHORPE	One 2½ h.p. 1916½ model. One 2½ h.p. 1916 model.	..	..	3
COVENTRY EAGLE	One 2½ h.p. 1916 model.	..	..	1
DOUGLAS	..	..	..	2
ENFIELD	One 6 h.p. 1916 model. One 3 h.p. 1916 model.	..	..	3
EXCELSIOR (AMERICAN)	..	..	..	1
EXCELSIOR (BRITISH)	..	..	..	1
HARLEY-DAVIDSON	One 7-9 h.p. 1916 model.	..	..	4
HENDERSON	..	..	..	1
HUMBER	..	..	..	3
INDIAN	One 1916 Powerplus model.	..	..	4

#### THE BRITISH MAGNETO AND "THE MOTOR CYCLE."

Those motor cyclists who have the interests of their country at heart will be interested in a booklet which will be ready shortly, reviewing the efforts of "The Motor Cycle" in fostering a British magneto industry. It is well to recall that "The Autocar" and "The Motor Cycle" were the only two journals which, BEFORE THE WAR, openly exposed the fact that the British motor trade was entirely dependent upon German magnetos. We shall be pleased to supply a copy of this pamphlet to any motor cyclist who cares to make application to the Editor.

JAMES	One 4¼ h.p. 1916 model.	..	..	2
LEA-FRANCIS	..	..	..	1
LEVIS	..	..	..	2
LLOYD	One 2½ h.p. 1916½ model.	..	..	2
MATCHLESS	..	..	..	2
N.S.U.	..	..	..	1
NEW HUDSON	..	..	..	1
NEW IMPERIAL	..	..	..	1
NOVER	..	..	..	1
ROYAL RUBY	..	..	..	1
SCOTT	..	..	..	1
SERVICE-PRECISION	..	..	..	1
SINGER	..	..	..	1
SUNBEAM	One 8 h.p. 1916 model. One 3½ h.p. 1916 model.	..	..	3
T.D.C.	..	..	..	1
TRIUMPH	..	..	..	1
WILLIAMSON	..	..	..	1
ZENITH	..	..	..	6

#### CYCLE CARS.

GARDEN (MONOGAR)	..	..	..	1
D.U.O.	..	..	..	1

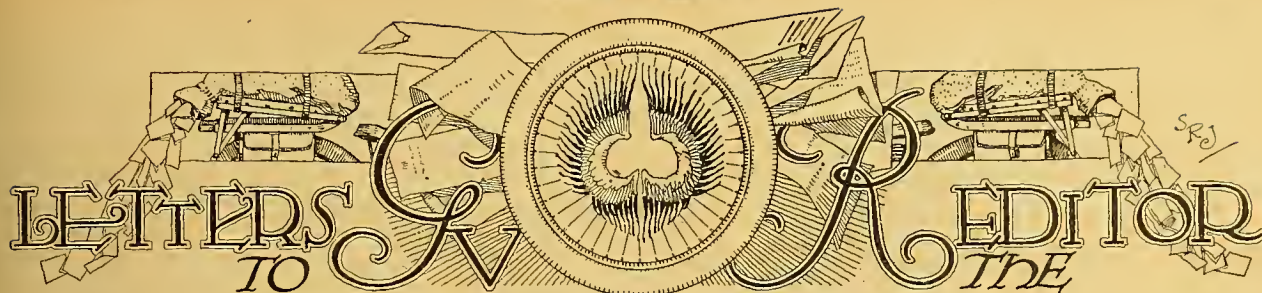
### A LONG DISTANCE DESPATCH CARRYING TEST.

**D**URING the present war motor cycles have undoubtedly come into their own, and by their great utility have practically proved themselves indispensable for modern warfare. Quite apart from belligerent countries, neutrals also realise their military value, and we continually hear of the motor cycle sections of neutral countries being perfected. A most interesting and arduous military motor cycle test is to be carried out

shortly by the United States military authorities, in order to show the utility of the motor cycle as a message carrier and a rapid means of transport. The test is to be made with a motor cycle and sidecar, and will consist of a journey from McAllen, near the Mexican frontier, to Albany, New York, a distance of, roughly, 2,700 miles. The test will be for the purpose of carrying a message from Maj.-Gen. O'Ryan, of the New

York National Guard, now at the Mexican front, to Governor Charles Whitman, of New York. The machine will be mounted by two men, who will be equipped as for field conditions with full kits, each weighing 50 lb.; camping necessities will also be carried. The total load, including passengers, will be over 469 lb., so with the rough roads and tracks likely to be encountered the outfit will certainly receive a severe test.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Automatic Inlet Valves.

Sir,—In answer to "L.F.I.'s" query relating to automatic inlet valve leaking between valve and seating, I have experienced the same trouble with valves, both in steam and petrol engines, and solved the problem by converting the seatings from bevel to flat face; the leakage will then cease. The trouble is caused by contortion when the cylinder gets heated.

GEORGE LEWIS.

Sir,—In reply to "L.F.I." re automatic inlet valves, there is probably a slight distortion of the valve seat when screwed into the cylinder. A method which effected a cure in my case was, if, as is usual, the inlet is over the exhaust, to remove the exhaust valve, screw the inlet valve, and cage with some grinding compound on the valve face into the cylinder, and grind in with a screwdriver through the exhaust valve guide.

J. A. ROBERTSON.

#### American Motor Cycles.

Sir,—I should like to reply to the letter by "J.W." in *The Motor Cycle* for November 2nd re American machines, and to point out that his argument is based upon the depreciation which has taken place in machines since 1915. This offers no comparison between the lasting qualities of British and American motor cycles. It is after a machine has seen four or five years' hard service that the workmanship put into British machines shows up. Personally, I have been riding a 1904 Rover lightweight during the recent summer holidays, and have covered nearly 2,000 miles without a single breakdown, with the exception of the ignition, which is by coil, etc. The machine will climb all but the very worst hills, and the speed is over 45 m.p.h. Whoever heard of a twelve-year-old American machine which had not fallen to pieces years ago? Usual disclaimer. J. W. MORRIS.

#### Will the Single-cylinder Survive?

Sir,—I have read with great interest the correspondence in your columns on the subject of single v. twin. May I, as an all-weather sidecarist, be allowed to make a small contribution to this controversy? Some of your correspondents who champion the cause of the single for solo riding appear to think that the heavy twin is the only suitable machine for serious sidecaring. I would like to point out that this is not by any means the case. Both single and twin have their allotted positions as sidecar machines, and the one will not efficiently perform the work of the other. To pull a sidecar satisfactorily the engine of a motor cycle must be kept in good tune, and the time spent in cleaning, adjusting, and keeping in tune must necessarily be greater in the case of the twin than the single—since the former has a greater and more intricate surface to be cleaned and more working parts to adjust than the latter. This fact persuades me that as sidecar machines both single and twin will survive, each in its own sphere. The man who sidecars principally for pleasure usually has plenty of time to devote to his engine and machine between his various outings. The machine for such a man is the big twin. Were I in the position to give plenty of time to my machine I would use an 8 h.p. twin and a luxurious heavy sidecar. The comfort of such an outfit well repays the time spent in keeping it in good order. On the other hand, there are many men who, like myself, use their machines every day in all weathers, because they have to, and who have very little time to devote to cleaning and tuning. So for such a man the single is, in

my opinion, far more suitable than the twin. All the time I can spend on my machine for cleaning and tuning is about a couple of hours once a week. But I require a machine that will start at the first kick every day, and take me in pouring rain over third-class roads suffering from the attentions of the motor transport lorries. Moreover, my outfit must be such that if I wish to drive a passenger 150 miles on pleasure bent I can do so without fatigue or discomfort to myself or passenger, and without being ashamed of the appearance of my mount. I have found all my requirements in a big single and sidecar. With the little time I can spare I could not keep a twin in such tip-top order as I do my big single, which I consider the ideal mount for my purpose—fitted, of course, with all-enclosed chain drive and ample mudguards. My present machine, a 4½ h.p. James and sidecar, is among the first of its class, and will, I think, with similar machines by reputable makers, remain the choice of the busy all-weather sidecarist.

H. V. TATTERSALL.

#### A Six-stroke Cycle.

Sir,—Your comments on the letter of your correspondent who writes from H.M.S. *Diana*, and the various letters of late on the steam motor cycles, suggest to me a six-stroke engine. It would have the usual valves timed to give induction, compression, power, scavenging, conventionally as with a four-stroke, but followed by the introduction of a few drops of water pumped into the hot cylinder at the top of scavenging stroke by a small pump worked by a suitable cam. This water should flash into steam and give an extra power stroke, which, followed by second scavenging stroke, gives us a cycle of operations in which we have two power strokes out of six, i.e., one in three as against one in four as at present.

I am quite prepared to hear that this idea has already been patented by, say, "Bill Adams" in the early forties, and that it was tried and rejected by Noah on a trial trip preceding his well-known voyage. Nevertheless I submit the idea for what it is worth.

G.H.

Mitcham.

[A six-stroke cycle is not new, but we have never heard of it being carried out exactly as suggested.—Ed.]

#### Running on Paraffin.

Sir,—A paragraph in your issue for November 2nd has prompted me to "rush into print."

I have now done over 2,000 miles on my 1910 single-gear Triumph on a home-made tin carburettor, using paraffin and water (a small amount of petrol is used for starting).

I have come to the following conclusions:

1. That water is absolutely indispensable when using paraffin (especially at full throttle).
2. That to warm the fuel, or the mixture, is a mistake in an air-cooled engine.
3. That if the correct amount of paraffin (for combustion) is introduced there is none left to dilute the oil.
4. That paraffin requires a larger jet than petrol.
5. That float chambers are out of date on motor cycles.
6. That paraffin and water is faster on the level than petrol, but slightly inferior on hills.
7. That one's engine is always cool and eager on paraffin and water.

I heartily agree with "Ixion" on flat twins. You should hear me curse my own single—the barbaric spoke smasher! Sheffield.

O.B.H.



### The Scott Sociable.

Sir,—As an interested reader of your paper, may I be allowed to pass one or two remarks with regard to the Scott Sociable, which I have seen alternately commended and depreciated in your columns?

In my opinion the *main* fact of the popularity of the sidecar has been overlooked, it being assumed that comfort and appearance are the only things to be aimed at. On the contrary, I think that the Scott Sociable has no advantages over the light car except that it is *minus* one wheel and none of the advantages of the sidecar. The points in favour of the sidecar are:

(1) The sidecar can be detached if necessary and the motor bicycle used as a solo machine, with a corresponding decrease in running expenses (probably the first reason why the sidecar as such was introduced).

(2.) Where the average person is concerned, all houses have not a large enough side entrance or passage to admit of such a wide machine as the Scott, whereas a motor bicycle can be detached and taken in separately.

Also I believe that many people would prefer rather a machine like a Morgan runabout, which, after all, is practically the same type as the Scott (and much neater looking), or else improve the Scott as your correspondent Sgt. S. Way suggests in his letter.

RFN. W. C. CLARKE,  
5th City of London Rifles.

### Inlet Pipe Connections.

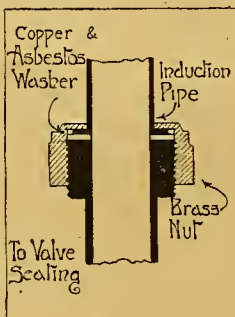
Sir,—In your issue of the 12th ult. I note that "Ixion" is interested in the several methods of attaching inlet pipes in twin and multi-cylinder engines. Perhaps he and some of your readers would be interested in the accompanying sketch of the way the inlet manifolds are connected on the Beardmore aero engines. This method is also used on the exhaust manifolds on that engine, and for the inlet manifold of one of the R.A.F. productions.

If it is found suitable on aero engines, where insulating tape is not tolerated, it surely should be the best and simplest method for use on motor cycles.

There is something to be said also for the coned seating, which does not require a washer if the faces are properly ground in in the same manner as a valve.

It is often used for inlet valve seatings, and would probably work well if used on the induction pipe itself.

ALEC H. JENKINS,  
F.-Sgt., R.F.C.



### Boycott of German Goods.

Sir,—In the concluding paragraph of the letter under the above heading, which you were good enough to publish in your issue of August 17th, I invited each one of your readers in sympathy with the object referred to to send me his, or her, name and address, stating if willing to join a league, either run as a separate body or, preferably, linked up to the A.C.U., and I stated that if the response were adequate further steps would be taken in the matter without delay. I have taken no further steps in the matter up to the present because, as a matter of fact, the response, though interesting, did not seem to me sufficient to warrant any such steps being taken. It is true I have received a number of letters expressing strong sympathy with the views set forth in my letter, and promises also to join any league which may be formed. It may interest you to know that these letters have come, not only from all parts of the kingdom, but from such a far-off land as Japan.

As I say, however, the total number is disappointingly small, and, indeed, suggests that motor cyclists as a body are extremely apathetic and, one might almost venture to say, selfishly indifferent in a matter of this kind; yet it surely cannot be that they are really indifferent: rather perhaps that they are merely thoughtless in the matter.

Does anyone to-day doubt the necessity for a definite boycott of German-made goods? If that be granted, does

BR8

anyone question that no such boycott can be brought about except by co-operation and by the strong pressure of public opinion? If this too be granted, is there any simpler or more effective way by which to achieve our purpose than by the formation of such a league as I suggested? This league should be so constituted as to appeal to every patriotic motor cyclist in the kingdom, and, indeed, as one of my correspondents suggests, it might include the pedal cyclists also.

Any such organisation is, of course, dependent upon the energising influence of one or two individuals, and in these days it is difficult to find the right kind of man to organise such a league having the time at his disposal for the purpose; that was mainly my reason for suggesting that it might be taken up by the Auto Cycle Union or some such existing organisation, and run in connection therewith at a nominal fee, instead of the ordinary A.C.U. subscription.

Unless the writers object, I propose, therefore, in the course of the next month, to hand over the letters I have received to the secretary of the Auto Cycle Union with a view to his endeavouring to arrange a preliminary meeting of those interested. May I make a final appeal to your readers to send in their names at once, in order that they may be invited to any preliminary meeting which may be arranged?

BRITISHER.

London, E.C.

### Electric Lighting for Motor Cycles.

Sir,—I, in company with many others, am glad to see that publicity is being given to this subject, for electric lighting is bound to oust acetylene, as it has practically done on motor cars.

Your correspondent, unfortunately, said very little about dry battery lighting, and, with your leave, I should like to give one or two conclusions drawn from experiments.

I have found the best battery for the purpose to be the Hellesen (catalogue price 6s. 6d.)  $4\frac{1}{2}$  volt, its recuperative powers being astounding.

Your article advocates a 4 volt 3 c.p. bulb for the head lamp, but in these days of reduced lighting, why waste 3 c.p. against tissue paper, when 1 c.p. without tissue paper (in the London area) and with the lamp tilted down has been giving satisfaction for six months or so? Moreover, two bulbs of 4 volt 0.3 amp., 1 c.p. (approximately), can be run for an hour per night off a Hellesen cell for at least a season, provided the light is switched off immediately it is not required.

I should like to add that I have no connection with A. H. Hunt and Co., the importers of the Hellesen cell.

L. W. E. HURSLEY.

### Bearing Pressures.

Sir,—“A.A.S.’s” article on this subject strikes me as an ingenious attack upon the long-stroke engine, based largely upon premises which are not necessarily correct; and even upon his premises I disagree with most of his conclusions. Taking these in order:

Page 334. 1. The hearings of a long-stroke engine can be as large as in a medium or short-stroke if a piece is taken out of the flywheel rim; but why not have a larger flywheel?

2. The long-stroke bearing will have a shorter distance to travel if the bearing is smaller (for the swing of the connecting rod can be neglected), these distances being  $\frac{3}{4}$  in. and  $1\frac{1}{4}$  in. per revolution.

Page 335, first column, 1 and 2. Neither of these statements would be true if the connecting rods were both of the same length in proportion to their stroke, say, five times the crank throw.

Another point: a long-stroke engine having a greater leverage at its crank can be geared higher, and consequently need not turn over at the same speed. Also, given a certain speed of crank pin, the longer the radius the less the pressure of the unbalanced force. “A.A.S.” seems to suggest the opposite in the last column of the article, although he does not actually say as much.

Finally, may I say that I hope Mr. Norton or some other long-stroke exponent will put the case for the opposite side? Personally, I have an open mind on the subject, and am willing to be convinced either way, but “A.A.S.’s” article is not convincing when it is examined carefully.

JOHN BONYTHON.



# THE LITTLE WORD *Bates* ON TYRES

*means big things  
like this!*



This is the original Bates,  
the finest tyre for hard  
work yet produced.

Perth, Western Australia.  
Gentlemen,—I feel I must write and let you know the wonderful wear I have had from a set of your 26×2½ in. Bates Tyres. After a varied experience of eight different makes on many Motor Cycles during the last nine years, I was forced to the conclusion that no tyres were much good. In November, 1914 (on the advice of a friend), I had Bates Tyres fitted to my new mount. The machine has now been used for sixteen months, and the tyres are a treat to see. This is a unique experience for me, for I have always had to purchase new tyres every 8 or 9 months, the heat and bad roads here always "settling" them in quick time. I am so delighted with my first experience of Bates Tyres that in future I will see that my machines are always equipped with your excellent tyres.

Yours sincerely, C.F.K.

This is only one of many proofs of the growing popularity of Bates Tyres, the increased output of which has enabled the makers to reduce prices, in spite of the higher cost of materials!

*Riders should lose no time  
in sending for our New List.*

## *Bates* SUPER RUBBER *Tyres*



The No. 2 is made in  
Special Heavy only,  
in four sizes.

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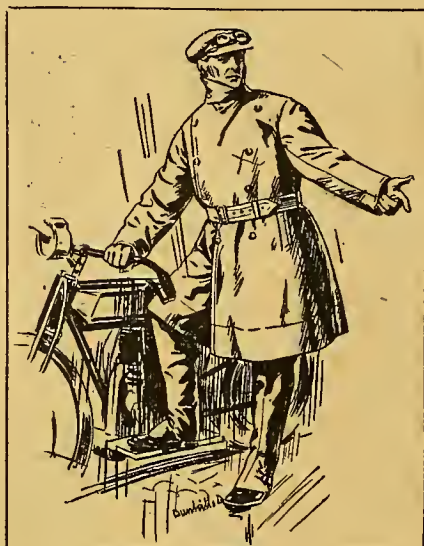
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## A NEW M.C. COAT.



It is essential that you should protect yourself against the vagaries of the weather.

Dunhills' New M.C. Coat will prove an excellent weatherproof for your tour.

It is made of proofed twill with a lining of oil cambric, and is thus impervious to any weather.

A detachable fleece lining is very fashionable with many motor cyclists. It is most useful during the climatic changes at this period of the year.

PRICE £3-15-0

Send a card for pattern.

**Dunhills LTD.,**  
359-361, EUSTON RD., LONDON, N.W.  
—42-43, LOMBARD STREET, E.C.—

MANCHESTER:  
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72, Vincent Street.

## Fit Wood-Milne Motor Cycle Tyres

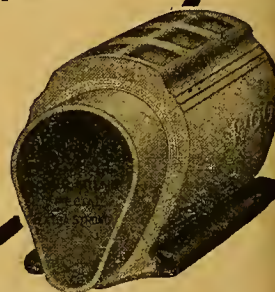
and experience real "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

Wood-Milne,  
Ltd.,



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Birmingham, Leeds, Manchester, Bristol, Belfast, Dublin, Glasgow, Etc.



## The "KAY" patent Quick & Easy Starter

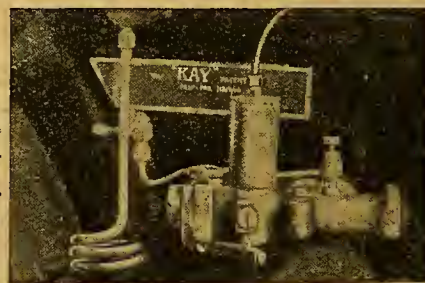
for use with Petrol Substitute and Heavy Fuels. Will start your engine immediately on the coldest day and when the engine is warm enough it automatically takes up the running on the heavy fuel.

### Points.

Engine will start on coldest day.

No draining of carburetter.

Satisfaction guaranteed.



### Points.

Prevents Petrol substitute from passing into base chamber, thereby allowing perfect lubrication.

Price low.

### Testimonial.

Lancaster, Oct. 17th, 1916.  
I am delighted with your Quick Starter. Kindly send me another as soon as possible.—Yours, W.J.

By the use of the "KAY" Patent Starter there is absolutely no necessity to turn off your main fuel supply tap, drain your carburetter, or prime your cylinders with petrol. You cannot be held up in traffic as the Starter immediately comes into operation if the heavy fuel ceases to act. It is impossible to start from cold on petrol substitute and therefore absolutely necessary to have a Starter even if you already have a vapouriser, as heavy fuels cannot be vapourised until the engine is warm.  
Easily fitted to any make of Machine in a few minutes.

Price complete ready for fitting, 15/-,  
or for fitting to any existing auxiliary tank, price 7/6.

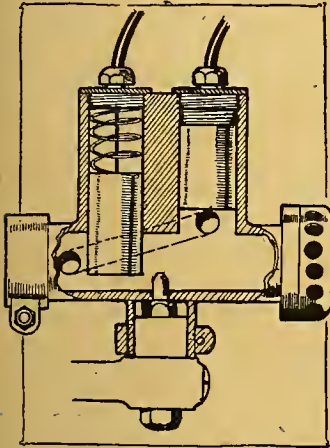
Further particulars from sole makers:

**KAY & SONS, Halliwell, BOLTON, LANCs.**



**Carburettor Improvement.**

Sir,—I enclose herewith a sketch of a simple fitting to a standard Triumph carburettor which has been made and tried on six machines at the Front with every satisfaction. These results are greater economy in petrol and an increase in speed—conflicting claims, I know, but let anyone who doubts try it first and express an opinion afterwards.



Sketch of carburettor improvement referred to in letter.

It should be of special interest to the writer of "1,500 Miles on a Military Mount."

The fitment consists of a piece of  $\frac{5}{16}$  in. to  $\frac{3}{8}$  in. copper tube bent to the required shape and soldered to the carburettor body as shown, holes being first drilled to suit. The air slide must be shortened  $\frac{5}{16}$  in. at the top to allow of further movement, and the control wire will need adjustment too. This will make it impossible to close the air right down, but such a position is never necessary.

With the slide in its normal position the action of the carburettor is not

altered in any way, but it will be found that when the engine is turning over fast it will take more air, and this can be given by raising the air slide above its normal position, and thus allowing dilution of the mixture by air passing down the  $\frac{5}{16}$  in. pipe already mentioned. I can guarantee that anyone taking the trouble to fit this addition will find it worth while.

A further alteration, which I find convenient, but not necessary, is to change over the wires on the ignition and extra air levers so that the throttle is on one side and the extra air on the other.

Perhaps I had better mention that the jet on the machines tried with this device is No. 29.

B.E.F.

J. C. HUDSON (Lt.), C.A.S.C.

**Sidcar or Cycle Car?**

Sir,—I thoroughly agree with Mr. F. E. Cooke in his commendation of the big twin combination for the family man. I had much the same experience as he: running a  $3\frac{1}{2}$  h.p. single for some years, "smelling" at a cycle car, and finally getting a 7.9 h.p. Harley-Davidson with a two-seated G.K. sidcar. I find that by the use of a simply-made arrangement, carrying three little seats *à la* toboggan, I can take my wife and four children quite comfortably without using the pillion. I am using Binks, but find that I can do practically every hill on top gear, which is something under 4-1, a steady 30 m.p.h. being the most comfortable driving pace. My tyres are 28x3in. Goodyears, which, after over 1,000 miles in very bad weather, are absolutely unscratched. The great comfort of the reserve power can only be appreciated by anyone who has had a good deal of the "run alongside to ease her on steep hills" sort of thing. My  $3\frac{1}{2}$  h.p. having a fixed gear, I did this oftener than I cared for. I have not yet got my carburettor properly tuned up, but I get 47 to 50 m.p.g., but will, I know, do better than that. The tractability and flexibility of the big outfit must be experienced to be believed. I use Ambroleum in the gear box, and find an ordinary icing-syringe, kept filled and hung upside down, a very simple means of filling. I find the three-speed countershaft very easy to manipulate, but always declutch (as with the H.D. one must) when changing.

WALTER ROSE.

**Overheating and Sparking Plug Design.**

Sir,—Referring to your correspondent's suggestion in your issue of October 26th under the above heading, it is interesting to observe that he is simply putting forward the features which have been embodied for years in the special racing model Lodge plug

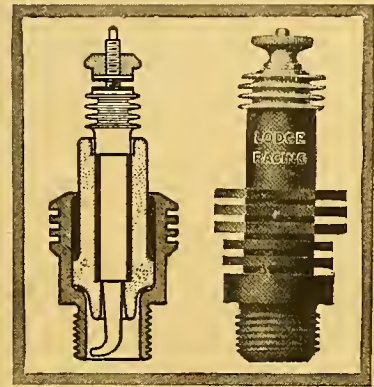
The drawing (fig. 1) of the old Lodge T.T. or racing model shows the radiator at the terminal end, the stout central electrode with the minimum of surface exposed to the heat of the combustion chamber, and the gradual increase in its diameter from sparking to terminal end.

Fig. 2 is an illustration of the present-day Lodge racing plug (model K), and it will be seen at once, on referring back to your correspondent's "proposed design" and comparing the two, how closely his radiator and terminal resemble those used in the Lodge racing plug, a plug which is, as you know, in general use, especially on high-speed motor cycle engines.

THE LODGE SPARKING PLUG CO., LTD.

F. B. LODGE, Director.

[Our contributor did not overlook the excellent Lodge plug, but his idea was to carry the matter further and make the fins appreciably deeper.—Ed.]

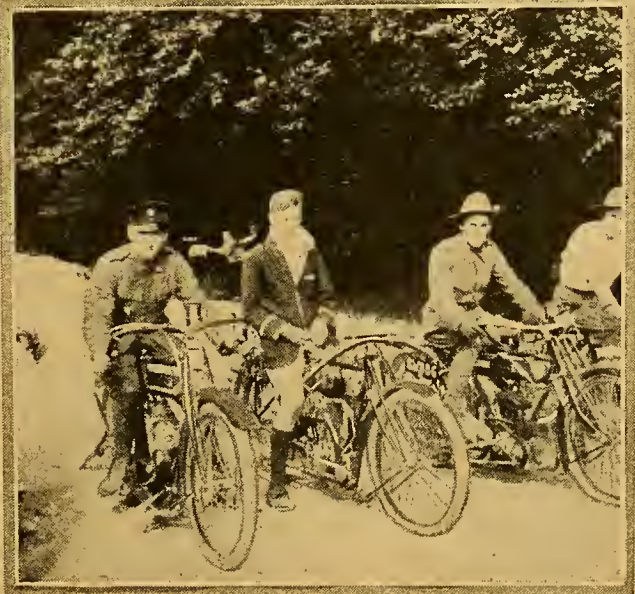


Sectional view of the old Lodge T.T. (fig. 1) and the new model K plugs designed for racing engines.

**Public School Orderlies.**

Sir,—I thought that the enclosed photograph of some of the motor cyclist orderlies at the Public Schools O.T.C. camp in the South might be of interest to you. Eton, Westminster, Marlborough, and Bradfield all provided orderlies. The photograph shows three Marlburians in uniform and myself (Westminster) in "change." Except for an Indian, a Zenith, and three Douglasses, everyone rode good old  $3\frac{1}{2}$  h.p.'s, which seemed much the most popular. I do not think anyone had any trouble, bar punctures.

T. M. KER.



Orderlies attached to the Public Schools O.T.C. Camp. The photograph shows three Marlburians in uniform and Mr. T. M. Ker (Westminster) in "change."

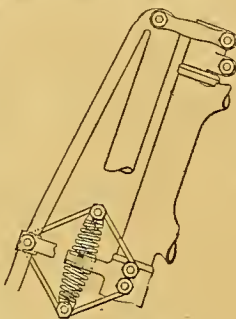


## PATENTS.

Abridged by ERIC W. WALFORD,

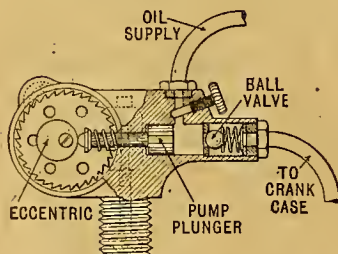
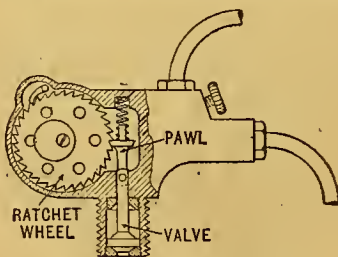
### A Fork Springing System.

The movable fork is attached to the steering column at the top by plain links and at the bottom by a system of links in the form of a closed four-sided figure. Movement of the fork in relation to the steering column would, of course, distort this figure, and consequently the movement of the fork is resisted by a pair of springs which bed against an abutment on the steering column. The result is that the fork is permitted both a vertical and a limited horizontal movement. As an alternative, the compound links may be arranged at the top and the plain links at the bottom of the head.—A. H. Culley and S. Davies, No. 12,977, 1915.



### A Compression-operated Lubricator.

Of the two illustrations the upper represents the operating mechanism of a lubricating pump, whilst the lower shows the pump itself. The pump spindle carries a ratchet wheel actuated by a pawl which is reciprocated by a valve rod working in a chamber which screws into the cylinder head, and is therefore exposed to the pressures in the cylinder. The chamber is provided at each end with a valve seating, and the valve head is of double cone formation, so as to

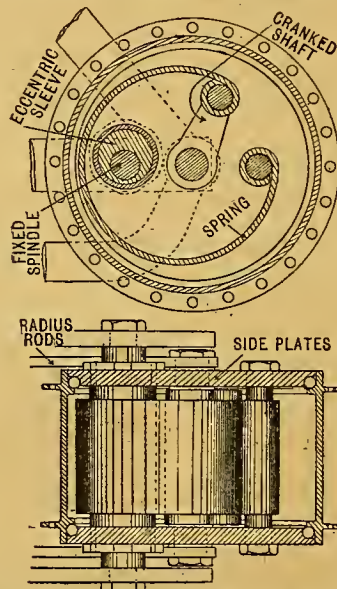


engage either seating. The lower seating is adjustable to vary the stroke of the valve rod. Each time that the pressure in the cylinder rises sufficiently to lift the valve the ratchet wheel is rotated, and by this rotation it actuates a pump

plunger through the medium of the eccentric shown. The pump chamber is supplied with oil, which, on each forward stroke of the plunger, is forced past a ball valve to a pipe leading to the desired point, e.g., the crank chamber. It would apparently be necessary to provide the oil supply pipe with a non-return valve to prevent the oil being forced back to the source of supply instead of passing to the engine.—D. McGregor, No. 13,768, 1915.

### A Spring Hub.

In order to obtain resilient suspension, the hub shell is arranged to run on eccentric side plates, which are secured together by bolts, enabling the bearings to be adjusted. The plates are free to rock on an eccentric sleeve mounted upon the fixed spindle, and at their centre is secured a cranked shaft, the ends of which project outside the plates and are



attached to radius rods pivoted to the frame of the machine in such a manner that the plates, and consequently the hub shell, always move in a suitable path. Between the crank pin and one of the attachment bolts for the side plates will be seen a curved blade spring, which is deformed when movement takes place, and which tends always to return the parts to the normal position.—J. Martin, No. 12,774, 1915.

### Components Employees' War Relief Fund.

We continue to hear splendid reports of the various war relief funds organised by the employees of the big concerns (the small firms doing just as well proportionately), and the employees of Components, Ltd., have recognised the needs of the men at the Front and the wives left at home, in a practical manner. They have sent 2,000,000 cigarettes out and numerous parcels. About eighty families receive regular weekly allowances. Up to date £2,000 has been collected and dispersed. On the roll of honour are 350 names of the men who have enlisted, and it is gratifying to find among them a holder of the Military Medal—Gnr. T. Holmes, who before the war was employed in the finishing shop.

## SPARKLETS.

### Changes of Address.

The Lodge Sparking Plug Co. are now located at St. Peter's Road, Rugby.

The vendors of Grandex motor cycles have moved to larger and more commodious premises at 349, Euston Road, N.W., than those previously occupied by this firm.

Messrs. W. and A. Bates Ltd., have removed the Glasgow depot to 24, Carlton Place, which is within a stone's throw of the old address.

### Sphinx Plugs.

The new catalogue of the Sphinx Manufacturing Co. will give readers all they want to know concerning Sphinx sparking plugs. It will be ready this week, and can be obtained on application to the makers at Bradford Street, Birmingham.

### Stock of Parts.

Messrs. J. B. Brooks and Co., Ltd., Great Charles Street, Birmingham, whose enormous factory and extensions are almost exclusively devoted to Government work, can still supply ordinary customers with many articles from stock where such stock permits. A special stock list can be obtained on application to the manufacturers.

### Joseph Lucas, Ltd. Second Interim Dividend.

Owing to the urgency of war work and the depletion of the staff for military service, it is found impossible to prepare the usual balance sheet. The firm have no doubt, however, that a profit has been earned, and they have declared a second interim dividend on the ordinary shares of 7½%, less income tax, making, with the dividend already paid, 10% for the year ended August 31st last.

### A Nutritive Drink when Winter Riding.

It is a difficult matter, occasionally, to obtain a suitable drink when on a cold winter's ride—one that is both stimulating and nourishing. Horlick's malted milk is a preparation that exactly meets that requirement, being a combination of pure rich, full-creamed milk, to which is added the nutritive extracts of malted barley and wheat. It is obtainable in tablets, which can be dissolved in the mouth as required, and being so extremely portable should appeal particularly to motor cyclists.

### Air-cooled Plugs.

The makers of the Apollo plugs, the Apollo Manufacturing Co., Moseley Street, Birmingham, have secured the sole manufacturing rights throughout the world for the Watkins air-cooled sparking plug. This plug has a large hollow central electrode, divided in two in such a way that a current of air can circulate through it and so keep it cool. The body of the plug has radiating fins as well to assist in cooling. Although the main output of these plugs will be for aeroplane purposes, they will be developed for other engines as early as possible.



# THE AUTOMOBILE ENGINEER

*Devoted to the theory and practice of AUTOMOBILE CONSTRUCTION.*

Published  
**MONTHLY**

(second Thursday  
in each month).

Price  
**SIXPENCE**  
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**I**SSUED in the interests of engineers, designers, draughtsmen, works managers, heads of departments, and all others concerned with the designing and building of motor vehicles, and dealing fully with the technical and manufacturing side of the motor car, utility motor vehicle, and motor cycle industry.

#### SUBSCRIPTION RATES.

The *Automobile Engineer* can be supplied direct, if preferred, at the following rates:  
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## Principal Contents of THE NOVEMBER NUMBER.

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THE GERMAN AEROPLANE ENGINE TRIALS.  
KEROSENE v. GASOLINE IN STANDARD  
AUTOMOBILE ENGINES.

PLANT AT THE MARTINO'S TREATING AND  
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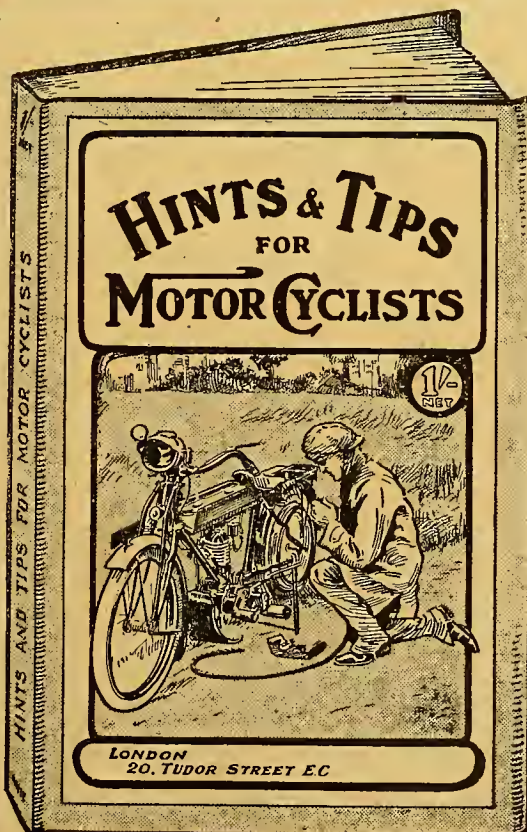
**Every  
Motor Cyclist**  
should draw upon  
this Storehouse  
of Motor Cycle  
Knowledge.

“Hints and Tips for Motor Cyclists” contains what may be termed the cream of all motor cycling knowledge up to date.

The book gives hundreds of useful “wrinkles” and little items of information concerning the running, management, and repairs of motor cycles, culled from the experience of many years of riding, and covering every detail of the machine.

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*Invaluable to  
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## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### Abingdon.

**A** BINGDON King Dick, 5-6 h.p., twin, condition perfect, 2-speed, free engine, kick starter, £30; exchange 7-9 h.p. Indian, not earlier 1914, cash adjustment.—52, Connop Rd., Enfield Wash, Middlesex. [4426]

### A.J.S.

**A** J.S., new 2½ h.p., 2-speed model, actually in stock; £55.—Moss, Wem. [X0939]

**1916 A.J.S.**, 2½ h.p. model, in stock; £55.—Cross, Agent, Rotherham. [X0894]

**1916 6 h.p. A.J.S.**, just delivered, exceptionally good finish; £84.—Russell, Lawrence St., York. [4282]

**A** J.S. 1914½ 6 h.p. Combination, faultless; £65; part exchange solo mount.—Pigot-Disney, East Molesey. [X0929]

**RIDER TROWARD**, 78, High St., Hampstead.—1915 A.J.S. lightweight, 3 speeds, clutch, kick start; 38 gns. [4394]

**RARE Opportunity**—1916 A.J.S., 4 h.p., and sidecar, just delivered; first cheque £96.—Taylor's Garage, Falmouth. [3267]

**1916 2½ h.p. A.J.S.**, 3-speed, latest model, ridden 700 miles only, condition genuinely as new, specification as list; £55.—Robinson's Garage, Green St., Cambridge. [4407]

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10748.	2½	single-speed HOBART	£20 0
10749.	4-5	1916 ZENITH and Sidecar	£67 10
10750.	4½	1915 3-sp. B.S.A. and Sidecar	£65 0
10751.	8	1915 MORGAN Runabout, De Luxe Model	£94 10
10752.	5-6	1913 2-sp. A.C. Sociable	£37 10
10754.	3½	1916 I.O.M. RUDGE Multi	£50 0
10705.	12-16	VAUXHALL Car	£125 0
10713.	4-5	1914 ZENITH-GRADUA	£37 10
10715.	3½	1914 2-sp. ROVER and Sidecar	£42 10
10717.	4½	3-sp. PRECISION	£22 10
10724.	3½	1912 3-sp. TRIUMPH and Sc.	£42 10
10727.	4½	1915 3-sp. B.S.A. and Sidecar	£60 0
10728.	10-12	1912 DELAGE Car	£175 0
10782.	3½	1914 3-sp. BRADBURY	£47 10
10684.	7-9	1914 3-sp. INDIAN	£27 10
10687.	14	single-speed J.E.S.	£10 0
10688.	2½	1911 2-sp. DOUGLAS	£22 10
10699.	3	1913 3-sp. HOBART & Sidecar	£35 0
10700.	5-6	1913 2-sp. F.N. and Sidecar	£32 10
10701.	2½	1911 single-speed	£22 10
10638.	3½	1912 single-speed INDIAN	£20 0
10643.	3½	1914 RUDGE Multi	£40 0
10649.	3	1913 single-speed B.S.A.	£25 0
10661.	6	1913 ENFIELD and Sidecar	£45 0
10663.	7-9	1914 2-sp. INDIAN	£35 0
10673.	4½	1914 3-sp. B.S.A. and Sidecar	£45 0
10693.	2½	1913 2-sp. DOUGLAS	£27 10
10610.	2½	1911 3-sp. NEW HUDSON, Sc.	£45 0
10614.	3½	1911 single-speed HUMBER	£25 0
10628.	14	1911 single-speed DAYTON	£12 10
10629.	3	1914 3-sp. ROVER and Sidecar	£50 0
10639.	4	1914 3-sp. SINGER and Sidecar	£45 0
10587.	3½	1914 3-sp. QUADRANT & Sc.	£42 0
10588.	3½	1913 RUDGE Multi and Sidecar	£45 0
10590.	8	1912 2-sp. MATCHLESS & Sc.	£35 0
10596.	3½	1913 RUDGE Multi	£35 0
10567.	2½	1915 2-sp. 2-str. CALTHORPE	£25 0
10573.	2½	1915 2-sp. CALTHORPE	£31 10
10584.	3½	1912 PREMIER and Sidecar	£20 0
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10333.	3½	1908 2-sp. TRIUMPH	£22 10
10565.	3½	twin N.U.T.	£35 0
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10523.	2½	1913 2-sp. DOUGLAS	£44 0
10533.	4½	1912 3-sp. QUADRANT	£27 10
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10485.	4	single-speed BRADBURY	£23 10
10430.	2	1914 2-sp. CALTHORPE Junior	£17 10
10432.	2	1914 2-sp. CALTHORPE Junior	£18 10
10448.	4	1914 3-sp. B.S.A.	£57 10
10453.	3½	1915 SUNBEAM and Sidecar	£25 10
10458.	2½	1914 2-sp. 2-stroke CLYNO	£25 10
10452.	5-6	1913 2-sp. N.S.U.	£40 gns.
10390.	2	1915 2-sp. WOLF-J.A.P.	£30 0
10396.	3½	2-sp. FAFNIR	£12 10
10402.	4½	1915 GRANDEX	£37 10

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## MOTOR CYCLES FOR SALE.

### A.J.S.

**A** J.S. 4 h.p. Combination, just delivered from works.—Prices and particulars, W. Brandish, Triumph Garage, Coventry. [X9653]

**4½ h.p. A.J.S.**, 1916, only used for a few weeks. Condition as new; £65.—The Purley Motor Garage, Ltd., Purley. [4500]

**NEW 6 h.p. and 4 h.p. A.J.S. Combinations** in stock, latest all black finish.—Parker's, Bradshawgate, Bolton. 'Phone: 1348. [X0998]

**1915 A.J.S. Combination**, in good order, interchangeable wheels, Watford speedometer; accept £75.—167, High St., Homerton, London, N.E. [4505]

**1916 A.J.S. 6 h.p. Combination**, family sidecar, with child's seat, hood and screen, in perfect condition; cost £117/10, accept £95.—Hall, 113, Queen's Rd., Peckham, London. [4295]

**A** J.S. 6 h.p. Combination, complete with best Lucas lamps, generators, and mechanical horn, new last month, not ridden 250 miles; cost £125, what offers?—Box L2,486, c/o The Motor Cycle. [4272]

**A** J.S., 1914, 6 h.p., 3-speed, countershaft, with almost new 1915 A.J.S. sidecar, locker in back, windscreen, grid, turnout in splendid condition; £270.—Baines, 30, Mandrake Rd., Upper Tooting, S.W. [4420]

**A** J.S. 6 h.p. Combination, late model, complete with spare wheel, hood, screen, speedometer, 3 Lucas best lamps, Stewart horn, two 700×80 and two 650×65 tyres, everything in first-class condition; cost £130; only done 5,000 miles; 50 miles trial run to prospective buyer; first offer over £90 secures this ideal turnout.—Ashton, Grocer, Newtown, Wigan. [X0900]

### Alldays.

**1916 Allon**, 2½ h.p., 2-speed, unused, shop-soiled only; £36.—Jones, Garage, Droitwich. [X0870]

**ALLON**, 2-speed, only used for few weeks; £37/10.—The Purley Motor Garage, Ltd., Purley. [4501]

**COLMORE** Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

**ALLON**, 2½ h.p., nearly new, 2-speed, lamps, horn, complete; £30, perfect condition.—Paskell's, 473, Stoke Newington Rd., London, N. [4437]

**RIDER TROWARD**, 78, High St., Hampstead.—Three Alldays: one 1915 Allon 2-speed, 29 gns.; one 1915 ditto, 26 gns.; one 1915 4 h.p. clutch model, 4-stroke, 25 gns. [4393]

**ALLDAYS** Allon, 1915, 2-speed clutch model, with accessories, £36/10; also 1915 single-speed, £29/10; liberal deferred terms.—Lamb's, 151, High St., Walthamstow, and at 50, High Rd., Wood Green. [4329]

### Ariel.

**3½ h.p. Ariel** Motor Cycle, B.B. mag., running order; £29, or offer.—Snow, Boundary Rd., Mountstuart. [X0931]

**1914 Ariel**, 3½ h.p., 3 speeds, and clutch, wicker sidecar, tyres and belt practically new, perfect order; £32.—Mount, Woodcock St., Hull. [X0841]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

### Auto-Wheels.

**A** UTO-WHEEL de Luxe, and B.S.A. Auto-Wheel bicycle, splendid condition; £14.—Haggett, Arundel. [4314]



## MOTOR CYCLES FOR SALE.

## Auto-Wheels.

WALL'S Auto-Wheel, B.S.A. Model de Luxe, shock absorber, good tyre, running order; £38/10, or offer; after 6 o'clock.—Walters, 143, Westcombe Hill, Blackheath, S.E. [4263]

## Bat.

BAT-J.A.P., 1914, 6h.p., countershaft 3-speed, Bramble sidcar; £48.—Colliers, Deal St., Halifax. [4275]

BATS.—P. J. Evans, Birmingham agent.—Immediate delivery 4-5h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X0927]

BAT-J.A.P. Combination, late 1913, 6h.p., 2-speed countershaft, lamps, mechanical horn, good tyres, Canoelet C.B. sidcar, hood, wind screen, clock, condition practically as new; £47/10; 2-seater wanted.—The Priory, Swinton Park, Pendleton, Manchester. [X0875]

## Bradbury.

1912 Bradbury and Sidcar, 2 speeds, complete, lamps, etc.; £23.—Cross, Agent, Rotherham. [X0892]

BRADBURY (1912), 4h.p., N.S.U. gear, family wicker sidcar, tip-top condition; £30.—Jones, Broadway, Newbury, Berks. [X0586]

BRADBURY 1913 Combination, 4h.p., N.S.U. gear, overhauled by makers October last, good as new; £30.—Evans, Grocer, Buxton. [4377]

BRADBURY, 1912, Stewart, Lucas horn, Wood-Milne, Dunlop, all accessories, perfect condition; £13.—21, Semley Rd., Netherby. [4447]

## Brough.

1916 H.T.T. Brough, Lucas lamp and horn set, perfect; £60.—Geo. Brough, 69, Northumberland Rd., Coventry. [X1006]

## B.S.A.

B.S.A., new 1917 models H and K, in stock; also No. 1 sidcar.—Moss, Wem. [X0940]

B.S.A., 1914, 4½h.p., kick start, coach sidcar; £38.—29, St. Leonard's St., Bow. [4432]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

RIDER TROWARD, 78, High St., Hampstead.—1915 T.T. B.S.A., clutch model; 31 gns. [4395]

B.S.A. 4½h.p. Models H and K's in stock for immediate delivery, £64 and £66.—Russell, Lawrence St., York. [4283]

B.S.A., 3½h.p., 2-speed, free engine, coachbuilt sidcar, good condition; 27 gns.—Kennison, Walton-on-Thames. [4454]

B.S.A., model K, 4½h.p., 3-speed, chain-cum-belt, just delivered from works; £54.—Davenport Vernon and Co., High Wycombe. [X0838]

LATE 1913 2-speed B.S.A., 3½h.p., with Montgomery sidcar, fully equipped, and nice condition; £38.—20, Whitley St., Reading. [4372]

1914 B.S.A. and Coachbuilt Sidcar, 3-speed, kick start, speedometer, condition and tyres good; £49.—118, Kinvauchy Gardens, Charlton, S.E. [X0949]

B.S.A., 4½h.p., 1917, 3-speed countershaft, K models, just delivered from works; £64; liberal exchange terms.—Eagles and Co., High St., Acton, W. [X0865]

1917 B.S.A. in stock. Catalogues free. Spare parts per return. In. belts, as fitted by makers, 8/6, post paid.—Albert L. Pitts, Redditch. Tel.: 91. [X0529]

B.S.A., 4½h.p., late 1915 model H, 3-speed countershaft gear, enclosed chain drive, fine all weather machine; £47.—Engles and Co., High St., Acton, W. [X0866]

B.S.A., 1915, model K, 3-speed, with C.B. sidcar and accessories, overhauled throughout, condition guaranteed; £50.—Layton's Garage, Bicester, Oxon. [4522]

B.S.A., 1916, 4½h.p., chain drive, 3-speed countershaft, and coachbuilt sidcar, all accessories, tyres never been punctured.—Box L2,504, c/o The Motor Cycle. [4517]

B.S.A., 1912, new 1913, 3½h.p., 2 speeds, and free engine, little used, equal to new, new tyres, all accessories; £30.—Harding, 112, Holmhurst Rd., Woodseats, Sheffield. [4305]

B.S.A., 1915, model K, countershaft 3-speed, overhauled throughout, including gear box and transmission, complete and well tried; £48.—Layton's Garage, Bicester, Oxon. [4523]

B.S.A. 1915 4h.p. Sidcar Combination, 2 lamp sets, spares, tools, horn, etc., all good condition; £50, or nearest offer.—Capt. Goodwin, 37, Cavendish Mansions, West Hampstead. [4246]

B.S.A., 1916, model K, Millford Corvette sidcar, P. and H. lamp, Stewart speedometer, done 2,500, condition perfect; £65, or offer; also about 30 galls. Kempol.—Hewett, 43, Malvern St., Clapton. [4417]

1913½ 3½h.p. B.S.A., chain and belt, 3 speeds, lamps, horn, watch, mirror, etc.; this is a very fine, powerful machine, has had little use, and is equal to new; £47/10.—Alfred Proctor, Chepstow. [X0908]

1914 T.T. B.S.A., fitted lamps and horn, not been ridden for 12 months, a big bargain at £30; 1915 combination, Lucas lamps and horn, property of B.S.A. employee, and condition is positively as new, £60.—A. L. Pitts, 50, 52, and 54, Evesham St., Redditch. [X0879]

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## MOTOR CYCLES FOR SALE.

## B.S.A.

B.S.A. New Models in Stock, 4½h.p. 3-speed counter-shaft, chain-cum-belt, model K, £64; all chain, model H, £66; Montgomery sidcars to match, from £11/16; cash, exchange, or extended terms quoted.—Elce and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St. [0552]

B.S.A. Model K, 3-speed, kick start, with genuine B.S.A. No. 1 sidcar, £44/10; we can deliver new 1917 models absolutely from stock.—Lamb's, B.S.A. Specialists, 151, High St., Walthamstow, and at 50, High Rd., Wood Green. Tel.: Walthamstow 169, and Hornsey 1956. [4320]

1916 B.S.A., belt-cum-chain, with 2 lamps, separate generators, mechanical horn, purchased Sept. 20th, ridden under 200 miles, new, and unscratched; owner unable ride through illness; quick sale £56, no offers.—Captain Canard, Scandwell Manor, near Northampton. Station: Brixworth. [X0325]

B.S.A. 1915½ Chain-cum-belt Combination through-out, condition excellent, No. 2 sidcar with apron light luggage grid, spare 1 gallon petrol tank, Stewart speedometer, F.R.S. electric head sidcar, and rear lamp, very little used; cost over £90, take £70.—Westwood, Orchard Rd., Belvedere, Kent. [4241]

B.S.A. 1917 Models, with their latest fittings, just arrived from works, £64 each; also a model H £66; B.S.A. Canoelet sidcars delivered from stock 13 gns.; and late 1914 K, with No. 1 sidcar, £47/10; liberal deferred terms.—Lamb's, B.S.A. Specialists, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. Tel.: Walthamstow 169, and Hornsey 1956. [4318]

## Calthorpe

CALTHORPE, 2½h.p., h.b.c., good order; £15.—Dalton, 3, Brewer St., Piccadilly. [4228]

SOLE Bristol Agents for Calthorpes; immediate delivery.—Derby Motor Co., Bishopston, Bristol. [X0035]

1915 Calthorpe Lightweight, 2-speed, as new; trial; £18, or offer.—C.S., 497, Old Ford Rd., Bow. [X0999]

CALTHORPE, 1915-16, 2½h.p. J.A.P., 2-speed, free engine, equal new; £30, lowest.—179, Brixton Rd., S.W. (E) [3974]

CALTHORPE, 4h.p., 1914, 3 speeds, speedometer, coachbuilt sidcar, equals new; £38.—Warre, St., London. [4462]

1915 Calthorpe-Jap, Enfield 2-speed, fully equipped, excellent condition; bargain, £24/10.—Newham, 223, Hammersmith Rd., W. [4448]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

CALTHORPE-J.A.P., £37/16, in stock at Lamb's, 151, High St., Walthamstow; deferred payments if desired; also at 50, High Rd., Wood Green, Ttd.; Walthamstow 196, and Hornsey 1956. [4330]

CALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

CALTHORPE-J.A.P. New Models in stock, slightly shop-soiled, 2½h.p., 2-speed Enfield gear, 30 gns.; 4h.p. twin J.A.P. lightweight combination, complete, 64 gns.; ladies' 2-stroke 2-speed model, 30 gns.—Elce and Co., City Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

## Chater-Lea.

CHATER-LEA No. 9 Frame, £218/6; Ariel engine with magneto, carburettor, etc., £172/6.—J. Richards, 25, Jeffreys Rd., Clapham, London, S.W. [X1002]

## Chater-Lea-Jap.

CHATER-LEA-J.A.P. 6h.p. Twin and Sidcar, in real good condition; a real bargain, £18.—6, Warren St., London. [4460]

RIDER TROWARD, 78, High St., Hampstead.—1914 Chater-Lea-Jap 8h.p. combination, new Sturmer-Archer countershaft gear; 39 gns. [4398]

## Clyno.

CLYNO 1914 5-6h.p. Combination, hood, screen, spare wheel, accessories; £50.—Vicars, 123, Peckham Rye. [4252]

CLYNO, 1913-14, 6h.p., 3-speed countershaft chain drive; £39/10.—Motor Exchange, Horton St., Huddersfield. [4176]

1914 Clyno Combination, in perfect condition; £57/10; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [4309]

CLYNO, late 1915, shop-soiled, 2½h.p., 2-stroke, 2-speed, hand clutch, Lucas lamps, 2½ Dunlop (heavy), absolutely as new; £36.—Ruddle, Manor House, Fordingbridge. [4382]

## Connaught.

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X0924]

## Coventry Eagle.

COVENTRY Eagle, 2½h.p., 2-stroke, 2-speed; £45/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

COVENTRY Eagle, 1916, 3-speed countershaft, twin, and coach sidcar; £69/10; little used.—Motor Exchange, Horton St., Halifax. [4179]



## MOTOR CYCLES FOR SALE.

## De Dion.

DE DION, 3½ h.p., in perfect condition and order; £4/15.—Walker, 39, Manor Rd., Bentley, Doncaster. [X0911]

## Douglas.

DOUGLAS, new 1916, 2½ h.p., 3-speed model in stock; 50 gns.—Moss, Wem. [X0941]

1916 Douglas, W.D. model, all accessories, as new; £48.—Henly, 7, Woburn Place, W.C. [X422]

1914 T.T. 2½ h.p. Douglas, good condition; £35.—Roberts, 15, Victoria Rd., Addlestone. [X4373]

DOUGLAS, with all accessories, in excellent condition; £28.—29, James St., Walthamstow. [X366]

1911 Douglas, 2 speeds, requires slight repairs, but sound; £21.—Cross, Jeweller, Rotherham. [X0893]

1915 2½ h.p. Douglas, just been overhauled; £35.—Wilkin and Co., Hunters Bar, Sheffield. [X0967]

DOUGLAS, 2½ h.p., lamps, speedometer, horn, fine hill-climber; £28.—6, High St., Lewisham, S.E. [X4249]

1913 Douglas, 2-speed model, excellent condition; £35.—The Parley Motor Garage, Ltd., Purley. [X4502]

DOUGLAS, 2½ h.p., £15/10; 1914 single-speed model, £27/10.—Motor Exchange, Horton St., Halifax. [X4177]

1914 T.T. Douglas, lamps, etc., in fine condition; £34.—139, Beverstone Rd., Thornton Heath. [X4363]

1914 2½ h.p. Douglas, lamps, horn, and speedometer; £32.—Wilkin and Co., Hunters Bar, Sheffield. [X0966]

1912 2½ h.p. Douglas, 2 speeds, Stewart horn, in good condition; £26.—61, Peckham Park Rd., Peckham. [X4238]

DOUGLAS, 2½ h.p., splendid condition, new tyres; bargain, £14/10, offer.—35, Colwell Rd., E. Dulwich. [X4469]

1915 (January) 2½ h.p. Douglas, 2-speed, speedometer, lamps, kick start, etc.; £41.—Long, 40, Ferrars Rd., Oswestry. [X4277]

DOUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil, Tel.: 50. [X5855]

1915 2½ h.p. T.T. Douglas, fitted with Bosch mag., very fast; £32, bargain.—Earl, 5, Heath St., Hampstead, N.W. [X4367]

DOUGLAS, 1914, 2-speed, T.T., special low gear, lamps, hardly used; £38.—H., 19, Greenwood Rd., Twickenham. [X4419]

DOUGLAS, 1915½, T.T., 2½ h.p., 2-speed, splendid condition throughout, lamps; and horn; £42.—M. Trethewey, Roche, Cornwall. [X0845]

T.T. Douglas, 1915 engine, 1912 frame, etc., single speed, very fast, and perfect throughout; £20.—Empson, Gamlingay, Sandy. [X4385]

DOUGLAS, late 1913, 2½ h.p., 2 speeds, clutch, lamps, good running order, Binks carburetter; £35.—Surplice, Poole Hill, Bourne-mouth. [X0789]

DOUGLAS, Sept., 1914, 2½ h.p., 2-speed, T.T., Volta-light head and tail, condition as new; £37.—Baltic Cottage, Suffolk Rd., Dartford. [X4360]

DOUGLAS 2½ h.p. Motor Cycle, in excellent condition, all spares and accessories; £18.—C. Sullivan, 111, Larkhall Lane, London, S.W. [X1001]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [X2118]

1913 Late 2½ h.p. Douglas, new gears, lamps, horn, T.T. bars, splendid condition; any examination; not used for some time; £32.—Alfred Proctor, Chesham. [X09071]

COLMORE Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [X0800]

1915 2½ h.p. 2-speed Douglas, W.O. model, in very good condition throughout, lamps, horn, and spares; £43.—Lieut. Harrison, Queenborough Pier, Queenborough, Kent. [X0840]

DOUGLAS, 1915, 2½ h.p., 2 speeds, clutch, kick starter, T.T. bars, all accessories, hardly used; owner been with B.E.F.; £42.—Low, Bennachie, Southborough Rd., Surbiton, Surrey. [X4301]

DOUGLAS, 1916, 2½ h.p., 3 speeds, free engine, Stewart speedometer, Lucas head and tail lamps, Lucas horn, absolutely new condition throughout; £50.—32, Dartmouth Rd., Chorlton-cum-Hardy. [X4384]

1915-16 4 h.p. Douglas Combination throughout, 3-speed, kick start, clutch, lamps, speedometer, horn, tools, new December, done 2,500, guaranteed perfect; £67/10.—H.F., 38, Claverton St., Bath. [X0880]

DOUGLAS, 1913, 2½ h.p., 2-speed, kick start, lamp, horn, has not been used for last 18 months; £36/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X4326]

1915½ 2½ h.p. Douglas, War Office model, all black, Lucas lamps, 2 generators, new tyres, Palmer and Dunlop, extra heavy, splendid order; £45; exchange higher power twin combination, Zenith or other good make.—Paterson, Prior's Gate, Pittenweem. [X0803]

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N.A.G., 14-20 h.p., new chassis, 4-speed gear-box, C.A.V. 12 volt set ..... £300

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G.W.K., 1914, 9 h.p., just re-painted and new hood fitted ..... £115

G.W.K., 1915, detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £160

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FORD, 1916, 20 h.p., 5-seater, shop-soiled ..... £125

MORGAN Grand Prix No. 1, water-cooled, all access. GARDEN, 1915, 6 h.p., M.A.G. engine, 2-speed, all lamps, windscreen ..... £70

## SIDEAR OUTFITS.

REX, 1914, 6 h.p., 2-speed, modele de luxe ..... £38

TRIUMPH, 3½ h.p., 2-speed countershaft, Sidecar ..... £32

INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed, and spring frame ..... £42

ZENITH, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidecar ..... £60

RUDGE, 1913, 5 h.p. Multi, with Rudge Sidecar ..... £46

ZENITH, 1914, 8 h.p., clutch, and Sidecar, all access. ENFIELD, 1912, 6 h.p., 2-speed twin, Enfield Sidecar ..... £29

RUDGE, 1913, 3½ h.p. Multi, coach-built Sidecar ..... £33

B.S.A., 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidecar, only done 500 miles ..... £68

SCOTT, 1914, 3½ h.p., 2-sp., and Scott Sidecar Chassis ..... £45

ZENITH, 1915, 3½ h.p., twin, clutch, and C.B. Sidecar ..... £52

HUMBER 1915 6 h.p. opposed, twin 3-sp., Combination cost £110 ..... £75

ENFIELD, 1914, 6 h.p., 2-speed Combination ..... £55

MATCHLESS, 1914, 8 h.p., 3-speed, J.A.P. engine, just re-enamelled ..... £80

## SOLO MODELS.

DOUGLAS, 1911, 2½ h.p., 2-speed, spring forks ..... £20

RUDGE, 1913, 3½ h.p. Multi, T.T. bars ..... £18

IVY, 1913, 2-speed, single-speed ..... £13

NEW HUDSON, 1913, 3½ h.p., 3-speed J.A.P. engine ..... £34

REX, 1913, 3½ h.p., 2-speed, and clutch ..... £34

RUDGE, 3½ h.p., Philipson pulley, 1913 improvements ..... £37

BROWN, 3½ h.p. model, Bosch magneto ..... £14

INDIAN, 1915, 5 h.p., 3-speed twin ..... £52

ROVER, 1912, 3½ h.p., T.T. clutch model ..... £20

DOUGLAS, 1912, 2½ h.p., single-speed ..... £16

ALLDAYS ALLEN, 1915, 2-speed, 2-stroke ..... £32

NEW HUDSON, 1915, 2-stroke, as new ..... £24

INDIAN, 1914, 7-9 h.p., 2-speed, electric equip. ..... £47

ENFIELD, 1910, 2½ h.p. twin, Grdco gear ..... £14

HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, twin ..... £56

LEVIS, 1914, 2½ h.p., 2-stroke, countershaft ..... £18

HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, as new ..... £53

INDIAN, 1914, 7-9 h.p., T.T., clutch model ..... £41

F.N., 2½ h.p., 2-speed, lightweight ..... £17

IVY, 1915, 2½ h.p., 2-stroke, 2-speed, as new ..... £21

NORTON, 1915, 4 h.p., T.T., all accessories ..... £49

DOUGLAS, 1912, disc wheels, all accessories ..... £24

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HARLEY-DAVIDSON, Model 16F ..... £80 15

HARLEY-DAVIDSON, Model 16F, T.T. bars ..... £80 15

HARLEY-DAVIDSON Sidecar to either of above ..... £21 0

ROYAL ENFIELD 6 h.p. Combination ..... £34 10

ROYAL ENFIELD, 3 h.p., twin, 2-speed ..... £57 15

ROYAL ENFIELD, 2½ h.p., 2-speed, 2-stroke ..... £44 2

B.S.A., 4½ h.p., 3-speed, all chain, H., 1917 model ..... £66 0

B.S.A., 4½ h.p., 3-speed, chain-cum-belt, K., 1917 model ..... £64 0

INDIAN, 7 h.p. Powerplus, model C ..... £75 0

INDIAN, 7 h.p., Powerplus, and Sidecar ..... £104 0

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LEVIS, 2½ h.p., 8-speed, Popular model ..... £32 0

COVENTRY EAGLE, 2-stroke, de luxe ..... £37 15

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## Dunkley.

1916 Dunkley-Jap, 6 h.p. twin J.A.P., Jardine 4-speed, with coachbuilt sidecar, 650x65 and 700x80 Hutchinsons, 3 electric lamps, in perfect condition; £60.—Dunkleys', Jamaica Row, Birmingham. [X0935]

1916 Twin Dunkley-Jap, Splitdorf, Amac, Jardine, 4-speed, with clutch and kick starter, 650x65 front and sidecar, 800x85 rear, Hutchinsons light car tyres, with coachbuilt sidecar, very roomy, and well sprung, 1916 model throughout, 3 electric lights, in perfect condition; £60.—Motorist, St. Ives, Selly Oak, Worcs. [X0934]

## Enfield.

3 h.p. Twin Enfield, new 1915, run 500 miles only; £40.—John Shaw, Wirsow, W. [X0832]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [X0801]

1914 Enfield, 3 h.p., just back from works, perfect order; £33.—Kendall, Ellesmere, Salop. [X4247]

ENFIELD, 1916, 3 h.p., kick starter, as new, done 300, 80 m.p.g., 55 m.p.h.; cost £58, taken £48.—Cox's Garage, Southsea. [X0902]

ENFIELD, 3 h.p., 1916, new 2 months ago; £49, with new Watsonian sidecar; £55.—Penny, County Asylum, Exminster, Devon. [X0833]

ENFIELD Combination, 6 h.p., 2-speed, delivery from stock; 80 gns.; cash, exchange, or extended payment terms quoted.—Below.

ENFIELD Combination, 1916, 6 h.p., 2-speed, complete with lamps, horn, speedometer, special long exhaust pipe, etc., fine condition; £74.—Below.

ENFIELD, 1912, 6 h.p., 2-speed, with wicker sidecar, lamps, horn, etc.; £35.—Elice and Co., Enfield Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [X0491]

ENFIELD, 2½ h.p., 1914, 2-stroke, 2-speed, lamps, horn, etc., perfect condition, good tyres; £32.—8, Half Moon Lane, Herne Hill. [X4429]

1913 Enfield Combination, coachbuilt sidecar, all tools and spares; £50.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X3944]

ENFIELD 1914 6 h.p. Combination, coachbuilt sidecar, lamps, horn, tools, in perfect condition; £47.—Priest, Connaught Av., Frinton-on-Sea. [X4294]

ENFIELD Combination, 90 gns.; 3 h.p. twin, 55 gns.; 2½ h.p. 2-stroke, £45.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [X0838]

ENFIELD Combination, late 1915, absolutely new condition, Stewart horn, speedometer, lamps; £67/10.—P., 14, Richmond Mansions, Earl's Court. [X4339]

1915 6 h.p. Enfield Combination, in perfect condition, P. and H. lamps, all accessories and spares; £62/10; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [X4310]

1916 2½ h.p. Enfield, 2-speed, 2-stroke, with 2 Lucas lamp sets and Lucas horn, genuinely as new, ridden 50 miles only; £40.—Robinson's Garage, Green St., Cambridge. [X4409]

ENFIELD Combination, 1914 tandem engine, excellent condition and appearance, new back tyre and tube, Cowey, lamps, horn, etc.; £57/10.—53, Ross Rd., Wallington, Surrey. [X4365]

1914 Enfield Combination, 6 h.p., purchased Easter, 1915, overhauled by makers August, all accessories, speedometer, perfect condition; £57.—S., 36, Bannock Rd., Hammersmith. [X4359]

ENFIELD 6 h.p. Combinations.—We hold a stock of the new type, and will be pleased to give you "red hot" exchange quotations, send us your queries.—Layton's Garage, Bicester, Oxon. [X4524]

ROYAL Enfield Combination, 6 h.p., 1914, with lamps, spare tubes, and other accessories, in splendid condition; can be seen any time; price £52.—A. L. Henshall, Church St., Eastwood, Nottingham. [X0910]

ENFIELD Combination, 1915, hood, screen, P. and H. lamp, speedometer, perfect, engine just overhauled; £60; lowest; consider exchange Triumph or Douglas and cash.—Adjutant, Kidston Camp, Birkenhead. [X0895]

ROYAL Enfield Combination, coachbuilt, late 1914, 6 h.p., speedometer, just been thoroughly overhauled at the works; £45; can be seen at the Enfield Works, Reddish.—Capt. Harrop, 16, Park St., Pembroke Dock, South Wales. [X0577]

ENFIELD, 1913, 2½ h.p., 2-speed, recently thoroughly overhauled mechanic, lamps, horn, speedometer; owner wounded, passed G.S., insured £50, all risks; cheap; £28; also weatherproof riding suit, cost 5 gns., perfect condition.—Captain Emley, Palmeira Lodge, Hove. [X0581]

ENFIELD 1917 Models actually in stock, not coming in, or on the way; also an 8 h.p. combination, with hood and screen, £102/2; 8 h.p. combination, electric, hood and screen, £119/7; 6 h.p. standard combination, £94/10; all absolutely in stock, and guaranteed 1917 models; 3 h.p. touring model, £57/15; 3 h.p., T.T. bars, no kick start, £57/15; 1913 6 h.p. combination, with all lamps, 3-speed, new tyres, £49/10; terms quarter down and balance in 12 monthly instalments if desired; liberal concession for short term payments; exchanges entertained.—Lamb's, 151, High St., Walthamstow, and at 50 High Rd., Wood Green. Tel.: Walthamstow 169, and Hornsey 1956. [X4319]



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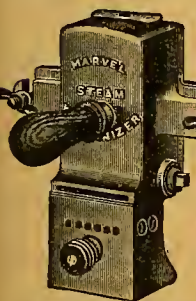
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  - 1916 Lady's CALTHORPE, 2-speed, new unused, cancelled order; cost £35 14s. Price ..... **£33**
  - 1916 2½ h.p. CALTHORPE-JAP, 2-speed, new, shop-soiled; cost £37 16. Price ... **£33 16**
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### MOTOR CYCLES FOR SALE.

**Enfield.**  
ENFIELD, 1914, 3½ p., splendid condition throughout; £33, or exchange 5-6 h.p. Rudge Multi combination.—Bagie, St. Paul's Terrace, Winchester. [4494]

**BIRMINGHAM** Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X0923]

**Excelsior.**  
£3/10.—3½ h.p. Excelsior, splendid hill-climber; gift; first P.O. secures.—Rev. Ball, 49, High St., Kingston, Surrey. [4291]

**AMERICAN** Excelsior, 8 h.p., and racing sidecar; bargain, £45.—W. and H. Motor Co., Ltd., 287, Dennsgate, Manchester. [3942]

**EXCELSIOR** (America), new 1916, 7 h.p., 3-speed model; cash offers wanted; list price £75.—Motor Exchange, Horton St., Halifax. [4179]

**EXCELSIOR**, 2½ h.p., 2-stroke, and sidecar, only been used 2 months; owner reverting to car owing to petrol increase; price £55.—Apply, Box 384, c/o The Motor Cycle. [X0028]

**BRAND** New Latest 1916 Model 7 h.p. 3-speed American Excelsior, exactly as listed at £75, for immediate delivery, £65 cash; sidecars to match from £14 to £20.—To be obtained only from The Premier Motor Co., Astor Rd., Birmingham. [4342]

**F.N.**  
1912 F.N., 5-6 h.p., good condition throughout, new tyres; £17.—Cooke, Nuacargate, East Kirkby, Notts. [X0905]

**Harley-Davidson.**  
1915 Harley-Davidson, 7-9 h.p., electric model, Gloria sidecar; £65.—Vale, 16, Queen Anne Av., Bromley, Kent. [X0869]

**HARLEY-DAVIDSONS**, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830]

1915 Harley-Davidson, 11J, and Gloria sidecar, perfect order; any trial; £65.—Howes, 19, Linsburg Rd., Clapham Junction. [4468]

**HARLEY-DAVIDSON** 1915 Coach Combination, model F, splendid condition; £62.—Williams, 28, Bushey Rd., Harlington, Middlesex. [4528]

**COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**LATE** 1915 Harley-Davidson Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

**RIDER** TROWARD, 78, High St., Hampstead.—Three Harley-Davidson combinations: one 1916, dynamo lighting, 65 gns., one late 1915 ditto, 69 gns. [4391]

**HARLEY-DAVIDSON** New Models in Stock. Your present machine taken as part payment.—Elee and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

**HARLEY-DAVIDSON** 1915 Combination, Harley-Davidson 1916 combination, both are as new, scarcely scratched; £65 and £80.—6, Warren St., London. [4463]

7-9 h.p. Harley-Davidson Combination, 3 months' use, electric equipment, cost £96; offers wanted, or lower power part exchange.—Write, Builder, 36a, Elm Grove, Peckham. [4425]

1915 7-9 h.p. Harley-Davidson and Canoelet sidecar, or lovely condition; £65, or would entertain 3½, or 4 h.p. combination in part payment.—Williams, 19, Portland St., Cheltenham. [X0887]

1915 Harley-Davidson, 7-9 h.p., 3-speed, Millford Empress sidecar, all grey, accessories, spares, fast, perfect; nothing better; £65; lower power part.—Rinkside, Penrhyn Rd., Sarbiton [4477]

**HARLEY-DAVIDSON**, 1915 model, 11B, 4½ h.p., single-cyl., chain drive, kick starter, 28x3 Good-year tyres, lamps and horn, Stewart speedometer, guaranteed in perfect condition; £35.—The Premier Motor Co., Aston Rd., Birmingham. [4343]

**HARLEY-DAVIDSON**, the Silent Grey; immediate delivery of 1916 models; all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817]

**Henderson.**  
HENDERSON, 4-cyl., 2-speed, chain drive; £46/10, or exchange.—Colliers, Deal St., Halifax. [4180]

**Humber.**  
HUMBER and Sidecar, 3½ h.p., 2-speed, and free; £25.—82, Shepherd's Bush Rd., Hammersmith. [4248]

**HUMBER**, 3½ h.p., 2-speed, clutch; £7; can after 9.—16, Fortune Gate Rd., Willesden, London. [X0930]

1914 3½ h.p. 3-speed Humber, lamp, etc.; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0863]

**HUMBER**, 3½ h.p., 3-speed, brand new; £56.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

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Chamois Sleeve Waistcoats, all leather, unlined, button close to throat, 2 large pockets, tan colour. All sizes. Price 32/6.  
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Black or tan Sheepskin, lined fleece (special value), short gauntlets. Price 5/3.

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## Humber.

**HUMBER** 3½ h.p. Combination, 2-speed, F.E. handle starter, spring forks; bargain, £17.—87, New Park Rd., Brixton. [X4509]

**2** h.p. Humber, Bosch mag., B. and B. carburetter, 4 lamps, generator, good order; £12/10.—Crabbrook, Langton Rd., East Molesey. [X4512]

**3** h.p. Humber, drop frame, new tank, tubes, B. and B. good tyres, overhauled, re-enamelled; bargain, £5, best offer.—27, Wilbury Av., Hove. [X4348]

**3** h.p. T.T. Humber Combination, fully equipped, 1915 2-speed sporting sidecar; £16/10, offer; must sell; enlisting.—35, Mowbray Rd., Broadbury. [X4378]

**HUMBER** Coach Combination, 3½ h.p., 1914 (late), 3-speed, tyres as new, 110 gallons paraffin, take 3 anywhere; £39, offer; owner joined up.—Seen 46, Woodgrange Rd., Forest Gate. [X4371]

## Indian

**1916** Powerplus Indian, as new; lowest £60.—16, York St., Dover. [X1005]

**INDIAN** Powerplus 1916 Combination, run 300 miles, equals new in every way; cost £115, accept £90. [X4235]

**INDIAN** 7.9 h.p., 1915 T.T., equals new; £45. [X4378]

**INDIAN** 3½ h.p. Twin, 1915, 3 speeds, in nice condition; £42.—6, Warren St., London. [X4459]

**SPECIAL** Offer.—1912 clutch model Indian, 5 h.p., in good running order; £26.—Brook, Burnham, Som. [X4235]

**5** h.p. Indian, in good running order; £25.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X3943]

**INDIAN** 1915½ 5.6 h.p. 3-speed Coach Combination; £58; solo mount part exchange.—Sinclair, East Molesey. [X0997]

**5** h.p. Indian, 1915, Millford sidecar, new Dunlops, perfect condition; £55; smart combination.—Brown, King St., Thetford. [X0463]

**INDIAN**, 1916 (July), 5 h.p., 3-speed, speedometer, 1,600 miles; trial; as new; £56.—Lieut. Faber, Eggescliffe, S.O., Durham. [X0736]

**1915** 5.6 h.p. Indian, unscratched, original tyres, absolutely perfect; £45, immediate sale; owner going to France.—Lieut. J. E. Thompson, M.T. Depot, Grove Park, S.E. [X0868]

**1916** Powerplus Indian, 3-speed, Lucas lamps and all accessories, with coachbuilt Bramble sidecar, new in August; £75.—Lieut. Broadway, c/o Dan Guy, Weymouth. [X4497]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X0925]

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Indian combination, 5 h.p., 3-speed, hand clutch, kick start, English controls throughout, Binks carburetter; 55 gns. [X4404]

**INDIAN** Combination, 1914½, just overhauled, guaranteed mechanically perfect, new chains, tyres, etc.; £52, or near offer.—437, Norwood Rd., West Norwood. [X4228]

**INDIAN**, 5 h.p., Nov., 1915, cigar-shaped sidecar to match, little used, perfect condition, new tyres, belt, £60; seen by appointment.—Marsh, 131, Warstone Lane, Birmingham. [X0994]

**INDIAN**, 1915½, 5 h.p., 3-speed, kick starter, lamps, tools, electric horn, not done 2,000, condition as new; £50, or near offer.—Evans, Paddington Manor, Abinger Hammer, Dorking. [X4376]

**1915** 7 h.p. 3-speed Spring Frame Indian and Montgomery coachbuilt sidecar, perfect condition, many improvements; any trial allowed; owner bought car; £60.—Santon, Elmfield, Taunton. [X0992]

**INDIAN** Powerplus, 7 h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £85.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X0920]

**BIRMINGHAM** Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5 h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X0921]

**1916** Indian, 5 h.p., 3-speed model, clutch, kick start, fitted with light coachbuilt sidecar, lamps, and all accessories, very little used, equal to new; price £60.—R. Ramber and Co., Ltd., Birkdale, Lancs. Tel.: 44. [X0377]

**SPECIAL** Toned 7.9 h.p. Indian, Bosch mag., 2-speed gear and clutch, spring frame, Montgomery de Luxe sidecar, electric equipment, excellent tyres, and valuable spares; first £52.—Indian, Morningside, Childs Hill, N.W. [X4287]

**1916** Model O 7.9 h.p. Indian Combination, in new condition, mileage 1,500, electric head, tail, and sidecar lamps, and horn, condition perfect; any trial; cost £105, bargain at £70, or Douglas part.—Scoones, West St., Sittingbourne. [X0986]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5 h.p. 3-speed model, £70; 7 h.p. T.T. Powerplus, £75; 7 h.p. 3-speed, spring frame, and electric light, £78; special de luxe 7 h.p. Powerplus, with spring frame, £85; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X0919]



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312.	2	<b>SUN VILLIERS</b> , 2-sp., 1915, splendid condition .....	<b>£27 10</b>
298.	2	<b>RADCO</b> 1916, 2-speed .....	<b>£27 0</b>
323.	2½	<b>LEVIS</b> , 2-stroke, flap machine .....	<b>£20 0</b>
339.	3	<b>TRIUMPH</b> , 1911, Phillips pulley, excellent order .....	<b>£20 0</b>
286.	3½	<b>ROVER</b> , 1914, T.T. Model .....	<b>£30 0</b>
259.	2	<b>ALLON</b> , 1916, 2-speed, clutch .....	<b>£36 0</b>
308.	2	<b>DOUGLAS</b> , 1914, T.T., 2-speed .....	<b>£37 10</b>
337.	3	<b>SCOTT</b> , 1914, good order .....	<b>£32 10</b>
156.	2	<b>SUNBEAM</b> , 1911, kick-starter, fully equipped .....	<b>£38 0</b>
286.	3½	<b>LEA-FRANCIS</b> Twin, 2-speed .....	<b>£35 0</b>
306.	5-6	<b>RUDGE</b> Multi & Sidecar 1913 .....	<b>£32 10</b>
309.	3½	<b>PREMIER</b> , 1914, like new, Canoelet S/car, hood, screen, many accessories .....	<b>£55 0</b>
326.	6	<b>ENFIELD</b> , 1915, fully equipped Combination .....	<b>£60 0</b>
324.	3½	<b>BLACKBURN</b> , 1915, 3-speed, countershaft and Sidecar .....	<b>£50 0</b>
303.	2½	<b>DOUGLAS</b> , 1915, T.T., overhauled .....	<b>£42 10</b>
332.	7-9	<b>INDIAN</b> , 1915, clutch, T.T. mod. .....	<b>£40 0</b>

## CARS IN STOCK.

125.	11	<b>LAGONDA</b> , 1915, 4-seater, fine order, just re-painted grey and overhauled .....	<b>£145 0</b>
127.	10	<b>BAYARD</b> , 4-seater, dynamo lighting, almost new condition, wheels .....	<b>£215 0</b>
126.	6-9	<b>BABY PEUGEOT</b> , splendidly fitted, very slightly used, 1915 .....	<b>£150 0</b>
10		<b>ENFIELD</b> , 1915, 4-cyl., dynamo lighting, electric horn, speedometer, etc. ....	<b>£170 0</b>
6-9		<b>BABY PEUGEOT</b> , 1916, speedometer, Stepmey acetylene and electric lamps, mech. horn .....	<b>£160 0</b>
140.		<b>MORGAN</b> , G.P., 1914, fully equipped .....	<b>£95 0</b>
166.	10-12	<b>PHOENIX</b> , 4-seater, good order, lamps, Stepmey, dual ignition, coachwork like new, 1910-11 .....	<b>£52 10</b>

SECOND-HAND SIDECARS from 30/-  
EXTENDED PAYMENTS ARRANGED.

SOLE LONDON AGENTS for BROUGH, CLYNO, CONNAUGHT, and METRO MOTOR CYCLES; EMPIRE and HERCULES SIDECARS.



## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN** 7 h.p. Combination, 1915, spring frame, De Luxe sidecar, fitted wind screen, hood, not done 2,000 miles, and is in perfect condition; can be seen Saturday or Sunday, or any day by appointment; price £72.—Yearley, 57, Chestnut Rd., Raynes Park, S.W. [X3878]

## Ivy.

**1914** 3½ h.p. Ivy-Precision racing machine, perfect; £30.—11, Luna Rd., Thornton Heath, S.E. [X4375]

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Ivy sidecar, 2-speed, 28 gns.; solo, 24 gns. [X4396]

## Ixon.

**SOLE** Bristol Agents for Ixons: immediate delivery. —Derby Motor Co., Bishopston, Bristol. [X0036]

**IXION**, 1916, 2½ h.p., 2-stroke, perfect order, accessories; £20.—O'Hara, Oriol House, St. Asaph, Flint. [X0734]

**1916** Ixon 2½ h.p. 2-stroke Motor Cycle, very little used, like new; £20.—Maddocks, Tattenhall, near Chester. [X0947]

**2** h.p. Two Ixon Motor Cycle, in splendid condition; £2 cash required; cheap.—Hall, Ammunition Column, Southminster. [X0741]

## James.

**JAMES** No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [X0829]

**COLMORE** Depot, 261, Deansgate, Manchester; have in stock complete range of James motor cycles. [X0833]

**1916** James 2-speed Lightweight, unpunctured, perfect, first cheque £28/10 secures.—112, Stoneleigh Rd., Perry Bar, Birmingham. [X0802]

**JAMES**—P. J. Evans, John Bright St., Birmingham.—Immediate delivery all models, including 2-stroke, 3½ h.p. twin, and 4½ h.p. big single. [X0926]

**JAMES**, 1915, 2½ h.p., 2-speed model, £31/10; deferred payments if desired.—Lamb, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X4328]

**JAMES**, 1915, 2½ h.p., 2-stroke, 2-speed, lamps, speedometer, etc., extremely good condition, little used; £28.—A. Primula, Harfield Rd., Hurst Park, W. Molesey. [X4293]

**JAMES** 1914 4½ h.p. Combination, chain drive, 3-speed countershaft, kick starter, hood, wind screen, good tyres, lamps, horn; any trial; £40 cash.—23, Albany Rd., Northampton. [X0833]

**JAMES** 1916 4½ h.p. Combination, 3-speed, clutch and kick starter, delivery from stock; £80/15; cash, exchange, or extended terms.—Elee and Co., 15, 16, Bishopsgate Av., Camomile St., E.C. [X0480]

**JAMES** 4½ h.p. Canoelet Sidecar Combination, with torpedo wind screen, all accessories, spare tyre and tube, purchased new December, 1915; cost £100 with accessories, perfect condition, not done 2,500; owner called up; what offers?—Box L2,485, c/o The Motor Cycle. [X4271]

## J.A.P.

**MOTOR** Combination, 5 h.p. twin J.A.P., 3 speeds, kick start; ride away.—Hunt, Writtle. [X4422]

**8** h.p. J.A.P. Coach Combination, perfect; £32, or exchange.—11, Luna Rd., Thornton Heath, S.E. [X4374]

**6** h.p. J.A.P., Chater-Lea, splendid condition; photo, stamp, £10; wanted, front and back springs and rods, for 1914 Indian.—Rapley, 3, Vilette-Brook St., Sunderland. [X0682]

## J.E.S.

**J.E.S.**, fitted to Triumph cycle; £9, in good condition. —Burham Motor Works, London Rd., Guildford. [X4495]

## Lea-Francis.

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Lea-Francis handle-bar clutch, countershaft gears, kick start; 43 gns. [X4402]

**LEA-FRANCIS**, late 1915, 3½ h.p. twin J.A.P. engine, Bosch mag., 3-speed countershaft gear, clutch, and kick starter, with Montgomery de Luxe 21 ga. sidecar, and Lucas accessories, all practically new, guaranteed perfect throughout; £75.—Moss, Wem. [X0942]

## Levis.

**LEVIS**, 2½ h.p. Baby, condition perfect; £20.—Farrington, Park Rd., Burslem, Staffs. [X0915]

**LEVIS**, 2½ h.p., 1915, in perfect condition; £20.—Baths Superintendent, Sevenoaks, Kent. [X4236]

**LEVIS** Popular, late 1914, guaranteed perfect order; £17/10.—Jordan, Chemist, Grays, Essex. (D) [X4490]

**LEVIS**, 1916, Enfield 2 speeds, chain drive, practically new; £35.—6, Warren St., London. [X4466]

**1916** Popular Levis, lamps, horn, etc., little used; £24 cash.—Taylor's Garage, Falmouth. [X3268]

**1916** Model Levis Popular in stock; £32.—Orrill Williams, Chapel Ash Depot, Wolverhampton. [X0936]

**LEVIS**, 2½ h.p., 1915, perfect, fast, new tyres, belt; £20.—G.M.L., 57, Gloucester Gardens, Paddington. [X4370]

**1916** Levis Popular, lamps, horn, etc., condition as new; £25/10.—8, Brooke Rd., Stoke Newington, N. [X4254]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [X0804]



## MOTOR CYCLES FOR SALE.

## Levis.

LEVIS, 1914, 2½ h.p., 2-stroke, good tyres, lamps, very reliable; £19/10.—Long, 40, Ferrars Rd., Oswestry. [4278]

1916 Levis Popular, lamps, horn, knee-grips, 100 m.p.g.; nearest £20.—Lieut. Davies, M.G.C., Wool, Dorset. [X0861]

1916 2½ h.p. 2-speed Chain Drive Model E Levis, condition as new; £37/10.—Wilkin and Co., Hunters Bar, Sheffield. [X0961]

LEVIS 1916 Latest Lightweight, one special sample in stock; also a few bargains in shop-soiled.—Laytons' Garage, Bicester, Oxon. [X0506]

LEVIS, 1914, 2½ h.p., 2-speed gear, little used, in splendid condition, and good going order; £22.—Turner, Alexandra Rd., Hounslow. [4442]

1916 Popular and model E Levis in stock for immediate delivery; cash, exchange, or easy terms.—Wilkin and Co., Hunters Bar, Sheffield. [X0963]

LEVIS, 1916 (July), 2½ h.p., condition as new, not done 150 miles; owner going to France; £25, or nearest offer.—Rodway, 143, Baulh Hill, Norwood, S.E. [X0906]

LEVIS, T.T., 2½ h.p., 1915, picked engine, long brass exhaust, new tyres and belt, lamps, mechanical horn, just overhauled and enamelled scarlet, full kit tools; bargain, £24; photo.—Argall, Daniel St., Truro, Cornwall. [4266]

## Matchless

MATCHLESS 1913 6 h.p. 2-speed Coach Combination; £42/10.—Colliers, Deal St., Halifax. [4189]

8 h.p. Matchless Combination, 1914, 3-speed; £55.—21, Princess' Parade, Church End, Finchley. [4453]

MATCHLESS, 8 h.p., sidecar, first-class condition, spares, complete; sacrifice £45.—Pritchard, Druid, Corwen. [X0889]

MATCHLESS 1915 8B Combination, all accessories, Lucas head lamp, horn, Stewart speedometer, etc.; price £72.—Edwards, Farmer, Barksides, Essex. [4340]

MATCHLESS 8 h.p. Coach Combination, late 1913, wind screen, hood, luggage and petrol carrier, electric lights, splendid condition; £48.—R. Hammond, Queen St., Bilston. [X0917]

MATCHLESS-J.A.P., 8 h.p., overhead, late model, Bosch, Cover, lamps, 3 belts, tools, mechanical horn, knee-grips, do. 80; £40.—Nye, Monaise, R.F.C., Fernwood Rd., Newcastle. [4244]

MATCHLESS, 1913, 6 h.p., Chater-Lea sidecar, 2 speeds, free, guaranteed, splendid condition, only wants seeing and trying; £44.—3, Lushington Rd., Wrothamley Rd., Harlesden. [4431]

MATCHLESS, 1914, 7 h.p., 3-speed, kick start, model 8B, in fine condition; £55; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4325]

MATCHLESS, 8-10 h.p., overhead J.A.P., T.T. bars, long flexible exhausts, Bosch, Samspry, Badcocks, re-enamelled, engine thoroughly overhauled; £30, offers invited.—Allen, 214, Broadway, Hendon, London. [X0858]

MATCHLESS, 1915½, 7-9 h.p., all chain drive, 3-speed, lamps, speedometer, horn, tyres, as new, 2-seater S.C., hood and screen; cost £115, sacrifice at £75, or near offer.—Chislett, 280, Battersea Park Rd., London. [4418]

WAR Bargain.—1914 8 h.p. Matchless chain drive combination, used 4 months only owing to war, original tyres as new, 2-speed, kick starter, etc., etc., everything perfect and guaranteed; first £52 secured.—Bon Marche, Chesterfield. [X0885]

## Minerva.

MINERVA, 2½ h.p., mag., good condition; £8/10, or near offer.—Bird, Florist, Daventry. [X0583]

## Motosacoche.

2 h.p. Motosacoche, mag., good condition; £7/10.—37, Howard Rd., Stoke Newington, London, N. [4290]

MOTOSACOCHE, 2 h.p., grand going order, Bosch, Empire de Luxe, new Dunlop tyre and belt.—20, Norwood Av., Southport. [X0587]

## New Hudson.

NEW Hudson Big Six, 1915, with coachbuilt sidecar, little used; £60.—Galbraith, 11, Billiter Sq., London. [4470]

NEW Hudson, 2½ h.p., 3-speed model, excellent condition; £23/10.—Motor Exchange, Horton St., Halifax. [4183]

NEW Hudson, 2½ h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

NEW Hudson 1914 Coachbuilt Combination, 3 speeds, kick starter; £28, lowest; must sell this week.—76, Summerley St., Earlsfield, S.W. [4441]

NEW Hudson Model C, 2-stroke, 2-speed, £38; just arrived 'iron works; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phone: Walthamstow 169, or Hornsey 1956. [4331]

NEW Hudson (late 1913), 3½ h.p., Speedwell sidecar, 6,000 miles only, Armstrong 3-speed gear, as new, electric head lamp, Stewart speedometer, exhaust whistle, numerous spares, including belt; £55.—Apply, W. Cook, Barley, Royston, Herts. [4284]

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Our style of doing business is shown by the following entirely unsolicited testimonial:

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NO FUSS, NO BEATING DOWN,  
NO DELAY, True to your word."

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SOME 1917 MODELS  
ACTUALLY IN STOCK.

B.S.A., 4½ h.p., chain drive, 1917 model . . . £66 0  
B.S.A., 4½ h.p., belt-cum-chain, 1917 model £64 0

Canoelet Sidecars from 13 gns. extra.

ENFIELD 6 h.p. standard Combination and their latest Sidecar, 1917 model . . . £94 10

ENFIELD, 8 h.p., elec., hood and screen. . . £119 7

ENFIELD, 3 h.p., kick start (touring and T.T. models), 1917 models . . . each £57 15

ENFIELD 8 h.p. Combination, 1917 model £92 12

ENFIELD 8 h.p. Combination, with hood and screen, 1917 model . . . £102 2

HARLEY-DAVIDSON, 16F, and Sidecar. . . £105 15

LEVIS, 2½ h.p., Popular . . . £32 0

LEVIS, 2½ h.p., Model E, 2-speed Enfield. . . £47 10

CALTHORPE-J.A.P., 2-speed Enfield gear £37 16

GOVERTY EAGLE, 1½ h.p., 2-sp., 2-str. £39 0

ALLDAYS ALLON, single-speed . . . £38 0

ALLDAYS ALLON, 2-speed . . . £42 0

ALLDAYS ALLON, 2-speed, clutch . . . £45 0

## SECOND-HANDS.

ENFIELD 6 h.p. 1916 Commercial Comb'n £84 0

Nearly new Sidecar 11 gns. extra.

GLYNO 6 h.p. 1914 Com., 3-sp., kick start, 2-seater Sidecar, and accessories . . . £52 0

TRIUMPH, 1914 (late), 3-sp., coach S'car, Lucas access., Watford speedometer. . . £49 10

MATCHLESS, 1914 (late), 7 h.p., Model 8B £55 0

TRIUMPH, 1912-13, 3½ h.p., 3-speed . . . £34 10

DOUGLAS, 1913, 2½ h.p., 2-sp., kick start £36 10

SUN-PRECISION, 1912, 3½ h.p., T.T. bars, lamps, horn, 1916 carburettor . . . £28 10

RUDGE Multi, 3½ h.p., 1914, all accessories £34 10

JUNO-VILLIERS, 1914, 3½ h.p. . . £33 10

JAMES, 1915, 2½ h.p., 2-sp., new tyres . . £31 10

HARLEY-DAVIDSON, 1916, Model 16F, Canoelet Sidecar, F.R.S. equipment. . . £82 10

ROVER, approx. 1908, new tyres, Grado. . . £32 10

TRIUMPH, late 1913, F.E., P. & H. access. £32 10

ALLDAYS ALLON, 1915, 2-speed, access. £36 10

NEW HUDSON-J.A.P., 1912, 2½ h.p. . . £18 10

ROVER, 1913½, 3½ h.p., lamp, Stewart horn P. & M., 1913, 2-speed, Lucas accessories. £32 10

RADCO, 1915, single-speed, Dunlop tyres. £18 10

RADCO, 1914, single-speed, Dunlop tyres. £15 15

LEVIS, 2½ h.p., 1916, Popular model . . £30 0

ALLON, 1915, single-speed, Lucas horn. . £29 10

A.J.S., 1914, 2½ h.p., 2-sp., all-chain, k/start £38 10

WOLF, 1916, 2-sp., 2-sp., ridden approx. 200 miles, Lucas access., hand clutch £31 10

ENFIELD 1913 6 h.p. Com., coach Sidecar, speedometer, lamps. Bargain . . . £47 10

RUDGE, 1912, 3½ h.p., 2-sp. Sidecar, access £28 10

B.S.A. 1916 de luxe AUTO-WHEEL . . . £10 10

SIDECARS.—Always a good assortment of good makes of Sidecars in stock.

## CARS.

FORD (Nov., 1915), magnificently fitted up, many spares, recently overhauled by Ford Co., £115

SAXON 1915 11 h.p. 2/3-seater, Goodyear heavy tyres uncut, new Steeple wheel and Goodyear tyre unused, new Watford speedometer, thoroughly overhauled . . . £112 10

HUMBERSTEAD, 1913, air-cooled, 8 h.p., hood, screen, all mechanical parts taken down, and where worn replaced, all new Dunlop tyres. Car in really first-class condition . . . £65

MOTOR CYCLE EXCHANGES ENTERTAINED.

DEFERRED PAYMENTS if desired. Reasonable suggestions invited. Courtesy and promptitude given every customer.

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Only depot in this district.  
'Phone: Hornsey 1956.  
Hours—9 to 8-30.  
Thursdays, 1 o'clock.

## MOTOR CYCLES FOR SALE.

## New Imperial.

NEW Imperial, 916, August, 2 speeds, absolutely as new; £30.—135, Ewell Rd., Surbiton. [4239]

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

NEW Imperial, 1917, new 2½ h.p. 2-speed model, in stock; £38.—Motor Exchange, Deal St., Halifax. [4181]

NEW Imperial 1916 Current Models in stock, also one or two bargains, shop-soiled.—Laytons' Garage, Bicester, Oxon. [X0507]

1916 New Imperial-Jap, 2 speeds, lamps, and horn, run under 300 miles; £30.—52, Midway Grove, Mildmay Park, London, N. [4473]

1915 New Imperial-Jap, 2 speeds, lamps, accessories, fine order; must sell; £24, bargain.—43, Whitehorse Rd., Thornton Heath. [4476]

NEW Imperial-Jap, late 1915, 2 speeds, variable ignition, 2½ h.p., lamps and tools, only run 2,500 miles; owner joining up; price £28.—Abraham, Billingshurst, Sussex. [X0896]

NEW Imperial-Jap, 2½ h.p., 2-speed, new July, 1916, head and tail lamps, Lucas horn, mileage under 700, splendid order; £30.—Heary, Mill Park Av., Hornchurch, Essex. [4275]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light fontist, kick starter, in 'Jules' models; also one shop-soiled model £35.—87-9, John Bright St., Birmingham. [X0918]

NEW Imperials, the handy lightweights, with J.A.P. engine and 2-speed gear. We are the accredited agents for Manchester and Liverpool districts, and can offer immediate delivery from stock; extended terms and exchanges arranged. Call or write.—Colmore Depot, 31, Rehsaw St., Liverpool, and 261, Demisgate, Manchester. [0614]

## Norton.

NORTON Big Four Combination, brand new, actually in stock; £87.—6, Warren St., London. [4455]

1915 T.T. Norton, lamps, horn, knee-grips, perfect order; £43.—Merry, Weedon Rd., Northampton. [X0809]

NORTON Combination, brand new No. 16 3-speed T.T. countershaft model, just arrived.—Moss, Wein. [X0943]

1916 3½ h.p. T.T. Countershaft Norton, all chain drive; £68 gns.—Wilkin and Co., Hunters Bar, Sheffield. [X0953]

1916 3½ h.p. T.T. Norton, Philipson puller, F.R.S. lamps, Stewart horn; £45.—Wilkin and Co., Hunters Bar, Sheffield. [X0954]

NORTON, 1916, T.T., 3½ h.p., countershaft, lamps, horn, speedometer, large leather luggage carrier, etc.—Elice and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0431]

## N.S.U.

1911 3½ h.p. N.S.U., clutch model, in good running order; £26.—Wilkin and Co., Hunters Bar, Sheffield. [X0960]

N.S.U., 3½ h.p., 2-speed, free engine, good useful machine; £17/10.—Motor Exchange, Horton St., Halifax. [4182]

## N.U.T.

1914 (late) 3½ h.p. Twin N.U.T., 3-speed, clutch, lamps, horn, etc., good tyres, belt, just overhauled; £44.—Lt. Isard, Pitsea Camp, Essex. [X0806]

1914 6 h.p. N.U.T., coachbuilt sidecar, chain drive throughout, 2-speed, clutch, new tyres, lamps; £55.—Wright, C. Fraser, 24, Cavendish Rd., St. John's Wood, N.W. [X0738]

## O.K.

O.K.'s in stock, M.A.G. 242/10, J.A.P. £38.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [4260]

O.K. Precision, 4½ h.p., 3-speed, usual equipment, in fine order; £25.—14, Dodbrooke Rd., West Norwood. [0856]

1915 O.K., 2½ h.p., 2-speed, usual equipment, excellent condition; £24.—Newnham, 223, Hammer-smith Rd., W. [4449]

## P. and M.

P. and M. Coachbuilt Combination, full accessories, new tyres; trial run; £31/10, lowest.—33, South Park Hill, Croydon. [4242]

P. and M., coachbuilt sidecar, F.R.S., 2-speed, lamps, horn, etc., fine condition; sacrifice £29/10.—Brooks, Jeweller, Leigh, Lancs. [X0807]

1913 3½ h.p. 2-speed P. and M., kick starter, and Milford sidecar, condition as new; £35.—Wilkin and Co., Hunters Bar, Sheffield. [X0957]

1912 3½ h.p. 2-speed P. and M. and sidecar, in lovely condition, Lucas horn, and Jones £5/5 speedometer; £54.—Wilkin and Co., Hunters Bar, Sheffield. [X0956]

P. and M. 3½ h.p. Motor Cycle, coachbuilt sidecar, hood, screen, lamps, etc., bought November, 1914, looks almost new, mileage about 3,000, unused winter months, very powerful; any trial or examination; 50 gns., cost £85.—Davies, Emlynfan, Newcastle Emlyn. [X0899]

## Peugeot.

5-h.p. Twin Peugeot, Phenix torpedo sidecar, everything perfect; £25.—Brown, King St., Thetford. [X0464]



## MOTOR CYCLES FOR SALE.

## Peugeot.

5-6h.p. Peugeot Twin, B. and B., Simma mag., Mahon clutch; £15, offers.—Lieut. Collis, Royal Aircraft Factory, Farnborough, Hants. [X0937]

1913 Baby Peugeot, Model de Luxe, speedometer, Stepney, lamps, tyres as new, paintwork extra, just overhauled, receipt shown; £95; combination part.—10, Norwood Crescent, Southport. [X0951]

## Pilot.

ONE Pilot Motor Cycle, 4½h.p. Precision engine, with sidecar, complete with lamps, Bosch, variable gear, in good condition; £39.—Hodgson, Rock House, Louth. [X0860]

## Precision.

PRECISION, 4½h.p., 2 speeds, free engine, coach sidecar; £29/10.—Motor Exchange, Horton St., Halifax. [X188]

## Premier.

PREMIER 2½h.p. Lightweight, all on, excellent condition every way.—Brooker, Hollies, Petworth. [X0740]

1914 3½h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [X0823]

PREMIER, 1912, 3½h.p., new tyres and belt, clutch; any inspection or trial; £17.—M. Tretaway, Roche, Cornwall. [X0846]

RIDER TROWARD, 78, High St., Hampstead.—Premier, 1914, 3½h.p., countershaft gears, perfect order; 29 gns. [X4399]

PREMIER, 2½h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Laytons' Garage, Biester, Oxon. [X0508]

1914 3½h.p. 3-speed Countershaft Premier, kick starter, and Millford coachbuilt sidecar, lamps, horn, etc.; £45.—Wilkin and Co., Hunters Bar, Sheffield. [X0955]

PREMIER, 1914, 3½h.p., 3-speed countershaft gear, with all-cane sidecar with panniers, tyres new, speedometer, lamps, and all sundries; £42.—Freeth, 5, Cornwall Parade, Church End, Finchley. [X4503]

## Quadrant.

QUADRANT, 3½h.p., 3-speed, and C.B. sidecar, in real good order; £24.—C. Walker, Scunthorpe, Lincs. [X4515]

44 h.p. Quadrant, 1912, Armstrong 3-speed gear, splendid condition, with coachbuilt sidecar; £32/10.—N. Clifton, Knockholt, Kent. [X4255]

32 h.p. Quadrant, new Grado gear, 2 new tyres, Simms, B. and B., coach sidecar, thoroughly overhauled; £16.—298, West Green Rd., N. [X4511]

3 h.p. Quadrant, good tyres, engine thoroughly overhauled, ready to ride away; £4/10; Saturday afternoon.—Rogers, 9, Mansell Rd., Acton Vale, W. [X0842]

QUADRANT, 4 h.p., 2-speed, free engine, and sidecar; £29/10; 7-h.p. twin, 2-speed, chain drive combination; £45/10.—Collier, Deal St., Halifax. [X184]

QUADRANT, 1914, perfect condition, just overhauled, 4½h.p., 3-speed, and clutch; £35; speedometer, done 4,000 miles.—Drew, H.M.S. Thames, G.P.O. [X0844]

## Radco.

RADCO 1914 2½h.p. 2-stroke Lightweight, U.H. mag., Amac carburettor, Pedley extra heavy tyres, recently overhauled and fully guaranteed; £14.—The Premier Motor Co., Aston Rd., Birmingham. [X4344]

## Rex.

REX 1911 7-9h.p. Twin, handle starting; £23/10, or exchange.—Collier, Deal St., Halifax. [X185]

REX, 1912, 6h.p. twin, new tyres, just overhauled, sidecar, complete; £35.—125, West St., East Grinstead. [X0733]

1913 6h.p. Rex, Canelet sidecar, splendid condition; no reasonable offer refused.—57, Abbeyhills Rd., Oldham. [X0928]

1911 6h.p. 2-speed Rex and coachbuilt sidecar, perfect running order; £18.—Wilkin and Co., Hunters Bar, Sheffield. [X0959]

1912 6h.p. 2-speed Rex and cane sidecar, in lovely condition, lamps and horn; £27.—Wilkin and Co., Hunters Bar, Sheffield. [X0959]

REX, 5-6h.p. twin, T.T. clutch model, tyres and belt new, machine in splendid condition; £20.—14, Dodbroke Rd., West Norwood. [X1543]

1914 5-6h.p. Rex Sidette Combination, 3-speed, etc., full touring equipment, paraffin fittings; £48.—936, Alum Rock Rd., Birmingham. [X0837]

REX 5-6h.p. Combination, 1912, 2 speeds, clutch, B. and B., lamps, splendid order; trial; £22; exchange lightweight part.—553, Caledonian Rd., Holloway. [X4237]

REX 6h.p. Combination, 1913, new tyres throughout, just re-bushed and overhauled; owner ordered France; accept £36.—9, Market Sq., Biggleswade. [X0901]

1914 Rex 6h.p. Twin, 3-speed combination, with 2-seater sidecar, complete with accessories, in first-rate order; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [X7493]

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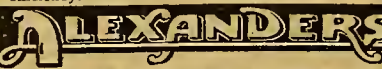
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## Rex-Jap.

REX-J.A.P. 6-8h.p. Combination, cane sidecar, 2 speeds, free engine, in perfect condition; any trial; 1913; £40, all accessories.—10, Clifton Rd., Luton. [X4274]

## Roc.

ROC 3½h.p. Motor Cycle, 2-speed gear, very fast and powerful; any trial; must sell; sacrifice £34.—Eyers, Orchard Lane, Southampton. [X4491]

## Rover.

ROVER, new 1917 latest model combination, in stock.—Moss, Wem. [X0944]

ROVER, 1918, 4h.p., T.T., Phillips pulley, almost new, fully equipped; £45.—Below. [X4464]

ROVER, 1914, 4h.p., 3 speeds, fully equipped, as new; £36; with coachbuilt sidecar, £45.—6, Warren St., London. [X4464]

ROVER, 3½h.p., clutch model, sound, but not smart; £22, or your reasonable offer.—Laytons' Garage, Biester, Oxon. [X0509]

ROVER Motor Cycle and Sidecar, 3-speed gear, free engine; £40.—George Newman and Co., 307, Euston Rd., London. 'Phone: Museum 1568 and 1569. [X4270]

1914 Rover Coachbuilt Combination, clutch, 3-speed, wind screen, luggage grid, 3 lamps, perfect condition; £36, or nearest offer.—Barton, 134, Earl's Court Rd., W. [X4435]

P. J. EVANS, sole Birmingham Rover agent.—Immediate delivery T.T., semi T.T. models, with or without Phillips, also latest countershaft models.—87-91, John Bright St., Birmingham. [X0922]

1917 Rover Combination, 3-speed countershaft gear, all the latest improvements, as illustrated in "The Motor Cycle" of Sept. 25th; price complete £89/9.—W. Brandish, Triumph Garage, Coventry. [X9654]

## Royal Ruby.

RIDER TROWARD, 78, High St., Hampstead.—1915 Royal Ruby, 2-speed, 2-stroke; 25 gns. [X4403]

1915 2½h.p. Royal Ruby, splendid condition; £20.—Wilkin and Co., Hunters Bar, Sheffield. [X0962]

ROYAL Ruby, 2-stroke, 2-speed model, quite new, in stock; £36/10.—Davenport Vernon and Co., High Wycombe. [X0859]

ROYAL Ruby, 2-stroke, 2½h.p., 1915 (late), condition as new; illness; £20.—90, Pretoria Rd., Streatham, S.W., after 8, or write J.K. [X4279]

## Rudge.

31 h.p. Rudge Multi; £50; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [X0864]

1912 3½h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [X0785]

RUDGE, 3½h.p., 2-speed, free engine, and sidecar; £29/10.—Motor Exchange, Horton St., Halifax. [X4186]

RUDGE Multi, 3½h.p., T.T., Isle of Man model, 1915, with or without sidecar.—38, Radnor Drive, Liscard, Cheshire. [X4303]

RUDGE, 1914, 3½h.p., clutch, splendid condition; must sell; £26.—Gifford, Hut 83, R.N. Air Station, Sleaford, Lincs. [X4245]

RIDER TROWARD, 78, High St., Hampstead.—1914 Rudge Multi 5-6h.p. coachbuilt combination, fully equipped; 37 gns. [X4401]

RUDGE Multi, 1914, 5-6h.p., excellent order; £30; will consider a lighter machine in exchange.—46, Hillcrest Rd., Acton. [X4445]

RUDGE Multi, 1913, completely overhauled, nearly new coachbuilt sidecar, sound lot; £35.—D.H., 7, East Rd., Maidenhead. [X4499]

RUDGE Multi, 1913½, 3½h.p., hand clutch, perfect condition throughout; 24 gns.—245, Hammersmith Rd., London, W. [X4504]

1914 Rudge Combination, 3½h.p., 3-speed, free engine, lamps, horn, accessories, new condition; owner joined up; £39/10.—8, Warrington Rd., Ashton-in-Makerfield, Lancs. [X4292]

1913 Rudge, new tyres, lamps, horn, Senspray, excellent running order; officer proceeding overseas; nearest £22; Bournemouth district.—Box 424, c/o The Motor Cycle. [X0862]

RUDGE Multi, late 1913, 3½h.p., P. and H. lamp set, speedometer, excellent condition throughout; bargain; £27/10.—Cass's Motor Mart, only address, 5, Warren St., Euston Rd., W. Museum 623. [X4521]

RUDGE Multi, 1914, 3½h.p., in fine order, £34/10; also a 1912 2-speed, with cane sidecar, £25; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [X4327]

## Scott.

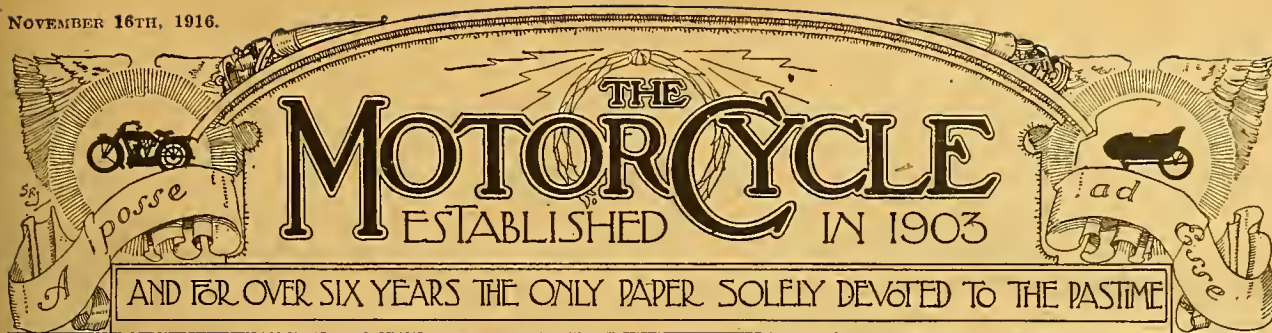
COLMORE Depots, Birmingham and Manchester, for Scott motor cycles. [X0806]

SCOTT, 1916, with Millford wicker sidecar, perfect condition; £60.—Potts, 33, Bigwood Av., Hove. [X4354]

1913 3½h.p. Scott, with lamps, etc., perfect running order; £20, or exchange for lightweight.—119, Alliance Av., Hull. [X0827]

SCOTT, 1914, 3½h.p., 2-speed, new head lamps, Covey speedometer, splendid order, with new Canelet sidecar, all new tyres and tubes; £45, lowest.—Ashworth, Dursley, Glos. [X0453]





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## Permits for New Motor Vehicles.

**S**IMULTANEOUSLY with the issue of the Board of Trade returns for October, showing that exports had increased roughly 100%, came the announcement by the Minister of Munitions that no further work upon motor cycles or cars could be performed after November 15th except by permit. We referred to the Order in our last issue, and since then we have had an opportunity of testing the feeling of the trade in the matter. As we have already pointed out, the majority of motor manufacturing firms are at present engaged almost wholly upon munitions of war, and others who were producing motor cycles made a point of exporting as big a proportion as possible. To those firms who were doing their utmost to follow the exhortations of the Board of Trade to specialise on the Overseas market, the ruling came as a great surprise, and for a few days considerable disorganisation of works occurred. Motor vehicles are not made in a week, and, obviously, plans for an output, however small, must be laid well in advance. At first, manufacturers regarded the edict as drastic and serious, and very quickly the representative firms gathered together in order to decide upon a plan of action. It was felt that if the Government intended to control the output of motor vehicles by freely issuing permits as in the case of steel and other valuable war material, then no one could complain, as war requirements must receive priority. Some manufacturers, however, regarded the order as a death blow to trade in new vehicles as well as repairs. That such views were ill-founded is confirmed by the secretary of the Motor Cycle Manufacturers' Union to whom we broached the subject subsequent to an interview he had with the Government department concerned. Mr. Bednell points out that the Government are not obstructionists; they still regard Overseas trade as of the greatest importance, that their action was merely to put the production of motors into line

with that of steel, for instance, and that, where it can be proved that the output of munitions will not be hindered or war requirements affected by the making of motor vehicles, then permits will be freely issued. This announcement should relieve those members of the trade who had interpreted the Order in the blackest manner possible. Those manufacturers who have been able to continue in a quiet way have had the greatest difficulty in obtaining adequate supplies of material, and undoubtedly the consideration of supplies for the Army and Navy has been one of the governing factors in the decision. Again, it is possible that the Minister of Munitions has been misled as to the number of workers engaged in the output of motor vehicles, and considers that such men will be more usefully employed in their country's cause on strictly Government work. This, of course, is reasonable enough, but surely one could well have expected a more extended intimation. Were permits not to be issued freely, the rulings of different Government departments would be entirely at variance, for as the matter now stands there are thousands of pounds worth of incomplete cars and motor cycles lying about the different works throughout the country, which with the attention of a little more labour would mean a large number of valuable vehicles which could be exported and so bring to this country gold to assist our exchange. We have been told throughout that "silver bullets" are as necessary in this war as man power and munitions, and as we have shown, there is little reason to suppose that there is to be a sudden reversal of such an obvious view of the situation.

Finally, the Order is an interesting specimen of ambiguity so typical of Government departments. A number of different interpretations of the Order were made during the first two or three days, and we encountered manufacturers of sidecars and bodies, who with but a week in hand were at a loss to know whether they were covered by this ruling or not.



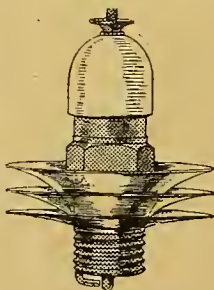


### Big Back Tyre v. Spring Frame.

My colleague's comparisons between the four-cylinder Henderson (rigid frame) and the flat twin A.B.C. (spring frame) were naturally of intense interest to me, as I know both machines well, though all my Henderson experience has been garnered with the models which have two-speed epicyclic hubs. His point that a flabbily inflated 3in. back tyre is a tolerable substitute for a spring frame is certainly true up to a point. On decent roads a soft back tyre of great size, in conjunction with a good spring fork, ensures reasonable comfort. But this combination cannot be termed ideal. I do most of my riding on very bad roads, and I do not find that a loose 3in. tyre is comfortable enough for me, or even that it approaches the comfort of a good sprung frame with a hard back tyre. There are two more sub-aspects of the same point which demand attention. Three-inch tyres, loosely inflated, are very prone to side-slip where provocable to skidding exist; they are not nice riding, for example, on winter roads in Devon or Durham, though well enough on our wide straight trunk roads, with hard surfaces. Further, they have not been applied to  $3\frac{1}{2}$  h.p. machines, nor is it likely that they will be.

### A Sparking Plug Cooler.

The accompanying sketch represents two small fittings which will soon be placed on the market by Mr. F. M. Fletcher, of Bamford, near Rochdale. They consist of two attachments intended to keep a sparking plug cool in a two-stroke or a super-efficient engine. One of them takes the place of the ordinary copper-asbestos washer, being threaded over the plug before it is screwed into the engine; its central ring closely resembles the ordinary washer, but carries three dished radiating fins of thin copper (about 3in. in diameter), which radiate heat away from the butt of the plug and the surrounding cylinder metal. The auxiliary device is a light inverted aluminium thimble, which screws on the outer end of the central electrode, below the terminal nut; it serves the double purpose of helping to cool the central electrode, and also of keeping the insulator dry in rainy weather, like the so-called "plug umbrellas" already on sale for the latter purpose. I have tested both articles, and find that the radiating fin washer makes all the difference to a plug; without this washer my two-stroke usually stops (from "silent discharge"?) up a certain hill; with the washer it invariably climbs it. I did not find the umbrella cooler equally efficient in tests with the same plug and engine. It must make some difference



Cooling plug device.

to the cooling of the sparking plug, but it did not prevent overheating of the plug in this particular test. It would be interesting to know whether, in the case of incandescent electrodes, the centre or outer electrode is more commonly the sinner, or whether both are *participes criminis*. The above tests were made with a thick central electrode, and rather a thin side electrode. If I can fake up a plug with a thin centre electrode and a thick side point (resembling that on the Lodge racer), I might find that the umbrella cooler stopped such a plug from overheating, whilst the triple copper fins had no effect.

### Overheated Plugs.

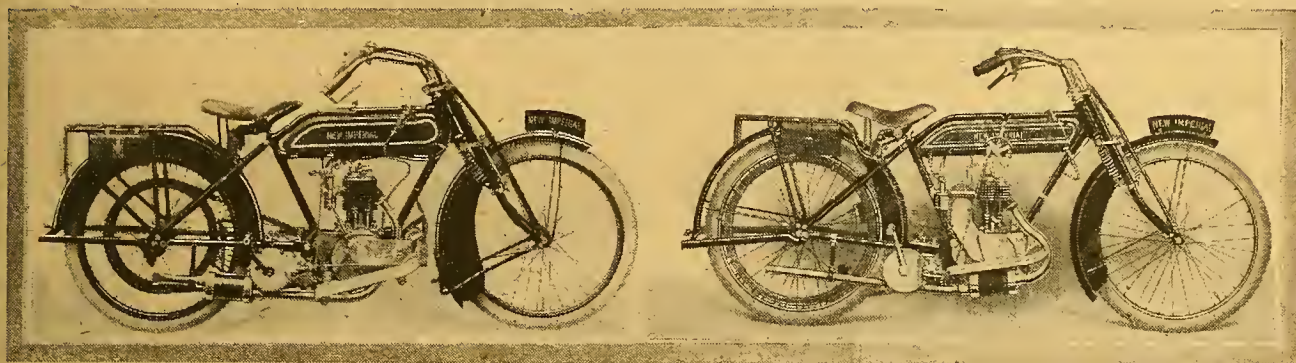
Mr. R. J. Cosh complains that he cannot find plugs which will stand up on his  $3\frac{1}{2}$ -h.p. flat twin Brough, and enquires as to my luck. I can overheat practically any standard plug with the A.B.C. if I want to, *i.e.*, by driving it hard on full throttle on second gear ( $9\frac{1}{2}$  to 1), a test which is rendered feasible by the excellent balance of the engine; indeed, I usually apply this test to sample plugs, and that not infrequently on the level. In normal road work I experience very little plug trouble with this engine. It does not overheat a good standard plug at speed on the third and fourth gears, and, when second gear is requisitioned, the road very seldom admits of anything like full throttle. I have had far more trouble with overheated plugs on smaller engines.

If I were entering a small engine for a six days trial, including such climbs as Applecross and Torna-press, I should pay very special attention indeed to the choice of a plug; I have no manner of doubt that hundreds of failures on test hills in the big reliability trials of the past have been simply and solely due to unsuitable sparking plugs. On the other hand, a big engine of the "woolly" type, driven at considerably under its full efficiency, seldom heats up a plug. In this connection a very interesting fact was announced last week by Mr. Ludlow Clayden, late a member of Messrs. Iliffe's staff, and now in New York. The standard American plug is larger than ours, but the American racing experts have regularly used the European metric plug on their racing engines since the autumn of 1913. The greater the diameter of the plug, the greater the separation between the central electrode, and the cooling jacket of the engine (in their case, a water chamber; in ours, fins). So plug manufacturers appear to be in something of a dilemma. On the one hand, thicker insulation seems desirable, if the huge electrical pressures generated at modern engines' rates of r.p.m. are to be resisted. On the other hand, a plug no thicker than a pencil would apparently solve the cooling problem. Progress is being made very rapidly, and I have no fears that our plugs will not somehow keep pace with the developments in engine design.



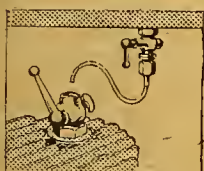
# THE NEW IMPERIAL CO.'S LATEST MODELS.

General Design Retained, with many small Detail Improvements.



New Imperial  $3\frac{1}{2}$  h.p. model with three-speed countershaft gear, clutch, and kick-starter, and the  $2\frac{1}{2}$  h.p. two-speed lightweight fitted with clutch and kick-starter.

THE New Imperial Cycles, Ltd., of Princip Street, Birmingham, are principally known for their excellent  $2\frac{1}{2}$  h.p. four-stroke lightweight, a sturdy little machine, capable of any amount of hard work, and having a very fair turn of speed. Their other lines are the  $2\frac{1}{2}$  h.p. lady's model, the  $3\frac{1}{2}$  h.p. single, and the 6 h.p. twin machines. These last two models are essentially reliable productions; but, unfortunately, the company, by reason of labour shortage and prevailing conditions, have only been able to turn out a very small number. The conditions were more favourable to the lightweight, and the  $2\frac{1}{2}$  h.p. single has been produced regularly.



Neat priming arrangement for starting on the  $2\frac{1}{2}$  h.p. machine.

## Few Alterations.

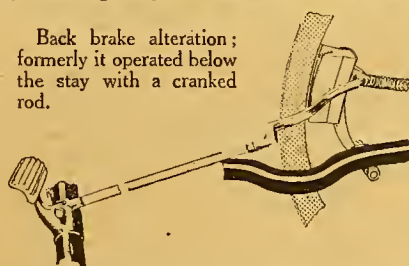
There are certain alterations to small points, but substantially the 1916 model is being retained. The J.A.P. engine  $70 \times 76$  mm., giving 292 c.c., is too well-known to need description. The magneto is gear driven, but a new engine is under test, which has chain drive to the magneto placed well up behind the cylinder, and no doubt this will be adopted as standard in the future. The frame has been considerably strengthened by a



Method of constructing the frame with large head and seat lugs and supports for the tank.

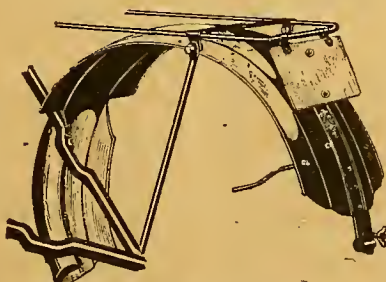
special head lug and a combined seat tube and under tube lug, whilst special lugs on the under tube form a very strong support for the tank. Clutch, gears, and transmission remain as before, except for certain alterations to the kick-starter, also to guard against the possibility of

the lock nut on the clutch end of the countershaft working loose a small twelve-sided cap is fitted, with a peg at one side fitting into a hole in the clutch plate, so preventing any movement of the nut.



Back brake alteration; formerly it operated below the stay with a cranked rod.

The back mudguard has been improved by increasing the width, and now affords ample protection. The back brake has been redesigned, and is now placed above the lower stays. A neat idea is the enclosing of the gear control quadrant in an aluminium cover. A small priming tap on the engine head and a pipe leading from the petrol tank are provided to facilitate starting, although it seems hardly



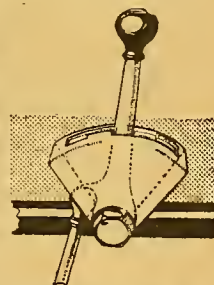
Improved back mudguard with side extension, on the  $2\frac{1}{2}$  h.p. lightweight.

necessary, as the engine in good condition fires very readily. A new pattern semi-T.T. handle-bar, all black finish to the wheels, and some alterations to the usual colours and lining of the tank, form the other departures from present practice.

## Serviceable Lightweights.

These mounts are essentially lightweights, but with many of the refinements

of the heavier mounts they form reliable solo machines. One machine in constant use in the works has made numerous successful runs between Birmingham and the South Coast, and has a very large mileage to its credit. The big brothers of the lightweight, the  $3\frac{1}{2}$  h.p.  $85.5 \times 85$  mm., and the 6 h.p. twin  $76 \times 85$  mm., are very creditable productions on good standard lines. No particular alterations are to be made, but, as previously mentioned, these two models cannot be supplied at the present time. Prices remain practically the same as in 1916.



Aluminium cover to the gear lever quadrant.

## THE JOHANNESBURG-DURBAN RECORD.

NOW that the African campaign has been nearly brought to an end increasing interest in South Africa is being devoted to motor cycling. One of the most recent events is the breaking of the record from Johannesburg to Durban. The fastest train between the two towns takes 23h. 22m., and on September 7th Mr. D. Owen, on an Indian and sidecar fitted with Bates tyres, completed the journey in 16h. 43m. On September 13th, however, Mr. McKeagh, on an Enfield, improved on this time by fifty-two minutes. Not to be beaten, Mr. Owen made another attempt, and completed the journey in 14h. 50m., no less than  $8\frac{1}{2}$  hours quicker than the time taken to do the journey by rail, thus winning back the record with an hour to spare. Taking into consideration the rough nature of the road, the number of obstacles and gates, this is a really remarkable performance, and one, we are informed, which is not likely to be beaten for some considerable time. Mr. Owen reports that his tyres at the end of the journey were in first-class order.



# A Run to the Welsh Coast.

THE writer recently had the opportunity of comparing the running of his standard Clyno sidecar outfit with that of a model supplied to the War Office. It will be interesting at the commencement to compare the chief points of difference in the design. These are the substitution of Brampton forks, reinforced lugs to the front portion of the frame, an improved clutch oiling device forming an extension of the gear box, six-point attachment for the sidecar, lower gear ratios, and a spring seat-pillar. Prior to the machine being handed over it had covered nearly 2,000 miles in the hands of different pilots. A start was made from Coventry at two o'clock in the afternoon, and the destination for the night was to be Aberystwyth. Desiring to be independent of garages which seem to carry varying stocks of petrol, I took the precaution of carrying a spare tin.



The Clyno ascending a rough track leading from a Welsh trout stream.

## Easy Steering.

The first point noticeable was the extreme ease and comfort of the steering. It was most marked, and the machine is certainly one of the best in this respect the writer has ever driven. The next point was the tendency of the driver at times to put his hand to the gear lever in the attempt to change into a higher gear, when he was already on top. This tendency (after riding a standard model) is caused by the much lower gear ratios used on W.D. models than on the standard machines necessitated by the conditions of the road surface overseas and the heavy load the machines carry. The top gear of the W.D. model is  $5\frac{3}{4}$  to 1, and such a low ratio rendered it unnecessary to change down on hills, and incidentally the speed on the level was quite good. With low gearing the transmission noises are naturally more noticeable, and certain sounds emanating from below which could not be accounted for caused some concern at first, and it was decided to investigate matters next morning.

## A Thorough Overhaul.

Taking matters easily, I reached Rhayader, and elected to stay the night here with the intention of viewing the Birmingham reservoir before breakfast. Next morning rain came down in torrents, so my passenger and I rolled up our sleeves to give the machine a thorough overhaul. It is a nice thing to spend the second day of a holiday tuning up! Wheels were taken out, bearings adjusted and oiled, and every part of the bicycle and sidecar was thoroughly lubricated. Slackness in the driving and magneto chains was taken up, and as the weather had improved we set out again a good deal more confident than formerly. The surrounding country was very picturesque, and we were able to enjoy its beauties. The Clyno, too, had benefited immensely by the overhaul, the transmission noises having entirely disappeared, and on the rough stretches of road I observed that the time spent on lubrication of the spring forks.



Taking the steep rise from the coast near Borth. Cardigan Bay is seen in the distance.



**A Run to the Welsh Coast.—**

wheels, and leaves of the sidecar springs had not been wasted. Too little attention is paid by many drivers to these minor points, which spell increased comfort and longevity of the wearing parts of the machine.

**A Water Test.**

Nearing the coast we made a slight *détour* to do as all others do, viz., visit the much-famed "Devil's Bridge," leaving the main road at Dyffryn Castell. A Scotch mist in Wales seems certainly out of place, but here we encountered one so thick that before I realised it we were in the middle of a stream. In ordinary weather the stream is shallow, but, owing to the incessant rain, it was about 15in. to 16in. deep, and between twenty and thirty yards across. The machine ploughed its way through without a misfire, thanks to the protected position of the magneto and enclosed chains. "The Devil's Bridge" was reached without further incident, but from my point of view it was a wasted trip, for the thick fog totally obscured the surrounding hills. Aberystwyth was a contrast and looked tempting enough, for it was quite fine. Some steep hills in the neighbourhood perhaps naturally tempted us to try our luck, for the Clyno is a noted hill-climber. I found one about half a mile long with a gradient of about 1 in 4 leading up from the seashore near Borth. Even at the first attempt I had no difficulty in getting up. At the summit there is a magnificent seascape. Other hills, too, enabled me to test thoroughly the latest W.D. Clyno, and nothing I encountered proved too much for it.

On the journey home the conditions were vastly improved, the sun shining gloriously, and I settled down to a steady pace of 28 to 30 m.p.h. The engine ran perfectly the whole of the tour, and though not as fast and not quite as silent as my own standard touring machine—doubtless accounted for by the difference in the gearing—there is no doubt that it is a most efficient machine for the purpose for which it was

**A TYPICAL WELSH SCENE.**

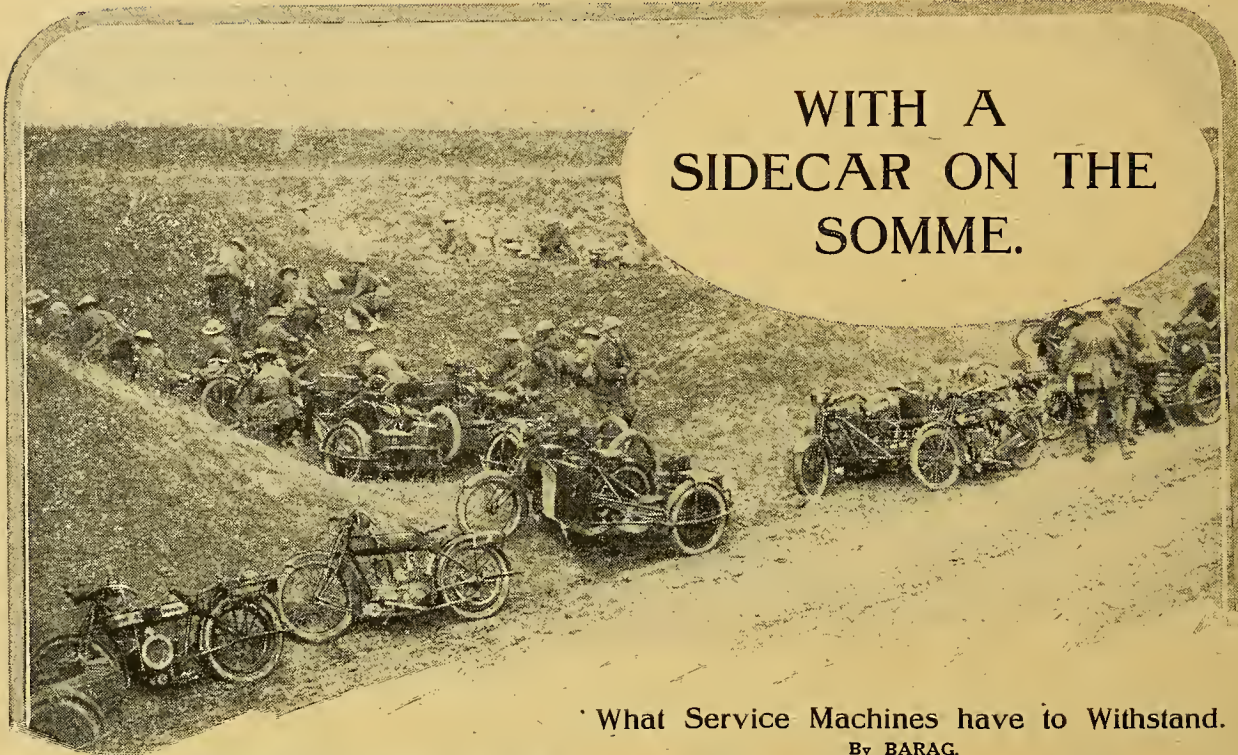
Fording the stream mentioned in the article. (Note that the water had subsided.)

designed, viz., "war work." With the exception of the back tyre going soft through the penetration of a tack no trouble was experienced. The operation of changing the wheel took but 2  $\frac{1}{4}$  m., which says much for detachable wheels, and is a refinement greatly appreciated by all. M.





## WITH A SIDE CAR ON THE SOMME.



What Service Machines have to Withstand.

By BARAG.

A motor machine gun battery taking cover in a sunken road on the Western front. Three motor bicycles belonging to the battery scouts are to be seen in the foreground: a Douglas, Sunbeam, and B.S.A. The sidecars are, of course, Clynos.

**B**E it known by these presents to all whom it may concern that a pot-hole is one thing and a shell hole another, and that a sidecar built to withstand the former is not *ipso facto* competent to deal with the latter. By the same token the outfit which will stand up to French and Belgian roads in their present condition is not yet constructed. These remarks, of course, only concern the roads within, say, fifteen miles of the actual firing line. The glowing eulogies written on the subject of motor cycles and sidecar outfits at the Front hold good in the main only for districts further back, more remote from the actual firing line, where the roads, if not good, are at any rate passable. One may without malice opine that the eulogies in question are penned with the rather curious object of bringing home to the general public the glad (though erroneous) news that some individual, hitherto unknown to them, spends his entire existence heroically conveying details of motor transport along unutterable surfaces to the accompaniment of inconceivable shell fire.

### The Story Begins.

The following true and particular account of a thirty-mile run may be of little interest as showing some of the many ills the bicycle is heir to. Let us call it "How we brought the sardines from Blank to Blank," and, before proceeding further, allow me to introduce the principal persons of the drama in order of importance.

First, the machine, whose actual designation it will perhaps be as well to keep dark. At any rate it is a 5-6 h.p. twin, and the engine is, in my humble opinion, the finest in any entirely British cycle. The

sidecar is a hideous, slab-sided, official looking affair, suspended by a C spring aft and a three-leaf transverse spring forward, an admirable system for the Brighton road in point of riding qualities, but of little or no use for the conditions prevailing out here. Secondly, the driver, a young and humorous bombardier, a civil engineer, and, in happier times, a budding road surveyor. At present he is almost entirely occupied in keeping together the souls and bodies of our two sidecar outfits and one solo machine. They are wife, family, and daily bread to him, and he groans from the depths of his sensitive soul at every hole and excrescence they hit.

Thirdly, my unworthy self, a subaltern in a siege battery, and the secretary of its officers' mess, to which fact, coupled with the existence of an urgent official and secret letter which had to be delivered at the ordnance workshops, I owe it that I am in a position to write these notes. It came to pass this fateful day that I took sweet counsel with the mess cook, and discovered that we were in lack of tinned goods, coffee, fruit, vegetables, fresh eggs, bread, and butter (our greatest luxuries, and by no means easily procurable), and that, worst of all, we had no drinks. Accordingly I warned the bombardier that I should require our three-legged Rolls to be champing at the bit at 10 a.m. precisely. To which he with dolorous countenance made answer, "Well, sir, I doubt if it'll do it. The centre leaf of the C spring has cracked, and keeps slipping out, and the transverse spring broke while I was bringing the captain back from — yesterday, and I've patched them both up with D 5." (D 5 is the strongest type of telephone wire obtainable by anyone of less importance than a



**With a Sidecar on the Somme.—**

divisional signalling officer, and it is used for all sorts of purposes besides the communicative one for which it is issued.)

My response was that we couldn't starve, and that it had darned well got to try. Moreover, the aforementioned letter had to be delivered to the I.O.M. (Inspection of Ordnance Machinery) that day.

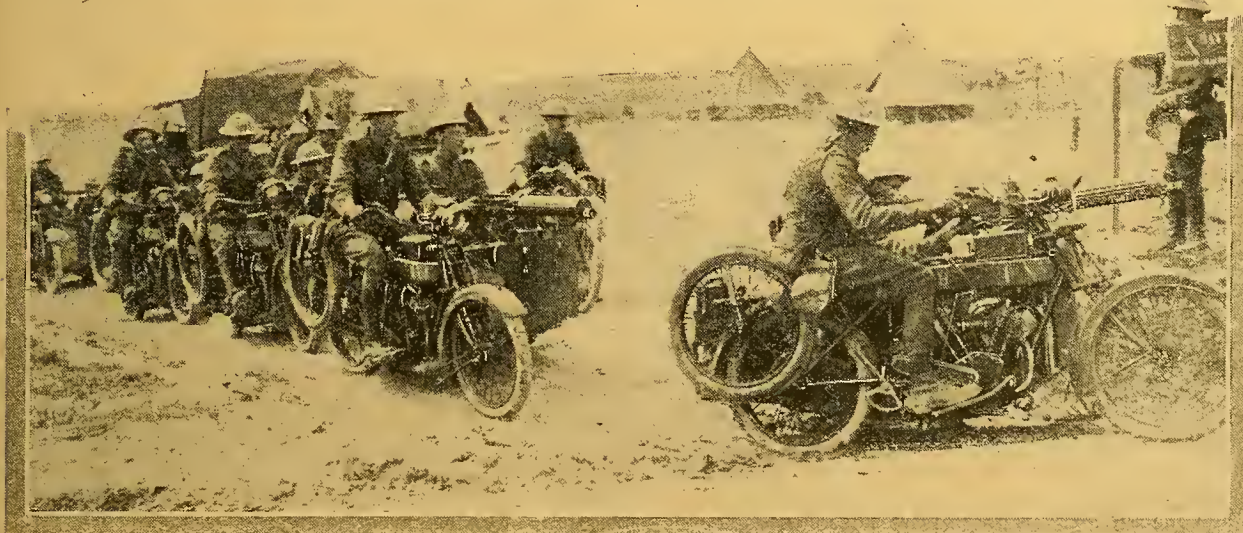
**The Sidecar Starts.**

On these lines we bumped forth on our fifteen mile journey. For a few miles all went well. Considering the rather "rag-time" repairs which had been effected, the sidecar rode remarkably well, and I was just beginning to relax my funk-stiffened spine and enjoy myself when a series of sickening thuds and inexplicable clanks became audible from the front wheel, and the machine swerved to the left and made a determined attempt to "savage" a passing lorry. "Oh, lor'!" ejaculated the bombardier, and dis-

as much of the inside of the cylinders as an electric torch would show us indicated that it had been getting a good mixture, and disclosed nothing which might cause the trouble, so we were forced to conclude that the timing gear had slipped. The bombardier, admirable soul, announced that he could fix it. I "knew that I knew nothing," so turned my attention to a clump of trees near the road, where I had reason to believe some friends of mine had established their local habitation. They were there, took me in, gave me lunch, and sent out food to the bombardier, who, an hour later, reported O.K.

**The Story Ends.**

We arrived at our destination without further mishap, delivered the precious document, made our purchases, and started on the run home. With its nose towards its stable the old 'bus behaved better, and we only had to stop five times for a few minutes to replace various bits of D5 which it frivolously cast adrift. (We



A motor machine gun battery leaving in answer to a signal. It will be noticed that all the men are equipped with steel helmets.

mounted. So did I. Our machine has a stoutly-sprung front fork with the bases of the springs held together by a bolt. This bolt had snapped at the near end, with the result that the springing was, to put it mildly, precarious.

The ever-resourceful bombardier produced some more D5 and a spanner, another Heath Robinson repair was successfully carried out, and we proceeded on our way.

**The Sidecar Stops.**

Five miles later it conked out altogether, and we again dismounted. This time we were, in the terse phrase of the British artilleryman, "in for it." Repeated applications of the kick-starter having failed to produce any signs of life, we ground our teeth, took off our coats, and got down to it. We removed the plugs and scraped off the soot. Again quoting the gunner, "No bon." We discovered that petrol was flowing freely, and after flooding the carburettor made another attempt. "No bon" again. We fitted new plugs, first ascertaining that they gave a good fat spark. But "no bon" once more. Examination of the plugs and

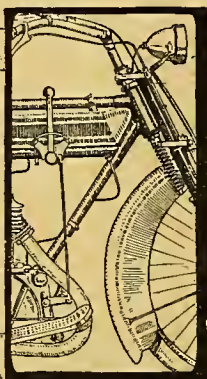
had abstracted quite a quantity when the Signalling Corporal's back was turned. He has since discovered the theft, and he and I are not quite on our old friendly footing yet.) "The shades of night were falling fast" when we got back, tired and hungry, and, with many imprecations, pushed the outfit into the little corrugated iron hut which serves as a garage.

**The Moral.**

Perhaps the foregoing remarks may convey what it was my purpose to convey, namely, that, magnificent though the British machine is, sufficient attention has not yet been paid to the fact that abnormal conditions require abnormal strength and abnormal efficiency, and that much yet remains to be done before an outfit is produced that will stand up to real war conditions. As I have tried to point out, the main weakness lies in the suspension. We do not ask for luxury on active service, and we are willing to sacrifice much of the comfort with which our machines provide us when they are in action in exchange for the strength and reliability which will take us where we need, when we need, and over the only roads we have available.



## The Economy of the Motor Cycle Exemplified.



Experiences of a Reader, engaged at the Ministry of Munitions, who uses a Lightweight in his Work.

**A** PART from Service riders, few motor cyclists put their machines through their paces like the owner of the little two-stroke Allon illustrated on this page. It was delivered on June 20th, 1916, and the mileage up to September 25th was 5,800. This works out at an average of fifty-nine miles a day for fourteen continuous weeks, and is a good test for a small machine.

### Choice of a Machine.

The owner is in the Ministry of Munitions, and his work entails constant travelling through the big industrial centres of England south of Yorkshire. All through last winter he travelled solely by train, but, in the spring, with a view to saving time, he turned his thoughts to a motor bicycle. Friends were rather sceptical when he chose a lightweight, thinking that a faster mount would be more suitable for the work, but the owner wanted an economical mount, also one that would be handy in traffic. The results have shown him to have been very wise in his choice, the Allon having proved a great success.

The machine is a standard two-speed model, and, as will be seen from the illustration, an auxiliary tank has been fitted over the top tube. The machine runs fairly satisfactorily on paraffin, but the owner, by reason of his work, has no difficulty in obtaining all the petrol required, and so he sticks to the latter. The capacity of the main tank is  $1\frac{3}{8}$  gallons, and the auxiliary tank  $\frac{5}{8}$  gallons. A useful fitment was that of a tin scoop under the carburettor to prevent petrol dripping on to the chain case, when it worked into joints and destroyed lubrication. Before the scoop was fitted two broken magneto chains were traced to this cause; they occurred at 550 and 1,200 miles respectively. This trouble has now been

remedied by the fitting of a pressed steel chain cover.

As regards tyres, the first puncture (on the back wheel) did not come until 3,500 miles had been covered, and then there were four between that and the 4,200 figure. At the latter, the tyres were changed from one wheel to the other, and are still in excellent condition, the rubber centre studs on the original back tyre being still visible.

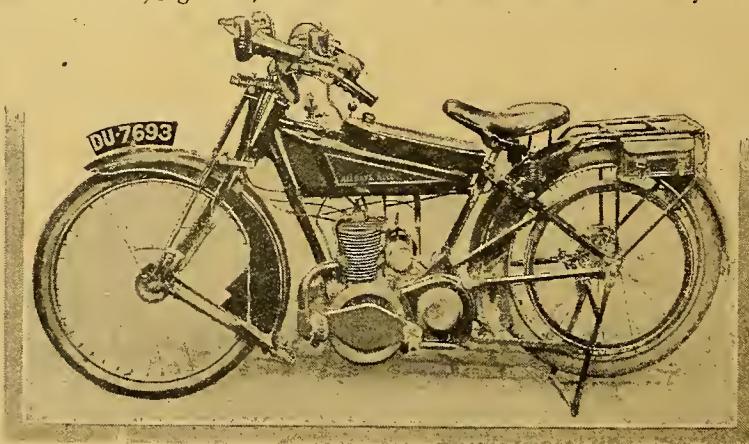
### An Easily Dismantled Engine.

The engine has been taken down three times. This is a simple matter with the Alldays engine, as by undoing eight bolts the bottom half of the crank case, with the piston, connecting rod, crankshaft, bearing, etc., may be removed without disturbing any connections. On the first two occasions the top ring was stuck. At 5,000 miles a heavier driving chain and special rings were fitted, and are going well. The big end was also taken up.

During the period under review sixty-one gallons of petrol and six gallons of oil have been purchased. The petrol consumption equals ninety-five miles per gallon—remarkably good figures, especially when one considers the amount of town work the machine has to accomplish.

The owner has used his machine for about ninety per cent. of his work, a very small proportion of train travelling being done, though with the approach of bad weather the train may be used to a greater extent.

For cross-country work it is invaluable, and enables many more firms to be visited in a day than would be possible by train. At the same time it is often quicker to use the machine for runs from one town to another connected by good train services, because works are generally in the suburbs of the large towns, and with the two-wheeler one goes direct and so saves



The two-stroke Allon referred to in the accompanying article.

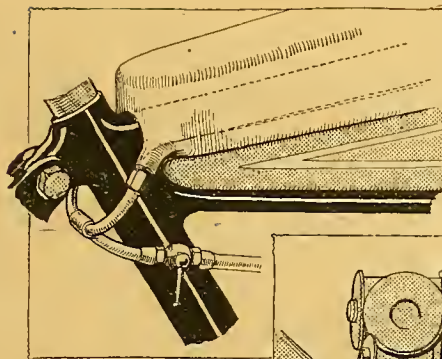


**The Economy of the Motor Cycle Exemplified.—**

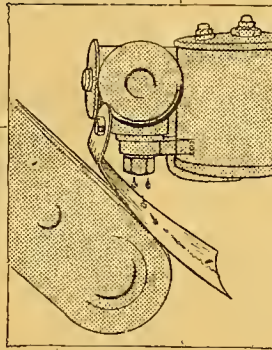
tram or 'bus journeys from main stations to outer districts.

**A Typical Day's Run.**

Taking a rather heavy day's run, a start was made from Coventry about 8 a.m., calls being made at Leicester and Stamford, and Chatteris, where another call was made, was reached by lunch time. Business being completed by three o'clock, the journey was continued to Ipswich in time to pay another visit before closing time. The total distance is about 175 miles. Such a journey by train would be very tedious, owing to it having to be made on branch lines with



Auxiliary tank connections (top) and shield fixed to carburettor to prevent petrol dripping on to magneto chain.



poor services. Even with good connections it would mean making seven changes and then not doing it all in the day. Such an itinerary is, of course, favourable to the motor cycle, but it is not an exceptional case.

In conclusion it may be added that the owner is all the better in health since he took to travelling by road. The work at any time is trying, as there are no fixed hours, and after a hard day's work there is a good deal of writing to be done, but there is no doubt that the man who has spent much of his time in the fresh air on a motor cycle, and consequently feels fit and well, is better able to undertake this than the man who travels by train.

R.C.F.

## Methods of Guarding Against Side-slip.

**M**ANY riders imagine that, so long as they equip their machines with good tyres, they have done everything that is possible to divert the inconvenience of side-slip, but there are several points, the sum total of which is quite as important as good tyres, which concern one's safety on the road during the skiddy season.

Nervousness is, of course, generally the cause of skidding. The nervous rider sets his body rigid on approaching a greasy patch, with the result that his front wheel is forced out of its natural course; whereas, if he were to sit his machine quite naturally and plug straight through it, nothing dreadful would occur. One thing is certain—that neither good tyres nor a good machine will save the clumsy rider, and if the likelihood of side-slip is a real source of anxiety to him, he would be well advised to purchase a light sidecar as a counter stabiliser. The throttle should be opened gradually, so that acceleration may not be too violent and cause the wheel to spin.

**Low Compression Desirable.**

The old dodge of lowering the compression of one's engine for the winter months is an excellent safeguard against skidding. This can be done by inserting a stiff cardboard packing, smeared with seccotine, between the cylinder and the crank case. For a  $3\frac{1}{2}$  h.p. single the washer may be  $\frac{1}{16}$  in. thick, for a small twin  $\frac{1}{32}$  in. or thereabouts, for each cylinder. Take care to readjust the tappets, and then test them with the engine hot.

The reduced compression gives the engine an increased range on top gear; it does not detract noticeably from its "revving" capabilities, but it softens down the explosions at low speeds, so that there is less snatch of the tyre on the road at the moment of firing. For this reason a small twin or two-stroke is less liable to side-slip than a single-cylinder.

Quite as important as good tyres is a good carburettor. Most present-day carburettors are good if pro-

perly adjusted, but from the winter rider's point of view some are undoubtedly better than others.

However perfect a carburettor may be, one cannot obtain perfect response unless the control wires are working properly, and the smooth working of these controls is a vastly important point as regards side-slip. Recently a beginner handed his machine to the writer for trial, explaining that it did not run so well as it used. It was found that the Bowden wires were rusted, so that the controls moved stiffly and in jerks, and this being set right the machine was returned. "I don't know what you've done," said the owner a day or so later, "but the change is simply marvellous."

It is impossible, then, to obtain smooth acceleration and perfect controllability—which count for everything on grease—unless the carburettor controls are working smoothly, and easily responding to a light and natural pressure of the fingers. Their stiffness should be just sufficient to prevent them from automatically moving their position. If it is found that the friction disc must be screwed down tightly in order to prevent the levers creeping back, this is distinct proof that the springs in the barrel of the carburettor are too strong. In very bad places it is better to run on the low gear and so obtain a more even impulse. Never put the brakes on suddenly.

**Adjustment of Shock Absorbers.**

The friction type of shock absorber may be kept screwed up solid for summer solo riding, but if it is left thus during the winter skidding experiences may be anticipated. Do not tamper with the shock absorber unless you are sure that the drive is too solid. Then to reset the adjustment, jack the machine on the stand, cover the slipping device with oil, then slacken off the lock nuts. Jerk the engine over compression by the back wheel; slowly screw up the nuts till no slip is perceptible on the most violent jerk. This should give the proper adjustment, but a subsequent road test is generally necessary.

H.M.B.





## Will the Single-cylinder Survive ?



### An Experienced Amateur's Impressions as a Result of Prolonged Road Test.

The possible doom of the single-cylinder was discussed by "Road Rider" in our issue for September 28th. The question was taken up by "Ixion" in his Occasional Comments and by several readers in our correspondence columns. "Ixion" agreed with "Road Rider" in the main, but their opinion is by no means shared by all our readers, as witness the remarks on this page by an experienced rider.

**I** SHOULD like to endorse the remarks of Mr. A. C. Huskinson in *The Motor Cycle* of October 12th in regard to the comparative merits of the T.T. single and the horizontal twin of 500 c.c.

During the summer of 1914, I had an opportunity of making a lengthy and searching comparison between a 1913 T.T. Rudge-Multi, geared  $2\frac{2}{3}$  to 1 on top and  $5\frac{1}{2}$  to 1 on bottom (being fitted with a small rear belt rim), and a 1914 T.T. A.B.C., fitted with a hub gear in the countershaft position, Claudel-Hobson carburetter, rear springing, chain drive, and both inlet and exhaust valves overhead. It was geared, I think,  $4\frac{1}{2}$ ,  $6\frac{1}{2}$ , and  $9\frac{1}{2}$  to 1. On top the A.B.C. could attain 57-58 m.p.h. in full touring trim on any good road, whilst the Rudge on a gear of about  $3\frac{1}{2}$  to 1 was equally as fast. When stripped, either could attain a speed of about 64 or 65 m.p.h. On any serious main road rise, it soon became necessary to change down on the A.B.C. to maintain a good speed, and it must be admitted that the revs. on low and middle gears were surprising. The Rudge at this time had covered about 3,000 miles more than the A.B.C., but still managed to hold its own on the level as well as being faster uphill. The petrol consumption was 68 to 70 m.p.g. in the case of the A.B.C., and 79 to 82 m.p.g. in the case of the Rudge.

From the point of view of flexibility, the margin was in favour of the Rudge. Its slowest speed was less than that of the A.B.C., whilst on a gear of 5 to 1 it had a greater ratio of flexibility than the A.B.C. on its middle gear of  $6\frac{1}{2}$  to 1.

#### Acceleration Powers.

The acceleration of the A.B.C. was the better up to 30 m.p.h., but from that speed up to its maximum the Rudge was superior, as the A.B.C. was slow in getting going on its top gear. I note "Ixion" makes much of the fact that he can attain 40 m.p.h. on a gear of  $9\frac{1}{2}$  to 1, but surely finality of design is not reached when such a gear is necessary to attain a good uphill speed. I have owned a  $2\frac{3}{4}$  h.p. Douglas which, when in competition tune, could attain 42 m.p.h. on a gear of  $8\frac{1}{2}$  to 1, but I did not think much of this, and was far more keen on getting each additional mile on a higher gear, as I contend that a moderate road speed on such a low gear is not good except as an indication of engine balance. When we compare a good modern T.T. single, such as the Norton, Triumph, or Rudge, which will attain

40 m.p.h. up reasonable main road hills, and in addition do about 8 m.p.h. and 55 m.p.h. also on the same gear, we have some idea of the lack of flexibility of the twin.

A certain section of your readers would the more appreciate "Ixion's" remarks about the A.B.C. had he covered a distance of, say, 6,000 miles or even more on the same machine, as one is naturally experiencing only the best in the early days of a well-tuned factory special, such as I have no doubt he has been fortunate enough to have obtained.

#### Overhead Valve Gear.

After a mileage of just 4,000 in the case of the A.B.C. and slightly less than 7,000 in the case of the Rudge, there was a margin in favour of the latter. The overhead valve gear on the A.B.C. (particularly in the case of the front cylinder, which is very exposed) had worn badly, and there was a racket at anything like the revs. of which it was originally easily capable. I am quite aware that a Rudge overhead inlet rocker can do its share in this line when worn.

It may be that the new model A.B.C. is greatly superior to the one I tried, but, having regard to its high price and the fact that such mounts as the Brookland Road Special Norton are now available at a price considerably less than that of the A.B.C., I am still a T.T. single enthusiast when a solo mount is required.

I have also had experience of the Brough during 1914 and 1915, but not to the same extent as the A.B.C., and here again objected to the exposed overhead valve mechanism.

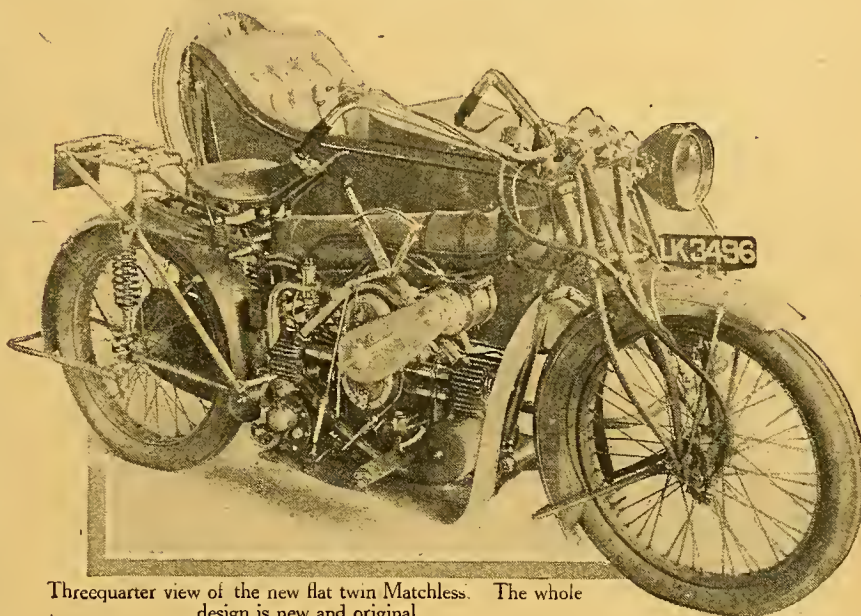
It is, of course, understood that this controversy centres round the 500 c.c. size only, as my experience is that the 350 c.c. Douglas is in advance of any single of that size as regards speed, general power maintenance, and wearing qualities. There must be some difficulty, which manufacturers find almost insuperable, in designing a 500 c.c. flat twin to give a proportionate power output to the 350 c.c. Douglas. We find that the Douglas firm has on three occasions at least altered completely the design of its 4 h.p. model, whilst the only radical alteration on its smaller mount has been the substitution of mechanical for automatic valves on its 1912 models. The A.B.C. has also undergone many alterations during its three years' existence.



# THE 5-6 h.p. FLAT TWIN MATCHLESS.

70 mm. × 95 mm., 732 c.c., Three Speeds, all wheels sprung.

FEW members of the motor cycle business deserve greater success than H. Collier and Sons, Ltd. Since 1903 the two sons have devoted their lives to the movement, and, by engaging in many competitions and races, have sought to evolve the perfect motor cycle. Having known both Charlie and Harry Collier for the past thirteen years, we have watched the progress they have made in the design of their machine, and have always admired their devotion to their business, which was also their pleasure. In the early days they engaged almost entirely in speed work on the track, and it was while occupied in this that they obtained their wonderful practical knowledge of the motor cycle engine. This knowledge has stood them in good stead, and has been of undoubted value to them in designing their own engine. Although for many years they assembled their machines and bought their engines from outside firms, they were by no means ignorant of engine design, and considerably altered for the better many of the engines built up into their machines. Now, for the first time, they have designed their own motor, and a very successful production it is. Being absolutely up-to-date in their ideas, they have evolved a 5-6 h.p. flat twin embodying the very latest practice in motor cycle engine design. Furthermore, being cognisant of the magnificent future for British motor cycles in the Overseas Dominions, they have placed upon the market a well-tryed and thoroughly efficient spring frame, while not only has the absence of vibration of the flat twin led them to adopt this form of engine, but also the fact that



Threequarter view of the new flat twin Matchless. The whole design is new and original.

the ground clearance is much greater than is possible in the case of the V type engine, the actual clearance being 5½ in. This is a point which will be much appreciated by Overseas customers.

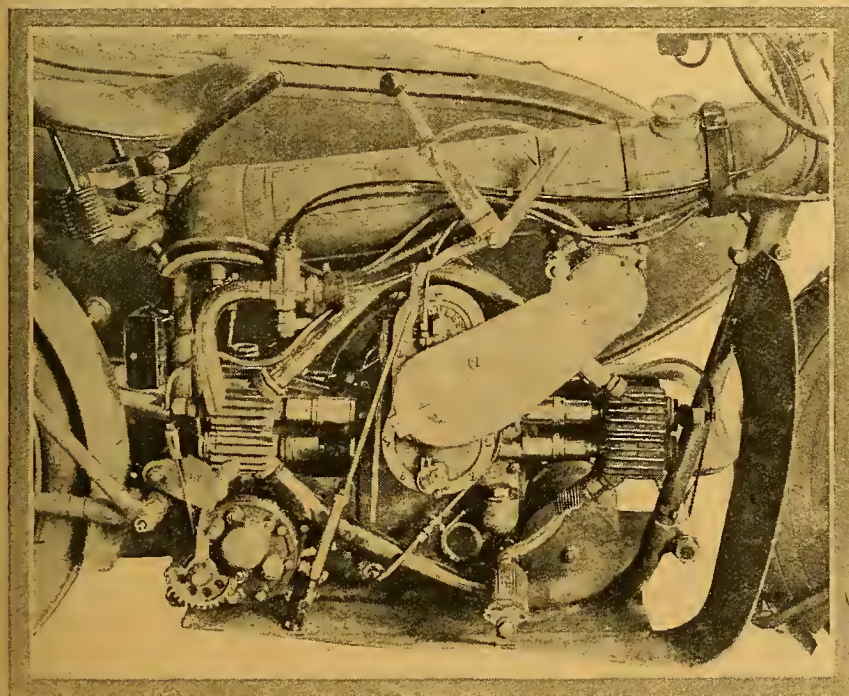
The frame is a total departure from the firm's standard practice. In the first place, the tubular tank of steel, containing two gallons of petrol, forms the top member of the frame, and has a slight

upward slope towards the head. The down tube forms a sort of loop, and acts as a support for the engine. The spring forks have been somewhat improved in design, the lower pair of links being now inside the main members of the forks, which are wide enough to allow the mud-guard to form a perfect sweep from the front of the extension right down to the back.

The system employed in the springing of the rear portion of the frame was clearly indicated in the issue of October 21st, 1915, page 401, and this has only undergone slight improvements in detail. The method adopted is to interpose coil springs between the movable rear forks and the rigid portion supporting the rear carrier. All moving parts, both on the front forks and the rear springing system, are provided with grease cups. These, however, will not be retained. Instead, a grease gun will be supplied, having a screw-on end, and on the dust caps taking the place of the grease cups, being removed, the nozzle of the grease gun may be screwed on to the hollow spindle, and the grease injected. This is much less trouble than the filling of numerous grease cups, one grease gun full being probably sufficient for all the points requiring attention.

## The Power Unit.

The question of accessibility has been carefully studied in the design of the new Matchless engine arrangement, which is so carried out that the cylinders may be removed without taking the engine out of the frame. The radiating fins run longitudinally down the cylinders and taper towards their base. The cylinders are off-set to the amount of one inch. Both valves are horizontal and are arranged at the side in an accessible position, telescopic valve

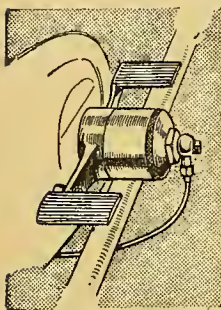


Details of the power unit of the 5-6 h.p. flat twin Matchless.



### The 5-6 h.p. Flat Twin Matchless.—

spring cams being employed which exclude all grit from the interior working parts of the valve system. Of the two portions of the valve spring cover the larger screws on to a ring surrounding the base of the tappet guide, and when it is found necessary to replace a valve it is unscrewed and slipped back, thus exposing the end of the valve stem and cotter. The valve gear is exceedingly simple and interesting, only three pinions being employed, while one set of cams actuates both inlet and exhaust valves.



The rocking form of clutch pedal is retained. Note the oil lead for lubricating the clutch.

### The Lubrication System.

A plunger pump actuated by one of the valve cams delivers the oil to two passages cast in the crank case, which lead direct to the main bearings; that is to say, the oil enters the bearings at both sides, the crankshaft is hollow and the lubricant is driven under pressure through it and exudes at the big end bearings, all excess returning to the sump. At the base of the sump whence the oil is delivered there is a large gauze which adequately filters it from all impurities. The system has been found to be most successful, and since the oil is delivered under pressure it is bound to reach those parts which need copious lubrication. A window has been let into the crank case just below the filling orifice which indicates the level of the oil in the sump.

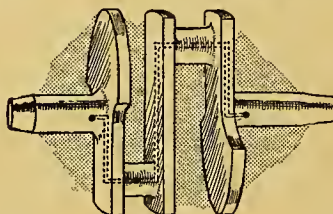
### Induction and Exhaust.

The arrangement of the carburetter is somewhat unconventional, the inlet pipe forming a complete bow, passing from one cylinder over the top of the timing gear case to the other, but near the top

of the arc of the bow there is a branch pipe to which the Amac carburetter is attached. Long experience with motor cycle engines has made the brothers Collier realise the fact that it is always beneficial to take the air in warm if possible, no matter whether pure petrol or a petrol substitute be used; consequently a warm air pipe is fitted to the main air intake.

The design of the exhaust pipes is also worthy of note, the pipe from the rear cylinder entering the bottom of the expansion chamber, while the exhaust gases from the front cylinder issue through a short pipe into the top of the expansion chamber, the final exit being through a long pipe on the rear side of the machine.

At first the designers were troubled with a fault which is common to flat twins, namely, a "ring" in the flywheel, and this they have corrected in quite an ingenious manner by interposing between



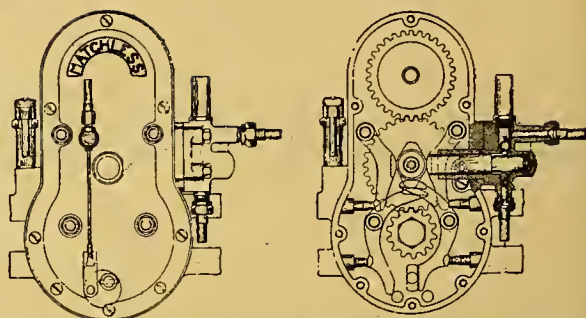
The crankshaft, showing the manner in which the oil ways are drilled.

the periphery and the flywheel boss a disc of three-ply wood securely bolted up to the face of the flywheel, and this effectually deadens the noise.

### Ignition.

The magneto fitted is the C.A.V., the advance spark lever being actually on the contact breaker and within easy reach of the driver. In actual practice it is found that the position of the spark lever requires practically no alteration. At the bottom of the timing case will be noticed the exhaust valve lifter, the crank for which consists of a small pin eccentrically mounted on a disc, which has a piece cut out of the lower portion, so that on the valve being dropped the indentation rests against one of the studs holding on the timing case cover. The exhaust lifter is of the double cam variety, the two cams actuating the exhaust rockers.

An interesting experiment is the



General arrangement of valve gear and lubricating pump.

fitting of aluminium alloy pistons, which so far have given every satisfaction.

### Transmission.

In the new Matchless the circular type of gear box is retained, but owing to a slight modification of the design of the teeth, which enables the gear wheels to be made lighter, the new gear box is of rather smaller dimensions than previously. It is carried in two plates, extending from the crank case to the bottom bracket lug, and is held in position by two steel straps. To adjust the front chain the two nuts at the ends of these straps are loosened, and by applying a special spanner to two of the lower nuts in the gear box the whole may be rotated, thus enabling any slack to be taken up.

It will be noticed that the Lucas dynamo is driven by a chain off the camshaft, and is carried in a bracket suspended from the tank, the chain being neatly enclosed in an aluminium case.

The clutch consists of two steel plates, hardened and ground, engaging with a central plate of cast iron forming part of the sprocket. An arrangement has been made so that, in the event of the machine being used as a solo mount, the clutch may be controlled by means of a Bowden wire from the handle-bar. The lubrication of the clutch is provided for by a branch pipe from the oiling system.

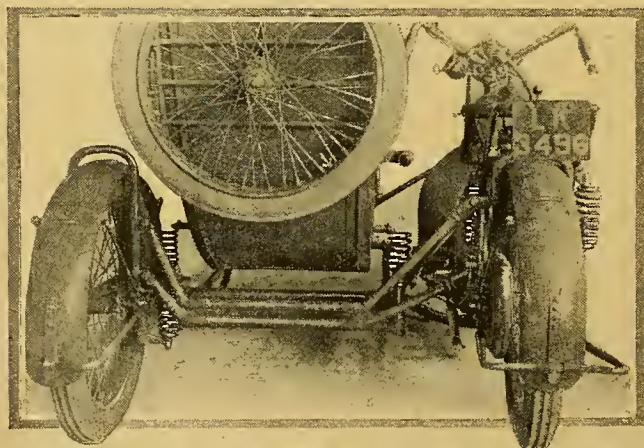
From engine to gear box the transmission is by silent chain, which is, of course, enclosed.

Considerable ingenuity has been displayed in arranging so that the rear chain cover is free to move with the lower and movable portion of the spring frame.

The mudguarding has been particularly well carried out, the guards being 5½ in. in diameter, while an additional mudshield is fitted to the down tube, and is arranged so as not to impede the cooling. This is continued below the power unit, and acts as an efficient undershield.

### The Sidecar.

The same system of springing as is employed in the rear of the machine has been adapted to the sidecar, inasmuch as both the wheel and also the sidecar body are sprung on coil springs. The form of staying at the rear of the sidecar frame is interesting. This consists of double tubes attached to the uprights forming a portion of the motor bicycle frame. This arrangement enables both the sidecar wheel and the rear wheel of the motor bicycle to move more or less in unison, therefore the fault present in many combinations in which the sidecar wheel is sprung, namely, that of instability and

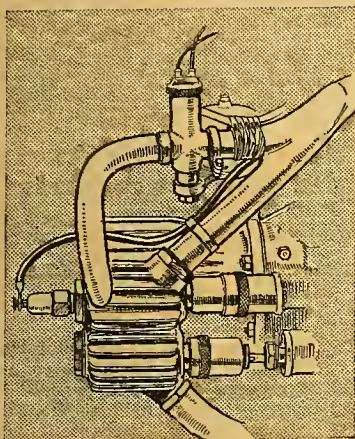


Rear view of new Matchless sidecar combination, showing the duplex tube joining the sidecar and motor cycle, and causing the two sprung wheels to work in harmony.



**The 5-6 h.p. Flat Twin Matchless.—**

a tendency to lean when turning corners to the left, is entirely absent. The sidecar wheel is also provided with a stand, similar in design to that employed in the front wheel. The sidecar is well sprung and luxuriously upholstered, while at the



Method of fixing the carburettor and the valve spring covers.

back thereof is carried the spare wheel and also an efficient luggage carrier. It will be noticed that both the luggage platforms on the new Matchless are on sprung portions of the machine, which is distinctly an advantage.

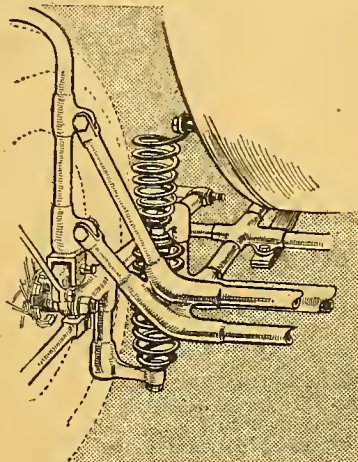
**The Machine on the Road.**

We were next taken for a short run in the district round Woolwich, which is decidedly hilly. The first turning to the right past the works brought us on to quite an appreciable gradient, which the engine took comfortably on top speed, mounting up gradually until we reached Woolwich Common. We noticed that the sidecar was exceedingly well sprung,

though Mr. Harry Collier assured us that he was not satisfied as to this point, affirming that the rider was more comfortable on the machine than in the sidecar. The roads were certainly rough in this locality, and personally we could find no fault whatsoever. The engine developed plenty of power, but seemed a trifle noisy—a fault which Mr. Collier readily acknowledged. Hitherto his efforts had been to obtain the maximum power for the engine, and he admitted that it required still further taming down both as regards the noise of the engine and of the exhaust, though with the latter little fault could be found.

On Woolwich Common we took control of the machine and drove for some considerable distance. Having driven a 1916 Matchless not long previously we soon became accustomed to the driving of the new mount. The engine possessed an ample degree of acceleration and was quite free from vibration, the clutch took up the load sweetly, and the gears went into engagement without a sound. The comfort of the spring frame was most noticeable on the rough road across the Common, which eventually brought us into Shooters Hill. A considerable amount of traffic was met, but the engine proved itself flexible, and we felt quite at home in negotiating it. On reaching Shooters Hill Road we found the surface distinctly good, though a little wavy in places, but the machine rode over the waves with an exhilarating and swinging motion which was delightfully comfortable. Having slowed up for the cross-roads at the foot of the hill we were practically brought to a complete standstill through a boy who saw fit to dismount from his bicycle and hold a conversation with a carter in the middle of the road. This necessitated a change down to second and reduced the speed of the machine to about four miles an hour. On opening the throttle it immediately picked up and the top was engaged, but not before we were well

on to the gradient. However, the engine rapidly accelerated on top until just near the crest of the hill, passing over the summit still in top speed and with



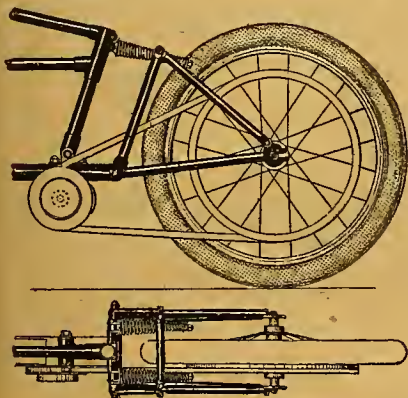
Details of the sidecar suspension, the sidecar wheel springing, and the duplex tubes forming the rear member of the frame.

the engine not labouring in the slightest degree. We noticed that considerable improvement has been made in the design of the handle-bars, these being much wider than on the previous model. Altogether, the run on the new Matchless was a delightful experience, and we greatly look forward to a closer acquaintance with this machine on the road at no very distant date.

It must be distinctly understood that Messrs. Collier and Sons are not in a position to deliver any machines. This is merely the prototype of their post-war model, which they hope to deliver to the public very shortly after the cessation of hostilities.

## STILL MORE SPRING FRAMES.

STILL they come. *The Motor Cycle* campaign in favour of spring frames shows no sign of abatement at present. We dealt on November 2nd with the frame applied to the Allon two-stroke, and illustrate herewith another adaptation of the Alldays rear springing,



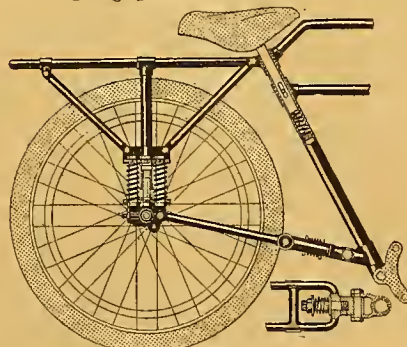
An adaptation of the Allon spring frame.

the difference being solely in the type of spring employed. In this instance, two springs of the coiled or helical type are used on either side, surrounding links on which the top of the rear frame is free to slide. Two springs take the weight of the machine and rider and two take the rebound.—Alldays and Onions and A. H. Johnson, No. 15,849, 1915.

**Compound Rear Springing.**

Another attempt at rear springing is the subject of a patent by T. Matthews, of Pengam, Monmouthshire (No. 10,712, 1916). This is designed to allow a backward as well as an upward movement of the rear wheel relatively to the frame. The rear stays are pivoted behind the bottom bracket, and also are capable of sliding backwards, this movement being controlled by a spring. It would be interesting to know what effect this movement would have on chain or belt or *vice versa*. The upper portion of the rear frame, made in one with the carrier, is hinged below the saddle, and carries at its lowest end two guide rods surrounded by springs.

Between these is a vertical tube, which slides over another tube mounted on a plate attached to that part of the frame which carries the axle. The last mentioned tube has an oil-retaining gland at its base. Upon these tubes and guide rods the frame must rely for its support, for otherwise the rear portion is hinged only. The saddle is shown supported on a spring pillar.



A design giving movement in two directions.





### TIMES TO LIGHT LAMPS. GREENWICH TIME.

Nov. 16th	...	4.39 p.m.
" 18th	...	4.36 "
" 20th	...	4.34 "
" 22nd	...	4.31 "

### Army Forage Department.

The Director of the Army Forage Department says that only district valuers are expected to travel in motor cars on their business, and the main work is done by cycle and motor cycle.

### More "Second-hand" Shows.

The organisers of the Agricultural Hall Show propose to hold exhibitions of second-hand motor cycles and cars in several different centres throughout the British Isles, viz., Manchester, Birmingham, Bristol, Glasgow, Edinburgh, and Dublin.

### The Government's Views.

The Motor Cycle Manufacturers' Union quietly called a meeting of its members to discuss the new order by the Minister of Munitions, and on Friday, Mr. Alfred Bednell, the secretary, interviewed the Government Department on the matter. We quote the result of his investigations in our editorial article this week.

### Rover Co., Ltd., Dividend.

The profits of the Rover Co., Ltd., for the past year, including the amount brought forward from the previous year, amount to £101,457. The directors recommend a dividend of 10%, less tax, absorbing £11,224, and the placing of £20,000 to the general reserve, £30,000 to the War Contingency Fund, and £40,233 to be carried forward to next year.

### "Rural England and the War."

Many motor cyclists, particularly Midlanders, are acquainted with the Cotswold district: they will therefore be interested to read the series of articles, "Rural England and the War," now appearing in *The Light Car*. The articles are written to show how this rural and beautiful part of the kingdom has contributed to the conduct of the war.

### Weatherproofing the Sidecar.

A fortnight ago we illustrated the latest 6 h.p. Enfield sidecar outfit equipped with a hood and screen, and in so doing mentioned that the latter fittings were now standardised. Some readers have written to the company imagining that these two luxuries are now included in the price of the standard models, and we are asked to make it clear that such is not the case, as the extra charge for hood and screen on either of the Enfield sidecar models is £4 19s. nett.

### Motor Scooters.

A type of motor becoming quite popular in America is a light four-wheeled type of trolley similar to those used by street urchins for tobogganing down slopes, but propelled by a Smith motor wheel, which is the American version of the Auto-wheel. Some of the cars are quite elaborate, having seats and wheel steering, while others are quite simple affairs.

### Petrol Licences.

New licences (free of duty) for the purchase of motor spirit for use in hackney and commercial vehicles, and in industrial processes, will be issued in November to holders of licences which expire in that month. *The new licences will cover a period of six months.* Applications for the renewal of a licence which expires in November should be made to the Petrol Control Committee, 19, Berkeley Street, London, W., between 16th and 25th November.

### Permits for Motor Cycle Manufacture.

When the Minister of Munitions issued his Order at the beginning of last week many manufacturers interpreted it in its blackest manner; but we have good reason to believe that there is a bright side to the Order, and that motor cycle manufacture *will not* come to a standstill. The Government is not an obstructionist, and the only difference will be that in future it will grant permits for all motor cycles which are manufactured. We have good grounds for stating that the permits will be issued freely.

### SPECIAL FEATURES.

THE FLAT TWIN MATCHLESS  
(Illustrated).

WITH A SIDECAR ON THE SOMME.  
FOUR MORE SPRING FRAMES.

### Nothing New.

Naturally, the second-hand motor cycle and car dealers up and down the country are strongly opposed to the second-hand motor show now being held at the Agricultural Hall. They, perhaps, rightly regard their own stocks of second-hand motor cycles as a miniature show in themselves, and, moreover, they go on all the year round.

### The Actress and the Motor Cycle.

Few ladies have been initiated into the joys of motor cycle riding in a more curious way than Miss Madge Titheradge. Having to ride a heavy man's machine across a plank before an enthralled audience would not appeal to many, but this experience has not deterred this lion-hearted actress in the slightest degree. She is going to order a machine of her own, and hopes to evolve some sensible leather riding suit like her stage one. She certainly might do worse than purchase a motor bicycle, but to wear anything like the *outré* costume she has to don at Drury Lane would, we venture to think, be a crime. There are plenty of well-designed ladies' motor cycling garments already on the market.



NOT TOO OLD AT 68! Mr. Uzzell, of Birmingham, is a fastidious rider in spite of his age. He was twelve months finding a motor cycle suitable to his taste, his final selection being a 2½ h.p. Royal Enfield two-stroke.



**Enemy-owned Company Wound up.**

The Bosch Magneto Co., Ltd., of 204, Tottenham Court Road, London, W., has recently been wound up under the Trading with the Enemy Act.

**Three New Flat Twins in Seven Weeks.**

Still another flat twin is described in this week's issue, viz., the 5.6 h.p. Matchless. This, incidentally, is the third entirely new design of horizontal twin described and illustrated exclusively in *The Motor Cycle* within the last seven weeks.

**No. 1 Petrol Commandeered.**

Judging from the quality of motor spirit that is allotted to motorists in these days, it is not difficult to imagine that "Shell" No. 1 motor spirit has been commandeered by the Government for a long time past, though the public notice is issued for the first time this week, notifying the public that such is the case.

**Prince a Light Carist.**

H.S.H. Prince George of Battenberg, who was married yesterday to Countess Nada Torby, is an enthusiastic supporter of the light car. In Wednesday's issue of our sister journal *The Light Car* there are two photographs of Prince George's Morris-Cowley coupé on which the honeymoon will be spent.

**A Motor Cyclist Volunteer Section for Northamptonshire.**

Motor cyclists in Northamptonshire who would care to join the motor cycle section of the Second Volunteer Battalion of the Northamptonshire Regiment should send in their names to Mr. F. W. Marriott, Market Square, Wellingborough, who will give them all the necessary information.

**So-called 1917 Models.**

It would be interesting to know just how much the constant references to "1917 models" has had to do with the decision of the Minister of Munitions to prohibit the manufacture of new motor cycles without a permit. Undoubtedly a good deal of harm has been done, and it is all the more annoying, since many of these "1917" models are in reality none other than 1914 and 1915 designs under a new guise.

**Cork Motor Cyclists' Annual Meeting.**

At the annual general meeting of the Cork and District Motor Cycle Club, held last week, for the election of officers, most of the present office-bearers were re-elected. R. S. Russell, to whom the club owes so much, is again the hon. secretary, W. F. L. Dooley as assistant, and the finances will again be looked after by H. P. Dobbin. Mr. Frank Daly was re-elected president.

The hon. secretary's report, which was presented to the meeting, had not a great deal to record. Owing to the present state of public affairs competitions were practically abandoned, only two events being held during the year. Another factor that has contributed to this inactivity is the fact that twenty-six of the members of the club are serving in the Army, and no inconsiderable part of the report was given up to a record of their work.

The usual dinner will not be held this year. Its place will be taken by a smoking concert.

**Fine for Unlighted Cattle.**

For allowing three cows to be driven on the road after dark without a light, in accordance with the new lighting regulations, Joseph Bower, of Holmgate, was fined £1 at Clay Cross. It appears that one of the animals did considerable damage to a sidecar by jumping on it. This is the first instance of a fine being imposed under the new regulations of which we have heard up to the present.

**Motor Cycles for Police.**

The North Riding County Council has approved of the recommendation to provide motor cycles for police officers in that Riding, at Stokesley, Malton, and Northallerton. At the latter place the police horses and traps are to be dispensed with. The machines are to have sidecars, and the cost of each is not to exceed £65. For the present, the forage allowance, amounting to £40 per year, is to be continued to meet the cost

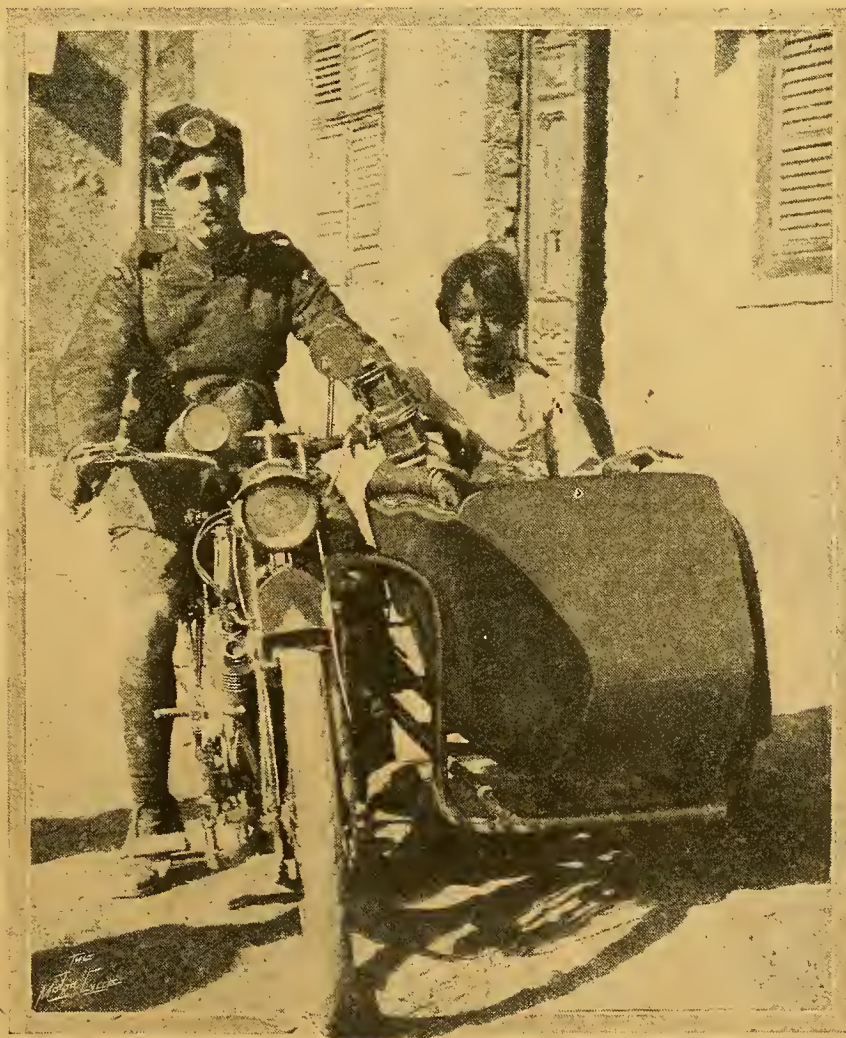
of upkeep, including licence duty, repairs, and petrol, the cycles to be used for all police purposes and to remain the property of the Riding. At Malton an additional allowance of £25 per year is to be granted for the same purpose.

**Ninety-two Spring Frame Designs.**

In support of *The Motor Cycle* spring frame campaign, we illustrate and describe in this issue four further new designs of rear springing for motor cycles, including the Matchless and the Zenith. During the last two and half years no less than ninety-two designs have been published in these columns.

**Demand for Second-hand Motor Cycles.**

There seems to be a good deal of buying and selling of second-hand motor cycles at the present time, and in this connection it may be remarked that upwards of a thousand small advertisements of second-hand machines appear in *The Motor Cycle* each week—approximately double the number appearing in any other journal.



JOY RIDING IN THE LAND OF THE PHARAOHS.

There are not many sidecars in Egypt, but they are apparently being used to good purpose. The illustration shows a member of the R.F.C. and a Gippo "flapper" aboard a P. and M.



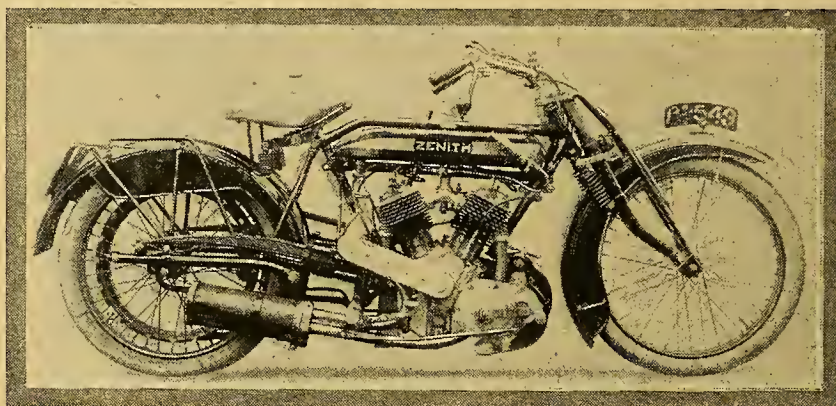
## ZENITH IMPROVEMENTS.

## A SPRING FRAME COMBINED WITH A SLIDING WHEEL.

ONE of the pioneer designers of the spring frame in the motor cycle world is Mr. F. W. Barnes, the works manager of Messrs. Zenith Motors, Ltd., Hampton Court, Middlesex. His first effort was the Zenette, the two side members of the frame being designed scissors fashion, each portion being separated from the other by coil springs. The idea was ingenious, and worked well, but the design in those early days (1908) was crude. The new Zenith spring frame follows the very latest practice, is simple, by no means unsightly in appearance, and most effective. Two long leaf springs are employed, the forward ends of which are attached to the rigid portion of the frame, while the rearmost ends are attached to brass plungers sliding in the tubes of the movable portion. This lower or movable portion, to which the rear wheel is attached, is connected to the rigid part by means of hinges attached to brass plungers sliding in the rigid tubes. The wheel, therefore, is free to move vertically, and to slide backwards and forwards, so as to preserve a constant belt tension in spite of the opening or closing of the expanding pulley on the engine-shaft. Great improvement in appearance has been brought about by fixing the mudguard stays, mudguard, and carrier to the movable portion of the frame, so that they all move in unison with the wheel, and consequently there is not that ugly gap between the rear mudguard and the wheel at present to be seen in the Zenith when the highest gear is in engagement.

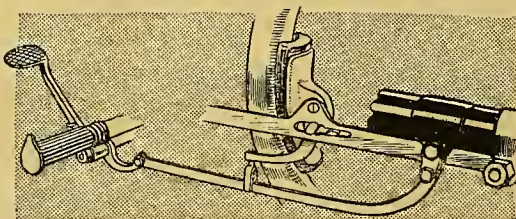
**An Ingenious Self-adjusting Brake.**

The sidcar attachment, which on an ordinary machine would be a clamp fixed to the near side chain stay, is a casting slipped over the spring and pushed forward as far as it will go. This is



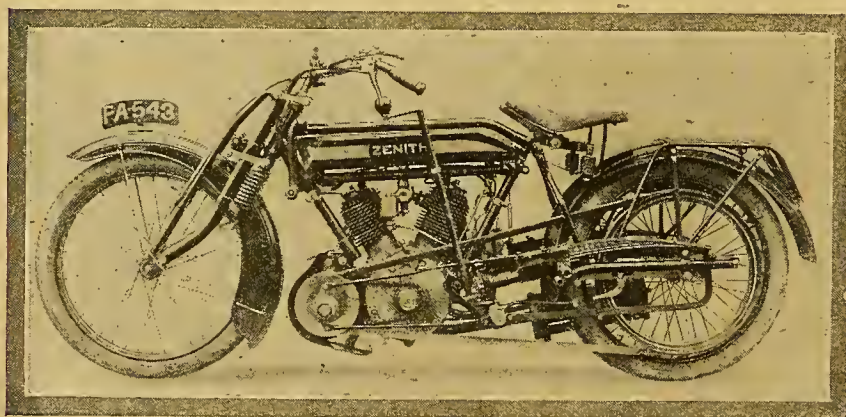
Valve side of the newly designed spring-frame Zenith.

quite secure, and just allows of sufficient movement of this portion of the spring, which is, of course, very slight at this point.



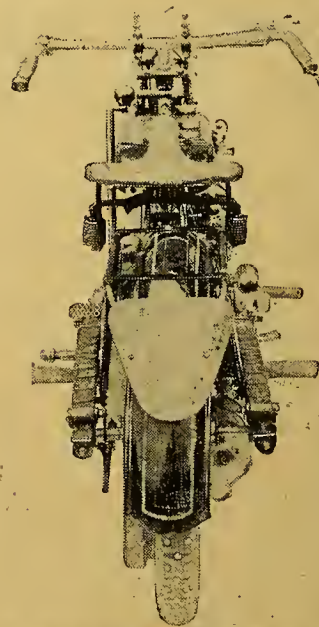
Rear brake mechanism, showing method of its adaptation to the sliding Zenith wheel.

Another important innovation is the new method of operating the rear brake by means of a rod instead of a Bowden wire, a piece of designing which was by no means easy to carry out in the case of a machine in which the back wheel is free to slide backwards and forwards.

**ANOTHER SPRING FRAME.**

Belt side of new 8 h.p. twin-cylinder Zenith-Gradua, the rear portion of which is suspended on laminated springs.

The difficulty has been got over in the following manner. The long pedal operating the brake is provided with a stop, so that it flies back into the correct position, and is connected to a long rod curved upward at its rearmost end and hinged to a point close to the rear spindle. This flat rod or bar passes



Rear view of springing system adopted on latest Zenith.

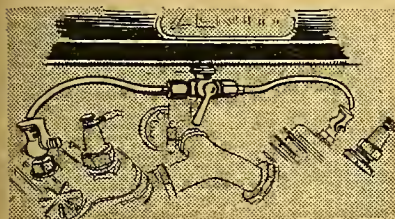
through an adjustable yoke, in which there is a roller engaging with the bar. On the pedal being depressed the bar is lifted, presses the adjustable yoke upwards, which is connected to the brake shoe, and brings it up against the belt rim. This brake shoe is self-adjusting, an excellent feature of the Zenith brake, which has been in use for some little time, and allows the shoe to have a



**Zenith Improvements.—**

perfectly parallel motion, thus engaging the rim evenly and exerting the maximum degree of stopping power. This device was seen more clearly on a 4 h.p. Zenith (85.8 mm. x 85 mm.), which was built to the order of the Russian Government. It was a standard clutch model, but possessed the important improvement just described. On this machine the instructions, on the clutch, "Oil here freely," are written in Russian as well as in English, and this is the case also with the instructions as regards the operation of the gear, which are to be found on the top of the tank.

An interesting experiment we noticed in the Zenith Works was a pair of channel steel forks, which are much lighter than the ordinary forks, stronger,



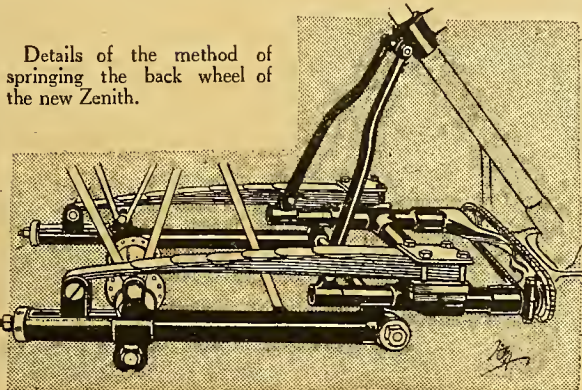
The priming device on the 8 h.p. twin Zenith.

and on account of their smoothness in design, far more easy to clean. Though engaged mainly on war work, Zenith Motors are not neglecting their experimental department, and when new machines may be freely delivered the

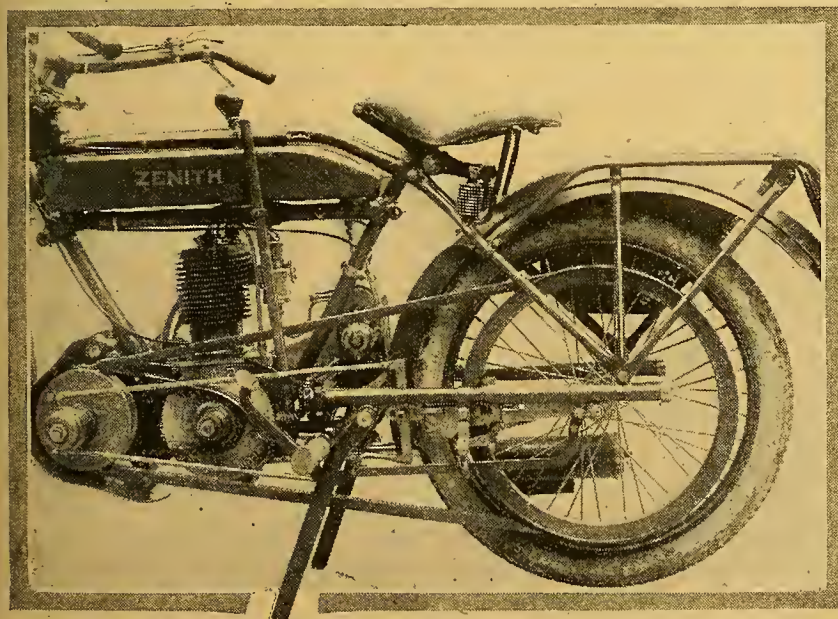
post-war model will be a thoroughly up-to-date machine, but in no way an untried model.

We had a very enjoyable little run

Details of the method of springing the back wheel of the new Zenith.



on the 8 h.p. spring frame combination, and were greatly impressed by the smoothness with which it rode. Shortly after leaving the works, Mr. Barnes, who was riding in the sidecar, asked us to be sure and keep well in the centre of the road, so that we could drive over the maximum number of pot-holes, and at the end of that particular stretch we were compelled to ask him where the pot-holes were; they were certainly not noticeable. The machine was tried over varying road surfaces, and certainly up to the present it is one of the best spring frames we have ridden. Naturally over exceptionally bad surfaces there was a good deal of motion, but all small indentations are entirely absorbed by the springs and are not noticeable, while the larger ones, though they threw the rider about, certainly eliminated the severe shocks which on an unsprung machine would be quite unbearable.



On the 4 h.p. model Zenith a new rod-operated foot brake is fitted. The machine illustrated was supplied to the Russian Government.

## Average Prices OF Second-hand Machines.

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within four weeks.

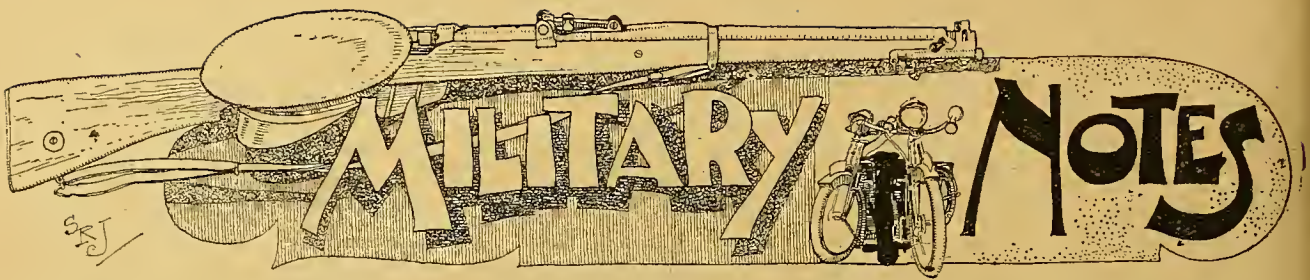
Make.	Year.	H.P.	Average for last week.	Latest average obtainable.
A.J.S. ....	1915 6	3-sp. sidecar ..	£75	—
" .....	1916 6	3-sp. sidecar ..	£92	—
" .....	1916 2½	3-speed .....	£55	—
Alldays ....	1915 2-stroke, 2-sp. ....	£30	—	—
Ariel .....	1916 5-6	3-sp. sidecar ..	—	£78
Bradbury ..	1914 4	2-sp. sidecar ..	—	£35
Brough .....	1916 3½	3-speed .....	—	£55
B.S.A. ....	1916 4½	3-sp. sidecar ..	£61	—
" .....	1915 4½	3-sp. sidecar ..	£55	—
" .....	1915 4½	3-speed .....	£48	—
" .....	1913 4½	2-speed .....	—	£31
Calthorpe ...	1915 2½	2-speed .....	£25	—
" .....	1916 2½	2-speed .....	—	£30
Clyno .....	1914 6	3-sp. sidecar ..	£51	—
" .....	1913 6	3-sp. sidecar ..	—	£48
" .....	1912 6	2-sp. sidecar ..	—	£31
Connaught ...	1914 2-sp. 2-stroke ..	—	—	£22
Douglas ...	1915 2½	2-speed .....	£39	—
" .....	1914 2½	2-speed .....	£35	—
" .....	1913 2½	2-speed .....	£30	—
" .....	1912 2½	2-speed .....	£22	—
Enfield .....	1916 6	2-sp. sidecar ..	£75	—
" .....	1915 6	2-sp. sidecar ..	£65	—
" .....	1914 6	2-sp. sidecar ..	£53	—
" .....	1913 3	2-speed .....	£40	—
" .....	1916 3	2-speed .....	£51	—
H.-Davidson ..	1915 7-9	3-sp. sidecar ..	£67	—
" .....	1916 7-9	3-sp. sidecar ..	—	£78
Henderson ...	1915 8	4-cyl. sidecar ..	—	£88
Indian .....	1916	Powerplus sidecar ..	£84	—
" .....	1916	Powerplus sidecar ..	—	£61
" .....	1915 7	3-sp. sidecar ..	£67	—
" .....	1915 5	3-speed .....	£47	—
" .....	1915 5	3-sp. sidecar ..	£57	—
James .....	1914 4½	3-sp. sidecar ..	£43	—
" .....	1915 2½	2-sp. 2-stroke ..	£27	—
" .....	1916 4½	3-sp. sidecar ..	—	£71
Levis .....	1915 2½	2-stroke .....	£22	—
" .....	1916 2½	2-stroke .....	£25	—
Matchless ...	1914 8	2-speed .....	£53	—
New Hudson ..	1915 4	3-sp. sidecar ..	—	£53
New Imperial ..	1916 2½	2-speed .....	£30	—
" .....	1915 2½	2-speed .....	£25	—
P. & M. ....	1914 3½	2 sp. sidecar ..	—	£40
Premier .....	1914 3½	2-sp. sidecar ..	£45	—
Quadrant ...	1916 4½	3-sp. sidecar ..	—	£65
Rex .....	1914 6	3-sp. sidecar ..	£47	—
Rover .....	1914 3½	3 sp. sidecar ..	£43	—
" .....	1914 3½	3-speed .....	—	£38
Rudge .....	1915 3½	Multi sidecar ..	—	£45
" .....	1914 3½	Multi .....	£34	—
" .....	1913 3½	Multi .....	£24	—
Scott .....	1914 3½	2-sp. sidecar ..	£43	—
" .....	1913 3½	2-speed .....	£30	—
Singer .....	1914 4½	2-sp. sidecar ..	—	£38
Sun .....	1915 2½	2-sp. 2-stroke ..	—	£25
Sunbeam ...	1914 3½	3-sp. sidecar ..	—	£62
" .....	1914 2½	2-speed .....	£42	—
Triumph ...	1914 4	3-speed .....	£40	—
" .....	1914 4	3-sp. sidecar ..	£44	—
" .....	1915 2½	2-sp. 2-stroke ..	£36	—
" .....	1913 3½	3-sp. sidecar ..	—	£34
" .....	1913 3½	3-speed .....	£30	—
Williamson ...	1914 8	2-sp. sidecar ..	—	£52
Zenith .....	1914 6	Gradua sidecar ..	—	£55

**LIGHTENING PISTONS.**

Those of our readers who wish to lighten their pistons and connecting rods to the utmost will be interested to hear that a British firm, Messrs. Bramco, Ltd., can now supply Magnalite castings to drawings or patterns.

Magnalite is an alloy which is said to be lighter than aluminium itself, and to possess high-tension and compression strength. This alloy has been largely used for racing pistons in America, and is standard on several cars.





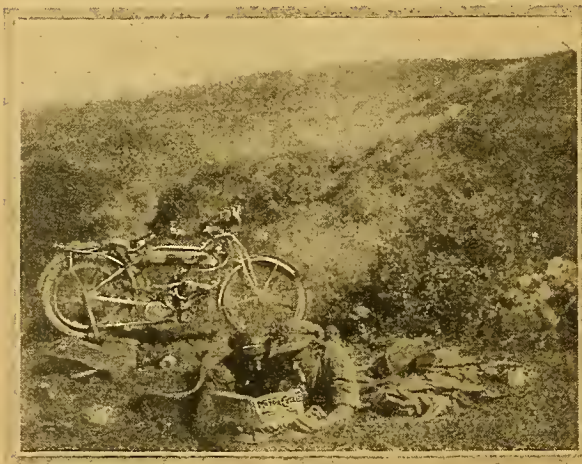
## WITH THE "TANKS."

WE extract the following paragraph from a communication received from a gunner serving with the heavy armoured cars in France:

"We appear to have created quite a sensation in the old country from all accounts, and I can personally vouch for the look of utter dismay on the part of our nice friends the enemy when they see the 'Tanks.'

"It was very hot for an hour or two, but as soon as we got over their lines they thought it time to do a disappearing trick. They absolutely poured shrapnel, machine-gun bullets, and hand bombs at us, but all to no purpose; except for a scratch or two from bomb splinters we arrived through without a scratch. We had nearly a fortnight within the shell fire zone, and as our position was surrounded by batteries of all kinds, things were most interesting at times.

"The artillery fire from our side is wonderful, and really one feels sorry at times for dear old Fritz; however, one's sympathies very quickly cool down when he starts to send the 'rations' across about supper time. For ten days he cleared us off to bed regularly every night at about 8.45 by a few nicely-placed 'ones,' and generally he kept going until a little after midnight. In spite of all this you will be pleased to hear that, as a rule, I slept the sleep of the just. You should just hear the racket when perhaps things have been quiet for an hour or two; all of a sudden every gun blazes away for all it is worth, and until you get accustomed to it the noise is simply deafening."



A Balkan scene, showing motor despatch riders interested in *The Motor Cycle*. (See letter.)

## WITH THE EAST AFRICA E.F.

DRIVER W. MILES-THOMAS, who is serving with one of the motor batteries of the M.M.G.S. with the British East African Expeditionary Force, writes as follows:

"I wrote you last while I was in hospital at Nairobi getting over an attack of fever. I rejoined the battery at Kondoia Irangi, and two days later we set off southwards again. On the run from there to here (—) we did jolly good work, as the road was quite good, and the Staff say we speeded up the advance over the 110 miles very much. We have run over mines in the road, but no casualties as yet. The entrance into this place was quite spectacular. When the German cavalry saw us in extended order on top of the ridge five miles back they put up the white flag, and retreated still further away from the town. Then we and the S.A. motor cyclist corps (rather a ragtime crush, who can't ride for toffee) rushed in, and there was great competition to be the first Britisher to cross the German cross-Continental line. Anyhow, our captain took over the proclamation, and we hoisted our own little Union Jack used for signalling, and pulled down the white flag. Now we are resting here awaiting supplies and orders."

A NOTE FROM THE  
BALKANS.

WE have received from a reader in Jersey, the accompanying letter and photograph, which shows the nature of the shrubby country of the Balkans, and incidentally gives a slight idea of the tracks our men have to traverse with their motor cycles, the one in the illustration being a War Office model Douglas:

"I have been asked to send you enclosed snapshots of two motor despatch riders in the Balkans, enjoying a rest and reading *The Motor Cycle*.

"They wish me to say how very much your paper is enjoyed in that part of the world:

"The two despatch riders are Cpls. L. R. Evershed and P. Austen, of the 28th Divisional Signal Company, Salonica Army."

IN THE COUNTRY OF THE  
RHINOCEROS AND LION.

FROM the remotest outposts of our Empire we frequently receive letters in which the writer shows his surprise at finding the blue-covered *Motor Cycle* in such distant and outlandish places. We have always aimed at catering as much as in our power for the reader Overseas, and, as a result, the journal is as much a friend of the Colonial as the home motor cyclist. The following letter from German East Africa gives a brief but graphic sketch of the conditions in that country:

"It may interest you to know that your paper has found its way out into



Cpl. Herring, the runner, of the London Athletic Club, now serving with A.S.C., M.T., in East Africa. (See the accompanying letter.)

this awful part of the world. I was very delighted when I came across an old copy of *The Motor Cycle*. It was certainly an old one, being dated November 4th, 1915, but it is as full of interest to me as it is when I am at home (South Africa). This country is nearly all swampy jungles, so the postal service is far from what it ought to be; we have not had any papers for nearly seven months. The despatch riding out here is done mostly on Douglas machines, and quite a lot of B.S.A.'s are used as well. It is really wonderful how they are sticking it, for they have to go hundreds of miles over 'game tracks,' and often it is simply cross-country riding. Generally speaking, the despatch rider has a pretty rough time when he is on a trip, having to keep a look-out for enemy snipers, and also keep his eyes open for all sorts of big game, such as rhinoceros, lions, tigers, and snakes.

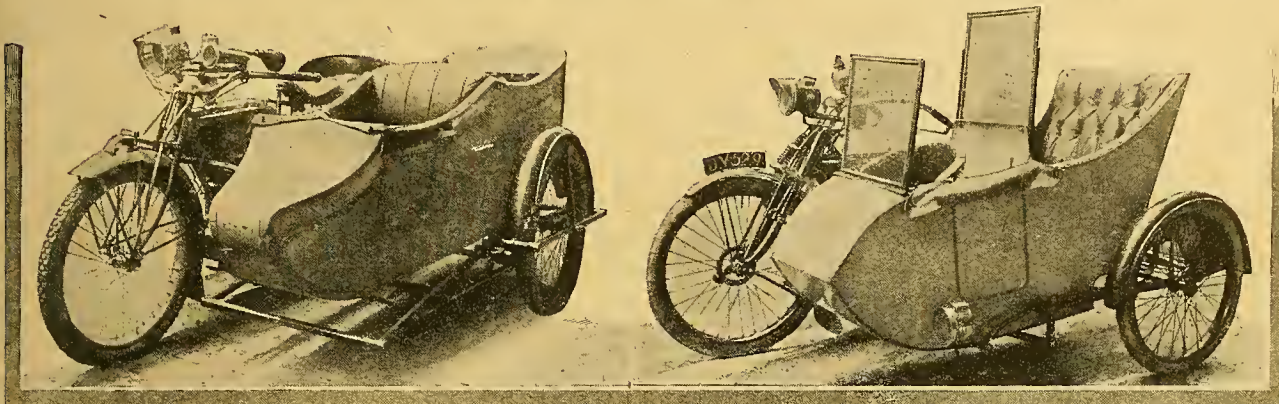
"Wishing you and your paper the best of luck.

"P.S.—Enclosed is a small snapshot of Cpl. Herring, the runner from the London Athletic Club now serving with the A.S.C., M.T., in East Africa, on a Douglas."—(Cpl.) C. H. SMART.



## THE "SECOND-HAND" SHOW.

Motor Cycles well Represented at Prices well up to the Average.



TWO EXAMPLES OF FAMILY SIDECARS ON VIEW.

The two-seated adult sidecar on the left is fitted to an American Excelsior machine, and is really a four-seated outfit, as the bicycle has a pillion seat.

The above sidecar has a seat in front for a child, and is fitted with double screens. The springs appear to require setting up.

"BUYING a pig in a poke" is a very old saying. To render such a possibility unnecessary is the object of the show of second-hand cars and motor cycles organised by Messrs. William Glass and Co. The exhibition now being held at the Royal Agricultural Hall, Islington, London, N., is drawing a fair number of visitors. This is not surprising, since the demand for modern motor vehicles of the economical class has been most pronounced ever since war broke out, and prices have consistently increased, and show no signs of coming to a halt. It was fortunate in some ways for the promoters of the show that the Minister of Munitions should have issued on the Tuesday previous to the opening an Order in regard to new vehicles which was interpreted in many quarters as exceedingly drastic, but which, we have good reasons to suppose, is not so severe as was at first imagined, for permits are to be issued freely in suitable cases. This Order laid down that no further motor cycles or cars may be made after the 15th November without a permit from the Ministry of Munitions, the Army Council, or the Admiralty. The natural effect is that existing vehicles are rendered more precious than ever, and those who visit the Agricultural Hall this week will therefore not be surprised at the absence of real bargains. The motor cycles represented form quite a good show, though the makes are not so varied as one might have imagined. Whereas quite a number of prominent patterns of machines are absent altogether, other brands have six or seven representatives.

### An Examiner's Certificate.

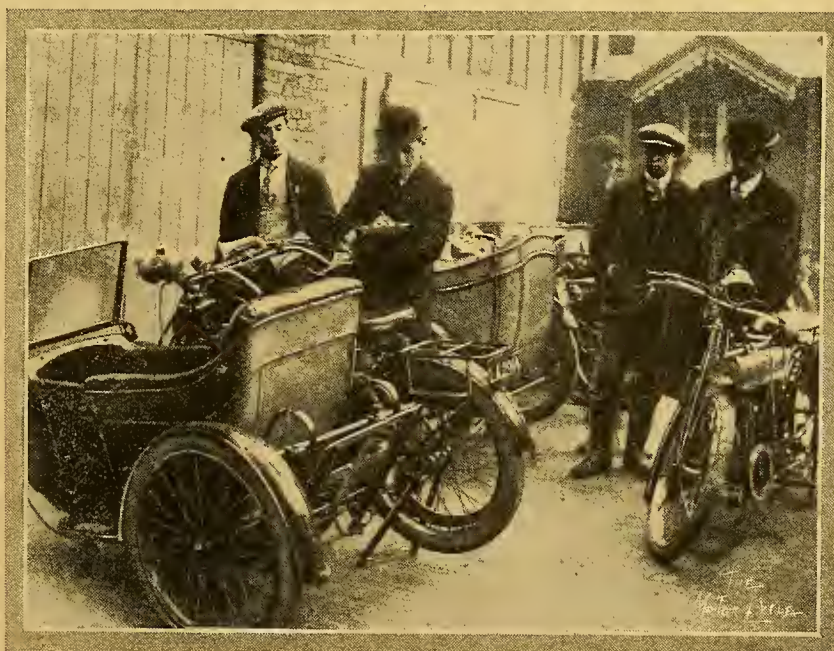
On Thursday there was supposed to be a press view of the exhibits, but there were very few vehicles in the hall even on Thursday afternoon, though the entrance was crowded with vehicles, the examiners being extremely busy getting through their work. All the motor cycles are examined by Mr. R. G. Mundy, who tests each vital part for

wear, and subsequently attaches a certificate of condition. Quite early Mr. Mundy discovered a motor bicycle with a fractured frame, and we heard, too, that a car with a real blemish had the weak portion smeared with thick oil. This, however, at once aroused the suspicion of the examiner, who removed the oil and the secret was out! The examining system, if performed really thoroughly (and particularly if it were possible for the examiners to have a short trip on each vehicle), is quite a good idea. It dispenses with the need for a salesman, whose attentions may be far too pressing. With a reliable certificate a buyer is able to consider his

purchase at leisure, and, should he decide to buy the machine at the price stated in the catalogue, he proceeds to the sales office and effects the sale. There is a reserve on every machine, so that a man may, if he chooses, make an offer. On Saturday there is to be an auction sale of any vehicles not disposed of.

### Entries Arrive Late.

Even on Friday the show was not full, but vehicles were still coming in, for Mr. Glass announced at the press luncheon that the pressure of entries grew rapidly last week, and that it might be necessary to put some of the



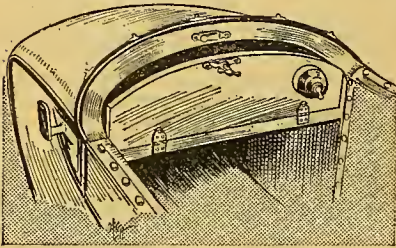
Every machine exhibited had attached to it a certificate of condition, the result of a personal examination by Mr. R. G. Mundy, who is seen above with note pad in hand.



### The "Second-hand" Show.—

motor cycles in the gallery. A certain number of late entries of older vehicles had been refused.

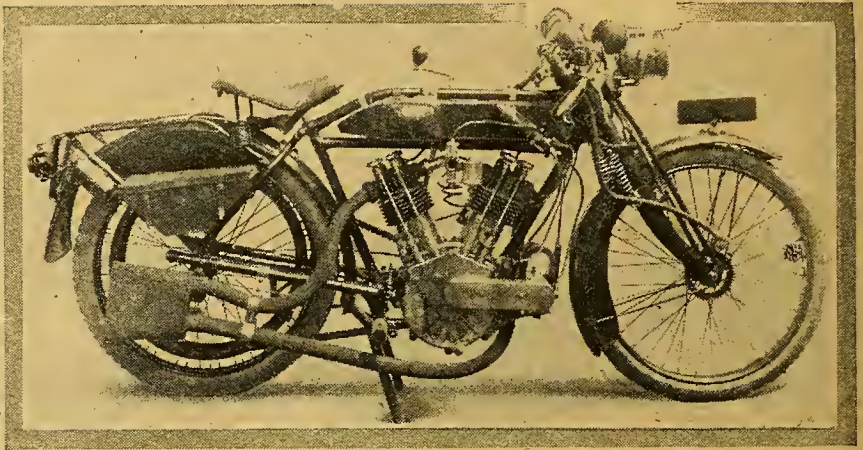
There was only a sparse attendance on Friday (it was half-crown day), but even in the morning several sales had been effected, and, after all, the actual sales will decide the success, or otherwise, of the show. There was quite a good sprinkling of khaki men among the visitors, and one of the first persons we met in the show was Eric Williams, the winner of the Junior T.T.,



A neat locker in the nose of a sidecar fitted to one of the exhibits. The door was inclined at an angle, so that it suggested a convenient place for a clock or speedometer, as well as the switch shown.

and lately a despatch rider in the Royal Engineers, Signal Section. He has just been discharged from the Army after several months in hospital.

We cannot congratulate all the exhibitors on the manner in which they have prepared their machines for exhibition. Flat tyres were quite common, sidecar aprons were hanging in slipshod fashion in the body of the sidecar, and a number of sidecar exhibitors, too, had obviously strained the springs badly, the bodies in some cases being in such a position that anyone sitting in the sidecar would run a great risk of slipping forwards off the



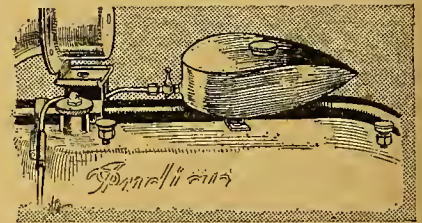
A Zenith with an 8 h.p. overhead valve J.A.P. engine. The straggly exhaust pipes at once attract attention.

seat. Rust, also, was far too prevalent. Then, again, comparing the machines with the statements in the catalogues, one was bound to pause on occasion. For instance, one machine was reputed to have covered a thousand miles, according to the catalogue, but the state of the tyres and enamel was by no means a compliment to the exhibitor or the rider, if such a mileage was anywhere near the mark. Again, there were some examples of sidecar misfits, whilst in other cases the colour schemes formed a striking contrast.

### A Variety in Sidecars.

Nevertheless, the exhibition, as a whole, is most interesting, if only as a study of the condition of machines after two, three, or four years' use on the road. There were low-built sidecars, high-built sidecars, lightweight sporting sidecars, and family sidecars. In the

case of some makes having a number of representatives, the comparison of the different years' models proved instructive, and in this connection it was an excellent plan on the part of the organisers to



A supplementary tank with a pointed tail, as fitted to one of the Red Indian machines in the Show. The usual tank is, of course, used for petrol substitute.

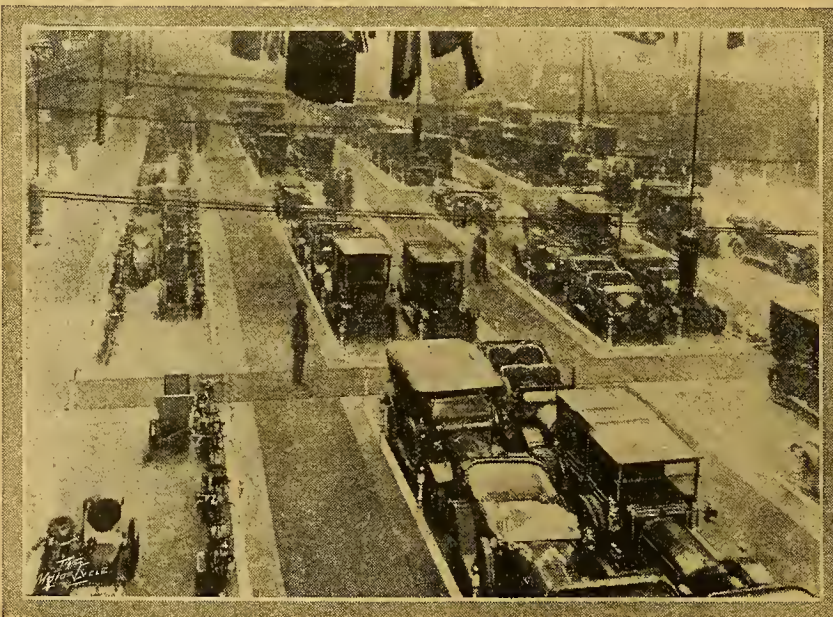
group the different specimens of any one make together to render comparison easier. In short, the Second-hand Show is quite interesting, and we shall be surprised if it has not come to stay.

### Latest Entries of Motor Cycles.

In our last issue we gave a list of the motor cycles to be exhibited, and since then the following have been added:

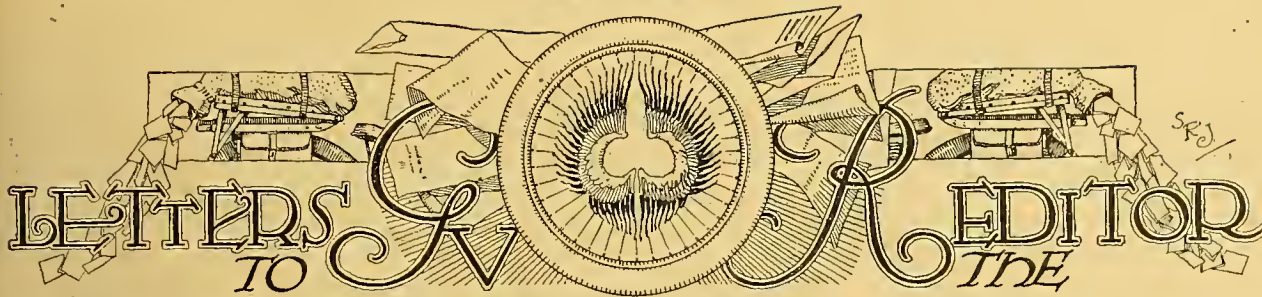
ALLON	1
B.S.A.	4
BRADBURY	1
CALTHORPE	1
CHATER-LEA	1
CLYNO	1
COVENTRY EAGLE	1
DIAMOND	1
ELSWICK	1
EXCELSIOR (AMERICAN)	1
EXCELSIOR (ENGLISH)	1
GRANDEX	1
HARLEY-DAVIDSON	4
HUMBER	1
INDIAN	3
J.A.P.	1
LEVIS	2
MATCHLESS	1
N.S.U.	1
PRECISION	1
RUDGE	1
RUDGE MULTI	2
ROYAL RUBY	1
SINGER	1
ZENITH	2

Near the main entrance there is a stand for the Auto Cycle Union. Hereon the Tourist Trophies and other special cups are exhibited, recollections of the competitions for which even now produce a tremor in the heart of the enthusiastic motor cyclist.



A general view of the Agricultural Hall Show. The motor cycles occupy the two outside rows of stands, whilst the cars are staged on the four central rows.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Herford Street, Coventry, and must be accompanied by the writer's name and address.

#### Motor Cyclist Volunteers.

Sir,—With reference to your article *re* volunteer motor cyclists, I should be glad if you would insert this letter in your columns asking if there are any Volunteer Corps in Brighton or district requiring motor cyclists.

I am sure that there must be many motor cyclists in this town, who, like myself, are ineligible for the regular Army, but would like to do something in which their motor cycling experience would come in useful.

I am sure that there must be many motor cyclists in section at present attached to any of the Volunteer Corps here, there would be no difficulty in raising one.

LEWIS C. CAHON.

#### Boycotting German Goods.

Sir,—Allow me to add my humble tribute of appreciation to your declaration of the attitude you propose to take regarding goods of enemy origin after the war. It is timely and commendable, and it is to be hoped your lead will be followed by others highly placed, especially manufacturers. It is in their hands that the solution of the matter lies. The average purchaser, after all, can hardly be expected to refuse a machine which in every way suits him merely because it has a German magneto, or because there is a band of German steatite round the plug, or because there is a German inner tube in the back wheel. It is for the people who have in the past incorporated these things in their products to see that there is no repetition in future.

The question will not be a very simple one. We have to remember that we are dealing with the wily Hun, and it is quite on the cards that if we confine our attention to goods from Germany and Austria we shall one day find that Mr. Bosch, for example, has transferred his works to Holland, Denmark, or Sweden, and that we shall be receiving the same rotten eggs in a different basket.

It would appear that the time is opportune for the leaders of England's motor industries to put their heads together and make up their minds what they intend to do. Only concerted action can lead to any good result; otherwise they will all be at sixes and sevens. Many, on the score of cheapness, laziness, or sheer unpatriotism, will return to their old and contaminated sources of supply, and, here is the crux of the question, provided the goods are serviceable and are the cheapest, whether they come from Germany, China, or Timbuctoo, they will find a ready market.

Cairo, Egypt.

H.S.

#### "Flat Twins on the Bummel."

Sir,—Under the above heading "Ixion" has certainly scored a victory—at least I think so. To those, like "Ixion," who have tried and those who have scorned flat twins the following may be of interest.

I have ridden 1912, 1913, and 1914 twins an average of 7,000 miles each, 3,400 miles of this with sidecar, on a repair and running bill which, I believe, very few could better. None of these machines "chewed up chains and chain wheels," although the 1914 did 8,700 miles. I had one spare chain, which did work on all three, and was passed on to the fourth.

There is a point overlooked by some, viz., that a "revving" engine needs less attention to valves and piston rings, etc., than the single, due to the mixture having little time to escape; at the same time "revs." keep valves in order. Now I have at present an August (1915) 2½ h.p. three-speeder with *adjustable pulley* (the most useful and

educating part of the machine). It has to date run 4,500 miles faultlessly, over 3,000 of this with sidecar. I have not yet had to grind a valve. The engine has been cleaned twice internally, the last time within 1,000 miles, to see the effect of paraffin mixtures. It has not been coddled, having been over Rest and be Thankful, Kirkstone, and Honister with sidecar. It does 15 m.p.h. with sidecar on single-figure gradients with absolutely no vibration. Vibration on flat twins is, I think, a question of carburation more than oiling, as suggested by "Ixion." With faked carburetter it gives power and economy, 85 m.p.g. with sidecar (jet 28, Amac).

From the foregoing and experience dating from 1903 I am convinced that, given a single and a flat twin with not less than 3,000 gruelling miles (the more the better), without any grinding of valves or cleaning of cylinder, and send them both over broken country, I would back the flat twin every time.

Mr. Huskinson unwittingly paid the flat twin a great compliment when he said, "Take away the gear box," etc. Why, it is through the gear box that we have a light, handy, go-anywhere and pull-anything mount. With reasonable treatment the latest 2½ h.p.'s are more than a match for the average 3½ h.p. singles, especially if the sidecar is attached. This is my experience. All credit to Douglas Bros.

W. HUTCHESON.

#### Bearing Pressures.

Sir,—With reference to Mr. Bonython's letter *re* my article. Taking the points he raises in order:

(1.) I do not think for obvious reasons any engineer would care to take a piece out of the rim of a flywheel. This leaves us the alternative of larger flywheels.

(2.) The area of the big end bearing of the medium-stroke engine, on the given pin diameters, is three-sevenths greater than the long stroke. The slightly greater speed makes little difference. Arguing on the line given by your correspondent, we should assume the smaller the bearing the better.

(3.) If the connecting rods were of the length suggested, viz., five times the crank throw, the rod of the 120 mm. stroke engine would be 300 mm. between centres, i.e., nearly 12in. The other would be 240 mm., or nearly 2½in. less. Of course, either length could not be accommodated on a motor cycle, and is impracticable, but when we have allowed this rod for the long stroke, *plus* a bigger flywheel, the size of the engine would be formidable. Hardly the one for motor cycle work. However, reverting to the existing rods. As both the rods are of the same centre actually, the deductions arrived at and stated in my article are correct in actual practice.

(4.) This point, to my mind, is an obvious fallacy. Mr. Bonython has apparently lost sight of the fact that, although the stroke is longer, the bore is smaller, therefore the pressure exerted is proportionately less than the medium-stroke engine. It is only another way of balancing levers. A long lever with a small weight will balance a short lever with a greater weight.

(5.) The speed of the crank pin cannot, of course, be the same at the same engine revolutions in both cases, and I must draw your correspondent's attention carefully to the end of the article, as I think this explains as clearly as can be the whole matter. How I *suggest* anything, as your correspondent states, is not clear.

In conclusion, the letter seems to me to have wandered far from the actual facts of the case as I have set them out.

A.A.S.



### Favourite Machines.

Sir,—Being a constant reader of your paper, I have much enjoyed the different letters comparing the respective merits of the British machines and the American ones.

In Belgium, I have ridden many machines of different makes, and think that for fast and sporty riding nothing can compare with the good  $3\frac{1}{2}$  h.p. single (T.T. Singer or Triumph); for sweet, vibrationless riding the big four-cylinder 7 h.p. F.N. is unbeatable; whilst for sidecar work the James is second to none.

Here in Holland, where I am interned now, they seem fond of the big American twins, and generally ride them solo. For this work my ideal here would be a Douglas, a little F.N., or a good two-stroke. Any one of these machines would take you everywhere.

Wishing your valuable paper (I expect it eagerly every week) all the success it deserves, **ENTHUSIAST.**  
Rotterdam, Holland.

### Motor Manufacture under Permit.

Sir,—In your comment on the new Order you say, "The new Order will put everybody on a fair basis." This is not the fact. The firms which are fully occupied with Government orders for cars and cycles will have a distinct advantage. They will maintain their output, and will make (as they are making) large profits. Firms whose cars or cycles are not purchased by the Government will have to dismiss their staff, their business will be entirely disorganised and they will suffer serious loss. Moreover, the firms which continue to manufacture will gain experience, while those which do not will fall behind. I need hardly point out that this means also a distinct gain to the foreigner. Moreover, the non-manufacturing firms will be left with large stocks which they cannot use or dispose of. Many firms have on their hands a number of partly completed cars, built to order and on which deposit has been paid, which cannot now be completed till the end of the war. Your article seems to imply that all firms can find employment under Government, sufficient to keep their works fully occupied. This is not so. If the Government will supply all firms with sufficient work to run their works at a reasonable profit (they do not expect pre-war prosperity), and will not compel them to scrap or keep unused much valuable stock, there will be less hardship. Even then the firms which continue to produce cars will have an enormous advantage over those which do not. It is mostly the smaller firms which will suffer. They will accept the position willingly if the interests of the country require it (which they doubt), but they will not agree with you that they are being treated fairly, or that the new Order will put them on a fair basis.

Malvern Link. **H. G. MORGAN.**

[We direct attention to the leading article in the current issue. If the expectations of the Motor Cycle Manufacturers' Union are realised, the situation will be considerably alleviated.—Ed.]

### The Motor Cycle in Australia.

Sir,—We note the letter from Lt.-Col. C. MacLaurin, A.M.C., A.I.F., in your issue of July 20th. We agree with that portion of the colonel's letter where he states the main roads about Sydney are as bad as can be, but we cannot agree with him that the roads in most other parts of N.S. Wales are quite decent.

During June and July it was almost impossible to use a motor cycle for any distance in any part of N.S. Wales, the roads being so bad owing to recent rains. Even under ordinary conditions there are but few good roads in this State.

The colonel also mentions that, owing to English manufacturers appointing but one agent in each State, motorists are left "like sheep in the hands of the shearer," etc., and in some cases have to pay an advance of 60% or more on English list, etc. We can only say the colonel's experiences must have been unfortunate. He evidently overlooks the fact that in the whole of N.S.W. there is less than one quarter of the population of London. If English manufacturers appointed, say, half-a-dozen or more agents in each State it would not be worth any agent's while to push the machines or keep stocks of spares. We are N.S.W. agents for Triumph, Rudge, and New Hudson motor cycles; at the last stocktaking we had on hand spares totalling in value £4,500 for these machines.

It will also no doubt surprise the colonel to find that the profits made here on British motor cycles and spares are very fine indeed, so fine that we have no hesitation in saying that in no case do we make a gross profit of 25% on an English motor cycle. Out of this percentage, sub-agents' commission, advertising, and general overhead expenses have to be paid. Further, British motor cycles are usually sold here at lower prices than the same machines can be imported by the motorist himself. The duty alone on a  $3\frac{1}{2}$  h.p. or 4 h.p. single-cylinder machine is from £13 to £14. It therefore costs at least £20 to land this class of motor.

**BENNETT AND BARKELL, LTD.**

Sydney.

[Accompanying the above letter were reproductions of photographs of New South Wales roads revealing the truth of our correspondents' statements, and never in all our experience have we seen worse examples of main roads. The Automobile Club of Australia is endeavouring to get Parliament to create Road Boards for all districts, as it is found that wherever these boards have been set up an immediate improvement of the roads is a certainty.—Ed.]

### Flat-faced Valves.

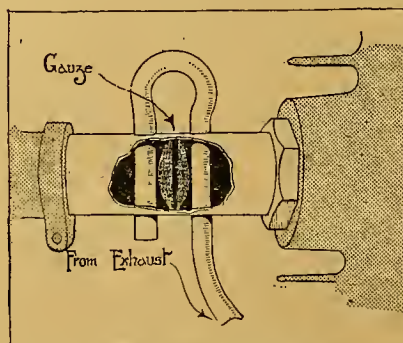
Sir,—The letter of George Lewis, page 415 (November 9th), raises an interesting point, viz., the substitution of flat-faced for bevel valves. Of the many motor cycles I have owned, as far as I can remember, three had flat valves—an ancient Fafnir, N.S.U., and Humber. In these three machines the valves gave no trouble; there was never a thought about grinding in, distortion of seating, nor "lipping." The power was ample for touring purposes. I have often wondered why the flat valve has not been universally adopted for utility mounts. From an efficiency point of view it appears that the gas enters and leaves the cylinder with freedom. I have heard it said that flat valves bounce and require unduly strong springs. This may be so or it may not; no one can say with certainty what happens. I have never seen a tracing to prove or negative this assertion. If there were a certain amount of bouncing at racing speed it would probably not be evident under touring conditions, and as the motor cycle of to-day has become a business man's necessity, reliability and a negligible bill for repairs should outweigh the doubtful advantage of slightly increased speed.

On Military Service.

**CUTTY.**

### Why Does the Engine Carbonise?

Sir,—I have read with great interest the article of Mr. H. Webster Moss in the issue of *The Motor Cycle* for October 12th, and I endorse his explanation of the engine's carbonisation. Let me describe for your readers a little device I have imagined, in order to apply easily Mr. Webster's remedy for carbonisation. As seen in the article,



A French reader's idea of vaporising heavy fuels by utilising heated gauzes in the induction pipe.

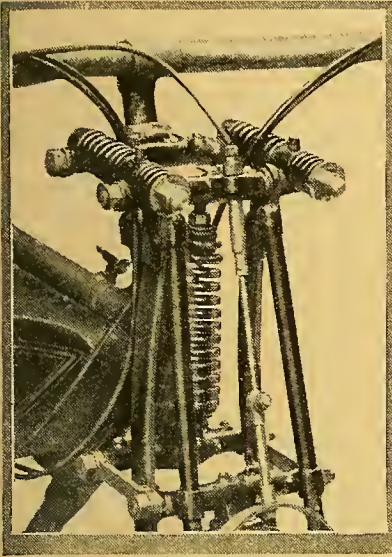
the idea of your contributor is to have an exhaust-heated tube leading through the induction pipe, and my device would be an improvement on that idea. It is also, I think, a simple vaporising device for the heavy fuels. The tube from the exhaust pipe passes first through the induction pipe, as close to the carburettor as possible, and then returns also through this pipe, leaving a space of a quarter of an inch between the two parts of the tube. In the interval two fine gauzes would be located, being forced against the tubes with two leaf springs, as shown in the sketch. I think the gauzes would be heated by the two tubes and the petrol particles of the gases be well evaporated before reaching the cylinder.

**RENE CAMUS,**

Médecin Chef, French Army.



## Brampton Fork Improvements.

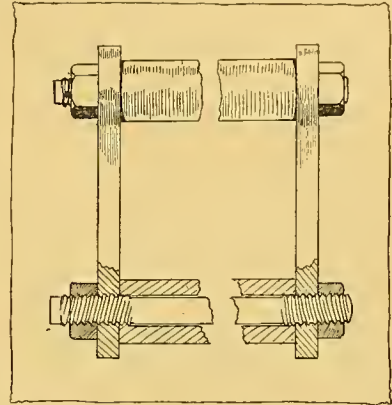


Improved type of Brampton fork.

MESSRS. BRAMPTON BROS., the well-known Birmingham makers of many motor cycle parts, notably spring forks, have introduced several improvements to their standard models. Previously the Brampton fork had only one central pair of horizontal springs at the top, but recently this has been improved upon, and the top of the fork is now fitted with their patent double spring couplings: a heavy spring to take the direct shocks, and a lighter spring to take the rebound.

The method of attaching the side links is good; the left and right-hand links are tapped with left and right threads respectively, and the spindles on to which they screw are threaded to correspond. Each spindle can be turned by the squared head on the left side, thus pulling the links into adjustment. A reasonable margin of play should be allowed by slacking back a half turn from the tight position, and when the outside lock nuts are tightened up, the whole link motion is as rigid as can be desired, whilst perfectly free in action. Lubrication is well provided for, with oil holes and spring covers to all necessary

bearings. It forms, without doubt, an excellent spring fork, giving the maximum of comfort, and its adoption by a number of the best known motor cycle firms, notably the A.J.S., Sunbeam, and Clyno, is sufficient guarantee of its excellence.

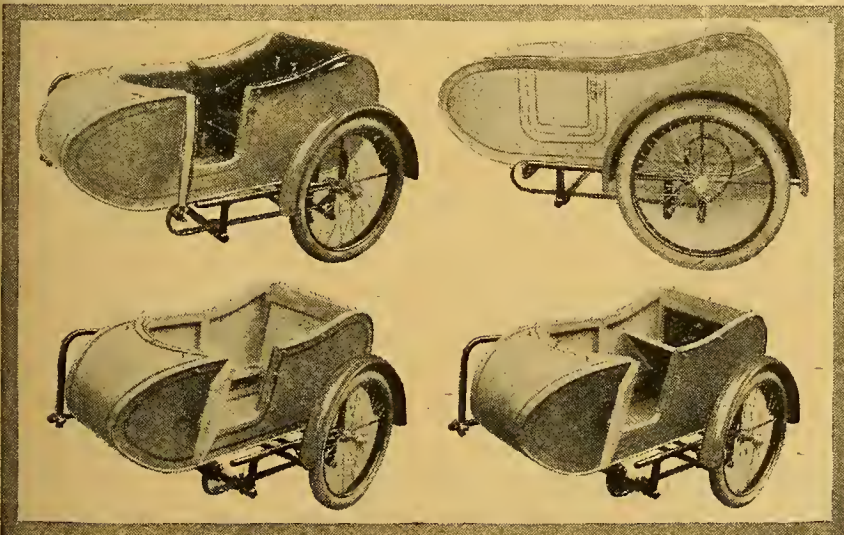


Brampton method of fixing spring fork links with right and left threaded spindles.

## THE G.K. SIDECAR.

AT the present time, when economy is so essential, any form of sidecar which will perform two purposes is sure to be popular among a large percentage of our readers. The latest form of G.K. sidecar can be used as a pleasure vehicle and also as a tradesman's carrier, and the conversion can be effected in a very few minutes. The upholstery is buttoned on to the body, and when the upholstery is in position the outfit looks just the same as any ordinary sidecar. It is claimed that the upholstery can be removed or attached in ten seconds.

When detached it folds away neatly, and stows into the locker in the bulbous back of the body, together with the seat cushion. The lid is then closed, and ample space is provided for the storage of all sorts of goods or merchandise. When the upholstery is in position the locker at the back of the body is sufficiently spacious to carry two petrol tins and other items. Although the coachwork is made specially strong so as to carry weighty goods, the whole sidecar only weighs 112 lb. complete, the body only weighing 50 lb. The makers are the G.K. Sidecar Co., Lorenzo Works, Lorenzo Street, Pentonville Road, London, N.

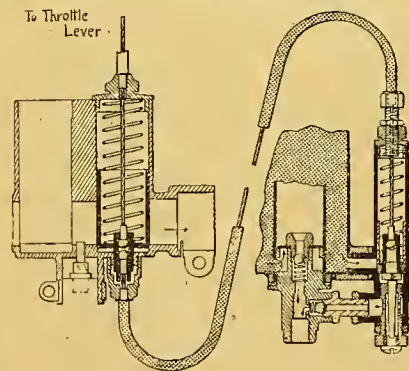


## FOR BUSINESS AND PLEASURE.

A double purpose G.K. sidecar, which can be converted into a business vehicle by easy removal of the upholstery, the bulbous portion forming a useful locker for storing purposes.

## THROTTLE CONTROLLED LUBRICATION.

MEANS of linking the mechanical lubrication or semi-automatic drip feed with the throttle, so that as more power is given by the engine



Throttle controlled lubricator

more oil is supplied to it, are becoming more common. Such connecting up was foreshadowed by *The Motor Cycle* more than two years ago, and no special difficulty is involved in carrying it out.

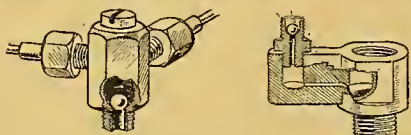
In the method under review (the patented invention of A. S. Baylis, No. 101,504/16) the means adopted are very simple. The throttle barrel carries a second Bowden wire which extends through the base of the carburettor and operates the needle valve of the oil controlling device. The oil so delivered may pass to the crank chamber and be splashed to the various bearings, or it may be pumped direct to the bearings or other part where it is required. This is combined with a hand pump by which an extra supply of oil can be given to the engine at any time.



## THE C.C. SPARKING PLUG. A Design enabling the Points to keep Clean and Cool.

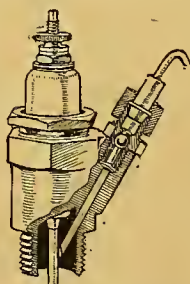
AN interesting article entitled "Over-heating and Sparking Plug Design," in the issue of October 26th, by "H.A.B.," has caused the inventor of the C.C. sparking plug to call attention to his device, which, he claims, supplies the long-felt want suggested in that article.

The C.C. sparking plug and its accompanying fittings, manufactured by the C.C. Sparking Plug Co., 5-7, Old Queen Street, Westminster, S.W., is an ingenious form of plug, in which the general construction of the central elec-



The three-way distributor screwed into the induction pipe, and the adapter for ordinary sparking plugs.

trode and its porcelain insulation follows standard lines, but the second or earthing electrode takes the form of a tube which passes in at an angle through the body of the plug. This tube is connected by means of a union, below which there is a ball valve, and a small bore pipe to the two-way union screwed into the induction pipe, also provided with a ball valve. The object of the first ball valve is to prevent any pressure within the cylinder passing up the pipe, while it allows free ingress for a portion of the mixture from the induction pipe to impinge directly upon the central electrode. Now the mixture, of course, contains a large percentage of petrol, consequently it possesses cleaning properties, and it is also cool on account of the vaporisation. There is no lower seating for the ball, its downward path being checked by a pin through the centre of the tube, which can be seen in the illustration. The second ball



C.C. sparking plug, showing device for cooling the electrodes.

valve is merely intended to come into action in the case of the first ball valve failing. Into the top of the union screwed into the induction pipe is inserted a compression tap, through which priming may be effected, or it may be left open as an extra air device.

It was demonstrated to us on a small plant consisting of a series of sparking plugs and a coil that an excessive amount of soot, though it may not lead to a dead short, allows a certain leakage of current, while through a clean plug there is no leakage at all, consequently a dirty plug would cause a poor spark across the plug gap. It is therefore to the interests of the motor cyclist to keep his plug as clean as possible, and the C.C. sparking plug should certainly go a long way towards helping to do this.

An adapter may also be used whereby an ordinary plug can be fitted and have practically the same effect as the special sparking plug we have just described.

## TRIAL OF THE PARKER VAPORISER. A Simple Method of Breaking up the Mixture.

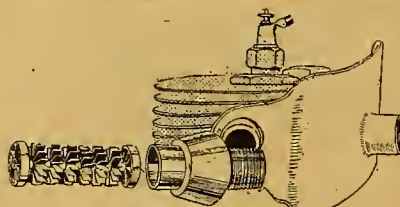
OF the various simple fitments alleged to assist carburation which we have tried the Parker vaporiser seems to us to have one of the best chances as regards permanency; but it certainly might more adequately be termed a "gas mixer" than a vaporiser.

The latter word rather suggests a fitment which is quite needless except when using a heavy fuel, whereas Mr. Parker's simple fitment is primarily intended to break up the charge, which end is desirable, even with petrol.

All who have experimented with heavy fuels have experienced that uneven running and unsteady pulling which indicated a mixture of varying density, and the object of this fitment is thoroughly to break up and mix the charge between the carburetter and the engine. The device was described on page 248, September 21st issue, and consists merely of a series of deep-toothed cog wheels screwed on to a hollow brass stem, the whole compact fitment sliding into the induction pipe at the point where it joins the cylinder.

### A Remedy for Uneven Running.

We recently tested this device, both with heavy fuels and with petrol, and are able to say with some confidence that it undoubtedly improves the running of the engine. The tests were made on a 3 h.p. twin-cylinder engine, tuned more for speed than for steady pulling, the vaporisers being merely pushed into the induction pipe at five minutes' notice. Hitherto, the engine has proved rather uncontrollable at low speeds, even with petrol—probably owing to the long and narrow induction pipe—and the inclusion of the vaporisers has made a consider-

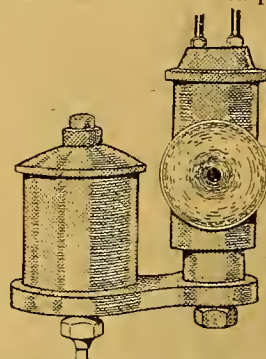


The Parker vaporiser and flange by which hot air is conducted to the carburetter.

able improvement at low speeds. It is also noticeable that, in addition to improved elasticity, the vaporisers appear to have sweetened up the running of the engine, which should indicate reduced wear and lower consumption.

The accompanying illustration—showing how the charge in the induction pipe may vary in density in accordance with the position it occupies—helps one to realise that if the charge be mixed as it rushes through the induction pipe a cleaner and sharper explosion may be expected.

When heavy fuels are employed and it becomes necessary to heat the gases as much as possible, a brass flange can be placed under the induction pipe. This encircles the cylinder and not only assists in warming the induction pipe, but also can be made to transmit hot air to the carburetter via a curved pipe.



Sketch showing how the charge in the induction-pipe may vary in density in accordance with the position it occupies.

Heavy fuels tend to give a very wet charge, varying in "wetness" or density, and therefore a super-atomiser or mixer is desirable. Judging from our own experiences, this simple and inexpensive fitment should meet with the approval not only of the fuel economist of to-day, but with the speed man of to-morrow, as our fears that the slight obstruction in the induction pipe might interfere with the "revving" capabilities of the engine proved unfounded. The idea is good!

The patentee is Mr. W. Parker, 435, Little Horton Lane, Bradford.

## IMPORTS AND EXPORTS.

THE prohibition order of importation of motor cycles is, of course, still in effect, and, although completely assembled machines do not now find their way into this country, tyres and accessories are still imported. The exportation returns for October have almost doubled those of September, and also show a big increase on the numbers given for the corresponding period last year.

### IMPORTS.

	October, 1916.	September, 1916.	October, 1915.
Number .....	—	—	314
Value of complete machines .....	—	—	£13,888
Value of tyres and parts .....	£3,660	£9,215	£9,273

### EXPORTS.

	October, 1916.	September, 1916.	October, 1915.
Number .....	1,497	746	880
Value of complete machines .....	£75,950	£31,700	£38,257
Value of tyres and parts .....	£29,460	£28,130	£26,568

### Petrol Figures.

The amount of petrol imported this month shows an increase of 3,000,000 gallons on the September figures, and 1,000,000 gallons increase compared with the corresponding period last year.

	Gallons.	Gallons.
July, 1916.—	11,526,600 (duty paid 10,528,695)	
August, 1916.—	28,773,053 ( " 10,017,985)	
September, 1916.—	13,532,420 ( " 8,272,230)	
October, 1916.—	16,399,255 ( " 8,926,494)	



# QUESTIONS AND REPLIES



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Cleaning the Crank Case.

**?** Would you be kind enough to tell me the best material with which to clean motor cycle crank cases? I have boiled mine in strong soda water, and it has not done much good. Instead of cleaning off all the oil and dirt and making it nice and white, it has turned it black. I once had a crank case repaired, and I asked the repairer to clean it, and when it was returned to me it looked just like a new one, nice and white. Can you tell me how this was done?—C.E.S.

We think the best way to clean your crank case is to wash it in paraffin. Any solidified oil will have to be scraped away. It is possible that when you had your case repaired it was cleaned by means of sandblasting, which, of course, requires special appliances.

## Timing Fixed Ignition.

**?** I have an A.C. cycle car with fixed ignition, and have removed the magneto for repairs. I now want to replace it. Will you kindly tell me how to set the timing? What should be the exact position of the piston when the contact points are about to break?—A.F.S.

You should arrange for the ignition to be as far advanced as possible consistent with satisfactory running and freedom from backfiring or knocking. You do not state the type of your machine and the engine dimensions, so we are unable to give you very accurate measurements. We would advise you to proceed as follows: Turn the engine till the piston is on top dead centre (firing stroke), then turn the engine slowly backwards until

the piston has descended about 6 mm. This can be easily ascertained by inserting a piece of wire through the compression top. Couple up the magneto and see how the engine runs. You could then experiment a millimetre at a time one side or the other of this setting.

## Increase of Speed on turning off Petrol.

**?** (1.) In your issue of September 14th, page 233, a correspondent, F. A. Holward, gave particulars of altering a Villiers two-stroke to run on paraffin.

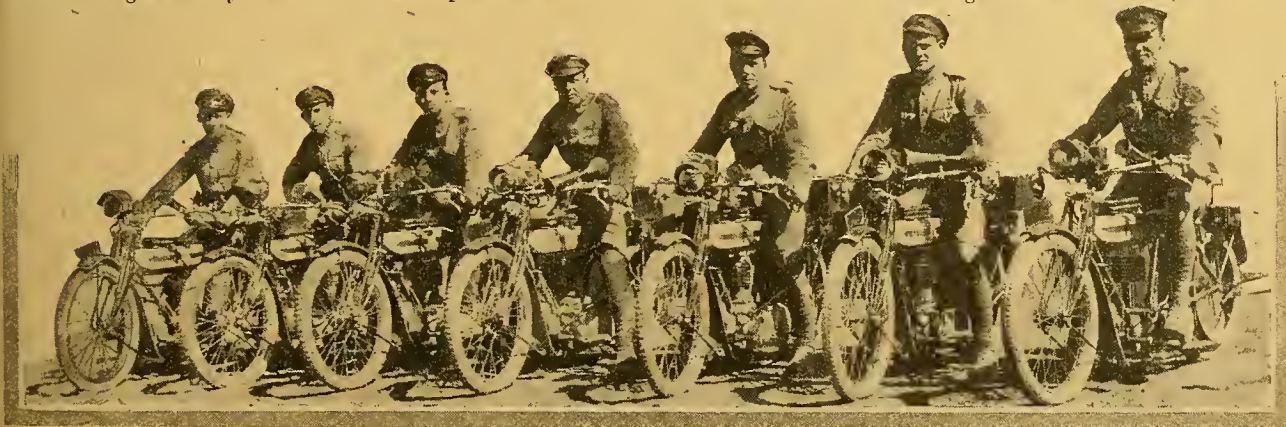
Could you please say if oil would mix with the paraffin (half a pint to one gallon) and work under conditions suggested by Mr. Holward? (2.) I always turn my petrol off about one hundred yards before I stop, and I find immediately I shut off petrol—that is, from the tank—the engine runs much better and increases speed 25%.—W.J.W.

Provided you have some method of vaporising the paraffin fairly well, you can mix oil with it in the usual manner quite satisfactorily. The method suggested by Mr. Holward is quite good, and should allow the fuel and oil to be mixed quite all right. A slightly larger jet may be required, however. The most likely reason for the improvement in running after shutting off the petrol is that in the ordinary way the petrol level is too high; after the supply has been stopped the level, of course, becomes lower. You should have the level lowered very slightly, or you might try fitting a slightly smaller jet, which would possibly give the same result and not interfere so much with the starting as altering the petrol level.

## Loss of Power.

**?** I have a 1914  $2\frac{1}{2}$  h.p. two-stroke two-speed bicycle purchased new in August, 1914. It has run a distance of 4,400 miles since then, but care has been taken of it. It has been little used during the last year, but I have had a good deal of trouble, having had a new piston and connecting rod. It now lacks power. On the flat it is a struggle to get along if there be much head wind, and on a slight gradient I have to change down. The compression is excellent. When warmed up it fires regularly and without four-stroking. The spark is adjusted in the same way as of old; but experiments in altering it have not improved matters. The carburetter takes full air, and it must be good, otherwise it would four-stroke or misfire. Different adjustments have been tried. The engine always sounded rather "puny," but I think there is now even less "bark." Can you suggest any reason for the lack of power? Is it merely old age? The compression being so good makes it difficult to understand.—S.T.F.

We think the most probable cause of your trouble is choked exhaust outlet. This trouble is frequently the cause of trouble on two-strokes. See that the silencer is quite clear, also tail pipe. In view of the fact that you say all other points are in order, this seems to be the only possible cause, unless the new piston is not correct in design. If clearing the silencer and exhaust outlets does not effect a cure you might remove the cylinder and see that the rings are free and in good order.



A detachment of motor cyclists of the Armoured Car Section. The photograph was taken in Egypt, and shows the riders all mounted on Triumph W.D. models.



**A Scored Cylinder.**

I have a 1913  $2\frac{3}{4}$  h.p. horizontal twin. The insides of both cylinders have been scored by the thin end of the gudgeon pins to a depth of about 1 mm.

This means that I can get no power out of the machine at all. (1.) Would it be sufficient to have the cylinders reground? (2.) Or would you advise me to send it to a firm of oxy-acetylene welders? (3.) How can I prevent the gudgeon pins from again scoring the cylinders?—G.P.

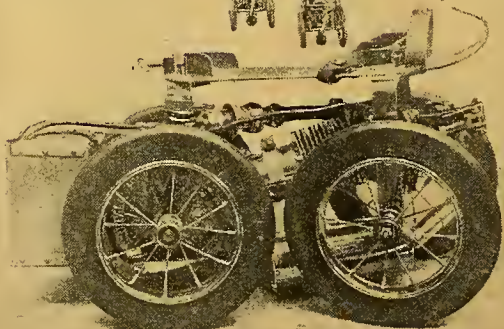
(1.) It will be necessary to have the cylinders reground, in which case you will require new pistons as well. (2.) This is hardly a job which could be cured by acetylene welding. (3.) At each end of the gudgeon pin, we believe, there are brass caps, which are in position for the purpose of preventing the cylinder being scored.

**Two Sparks.**

How can two sparks be got in each cylinder from a Bosch magneto, Z.E. type?—C.B.C.

Really the only practical method of obtaining two sparks per cylinder is by the use of a double pole plug. This is screwed into the usual plug hole. Another ordinary plug should be fitted into the cylinder head or any other convenient position. The high-tension wire is then taken from the magneto to the double pole plug, and a wire from the second plug terminal is then taken to the ordinary plug. Two instantaneous sparks are thus obtained, but this system is likely to cause difficult starting unless the double pole plug is cut out and switched in after a start has been made. Two sparks can be obtained by the introduction of a condenser in the high-tension circuit, but we do not think this method is so satisfactory as the double pole plug.

In view of recent illustrations in *The Motor Cycle* of Autopedes and motor skicycles, the photographs reproduced are of interest. They depict a pair of motor skates, the invention of a Frenchman, who made them ten years ago. Each skate has four wheels and a separate single-cylinder air-cooled engine.

**Swivelling Lamps.**

Will you kindly state exactly what is meant by a "swivelling lamp," which when used by a motor cyclist renders him liable to be fined, also to have his

lamps confiscated?—J.H.T.

A swivelling lamp is one which, by loosening certain nuts, is capable of being moved, or swivelled, independently of the movement of the machine, without actually removing it from the bracket in which it is normally held.

**Oil Leakage.**

The lower part (that is, in the neighbourhood of the crank case) of my  $2\frac{3}{4}$  h.p. two-stroke gets very much covered with oil.

Does this mean that there must be a leak between the cylinder and crank case? The part of the magneto nearest the engine also gets very oily. Is this to be expected or not? Would this mean a loss of much power? If a new joint of brown paper were made, would this stop all oil from leaking? One needs all available power on a small horse-power machine, and I should be glad of your advice in the matter.—H.B.T.

If your two-stroke is lubricated on the petroil system you need not be surprised that the crank case and everything else is enveloped in oil. If, however, the oil is led direct to the crank case, then there must obviously be a leak. This should not be the case, as if there is a leak you are losing crank case compression, and, consequently power. A new brown paper washer might cure the trouble.

**Tuning for Reliability and Speed.**

My mount is a 1916  $4\frac{1}{2}$  h.p. single, and I only use it for pleasure. I want some advice about tuning it for reliability trials, speed, or hill-climbing competitions. (1.) Will it increase the speed to drill the piston? (2.) Will this upset the balance and cause excessive vibration, as the makers recommend removing the bottom ring? (3.) Will you give me instructions for timing the valves? (4.) Do you recommend overlap? (5.) What grade of oil would you use—heavy, medium, or light?—J.U.

We would recommend you, if you desire to obtain generally good all-round results from your machine, consistent with reliability, not to make any very drastic alterations, but merely to make sure that all the adjustments are correct, and that the machine generally is clean, well oiled,

etc. Have as few accessories as possible fitted.

(1.) If properly done by an experienced engineer, and the engine balance corrected, an increase of speed is possible. (2.)

Yes; the balance would be affected, and should be corrected. (3.) The best valve timing can only be arrived at by experiment, and, unless

you intend to use your machine solely for racing, we should advise you to retain the standard setting, as recommended by the makers. (4.) We

would not advise overlap, except for racing or fast hill-climbing. (5.) Use an oil of well-known make; the thinner the oil, consistent with high flash point, the better.

**Tricar Licences.**

Will you kindly tell me if a tricar can be kept with a £1 motor cycle licence, and if it can be driven with a motor cycle licence?—J.W.J.

Yes, a tricar is considered to be a motor cycle as far as the law is concerned. The local taxation licence is £1 per year. It can be driven with a motor cycle licence; that is, the driver need only be fourteen years of age. If under 3 cwt. the registration numbers cost 5s.; if over 3 cwt., car numbers have to be used, which cost £1.

**Flat-faced Valves.**

(1.) Would you please forward particulars as to differences of flat valves and  $45^\circ$  valves? (2.) I have been troubled lately with petrol being blown back through extra air intake. If I close the air I do not get good results. I have set valves and reground them, but it makes no difference. They are both flat valves. (3.) How much clearance should piston have in cylinder diameter? My piston is a fit without rings. Would it cause overheating?—D.B.

(1.) When new there is little to choose between flat or tapered valve seatings. If anything, when new the flat seatings would be better, as they would require less lift, but directly wear sets in it is frequently difficult to get the flat-seated valve to seat properly, so in the long run the tapered seating is to be preferred. (2.) The blow back of which you complain may be due to the valve not seating correctly, weak inlet springs, or to incorrect timing. The inlet valve should not open until the piston has reached the top dead centre, and the exhaust valve has closed. (3.) The piston should be a fairly close fit, even without piston rings. On the average  $3\frac{1}{2}$  h.p. single-cylinder machine the clearance would be about  $3/1,000$  in. As a rule  $1/1,000$  in. is allowed for every inch of cylinder diameter.

**RECOMMENDED ROUTES.**

CROYDON TO WORTHING.—L.N.S.

Croydon, Redhill, Horley, Crawley, Horsham, Washington, Finton, Worthing.

MANCHESTER TO LYDNEY.—W.N.B.

Manchester, Altrincham, Mere Corner, Northwich, Crab Tree Green, Tarporley, Whitchurch, Wem, Shrewsbury, Church Stretton, Craven Arms, Ludlow, Leominster, Hereford, Ross, Park End, Lydney.

FARNHAM TO GLASGOW.—H.W.

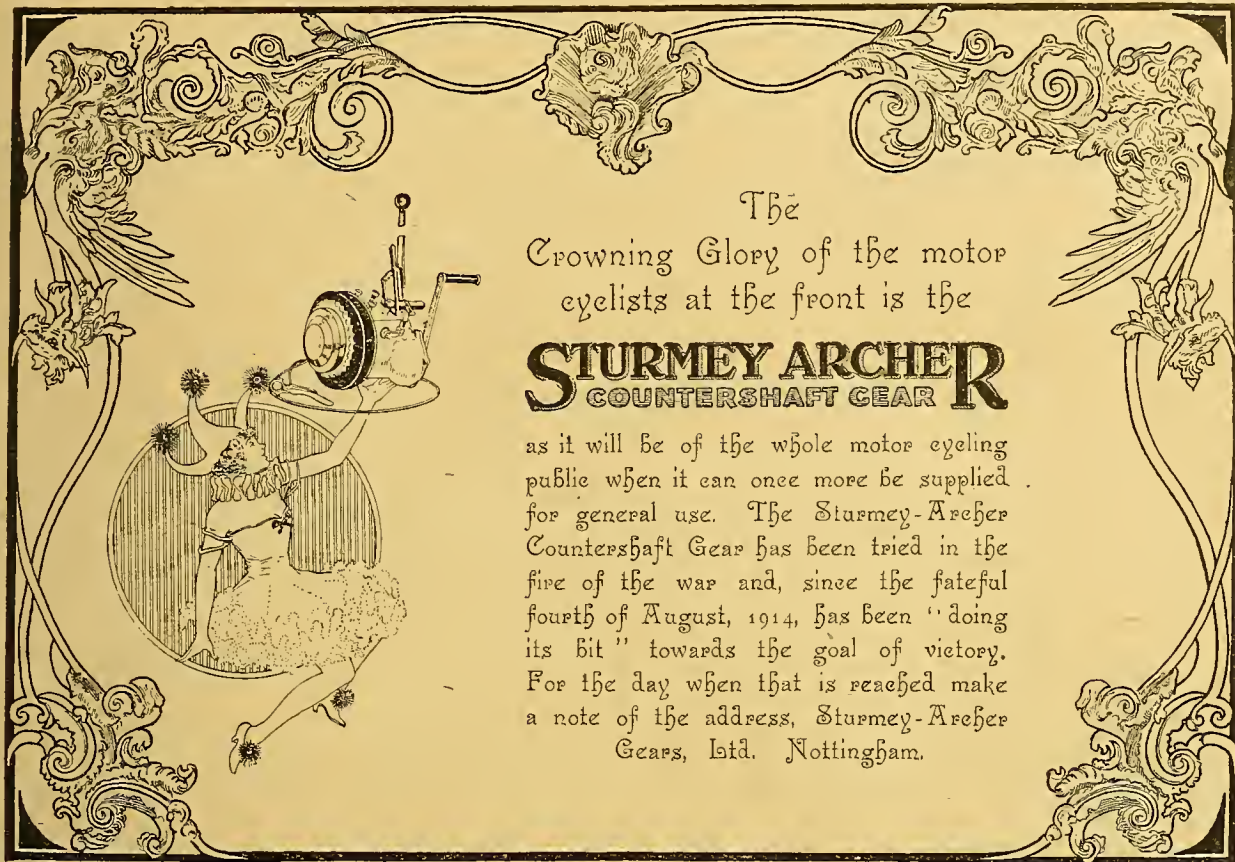
Farnham, Odiham, Reading, Streatley, Oxford, Woodstock, Chipping Norton, Moreton-in-the-Marsh, Broadway, Pershore, Worcester, Kidderminster, Bridgnorth, Whitchurch, Tarporley, Warrington, Wigan, Preston, Lancaster, Kendal, Shap, Penrith, Carlisle, Gretna Green, Ecclefechan, Lockerbie, Beattock, Abington Inn, Douglas Mill, Hamilton, Glasgow.



The  
Crowning Glory of the motor  
cyclists at the front is the

## STURMEY ARCHER COUNTERSHAFT GEAR

as it will be of the whole motor cycling public when it can once more be supplied for general use. The Sturmev-Archer Countershaft Gear has been tried in the fire of the war and, since the fateful fourth of August, 1914, has been "doing its bit" towards the goal of victory. For the day when that is reached make a note of the address, Sturmev-Archer Gears, Ltd. Nottingham.



### CAUTION.

See that the name 'FOX' is on the metal discs (right and left) attached to every genuine pair of FOX'S New Non-Fray Spiral Puttees, thus—



Patentees & Sole Manufacturers—  
FOX BROS & Co., Ltd., (Incorp'd)  
Wellingborough, Somerset.

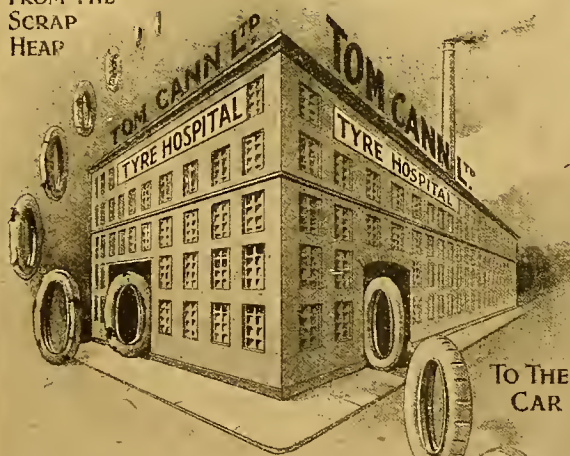
# FOX'S "F.I.P." PUTTEES

NEW NON-FRAY  
SPIRAL (Patented)

Agents for United States—  
Manley & Johnson, 250-255, West  
Broadway New York, U.S.A.



FROM THE  
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SEND US YOUR  
DAMAGED TYRES  
WE ARE UNBEATABLE.

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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1913, 2½ h.p., 2 speeds, in first-class order; £25.-6, Warren St., London. [4843]

RIDER TROWARD, 78, High St., Hampstead.—1915 A.J.S., 2½ h.p., 3-speed, kick-start; 37 gns. [4744]

1916 6 h.p. A.J.S., just delivered, exceptionally good finish; £84.—Russell, Lawrence St., York. [4282]

1916 A.J.S., 2½ h.p., 2-speed, in stock; £55.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X1371]

4½ h.p. A.J.S., 1916, only used for a few weeks, condition as new; £65.—The Purley Motor Garage, Ltd., Purley. [4500]

A.J.S., 1914, 2½ h.p., 2-speed, kick start, hand clutch, all chain drive, complete with accessories; £38/10.—Lamb's, below.

A.J.S., 1915, 2½ h.p., 3-speed, original tyres, first-class order; £44/10; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 169, and Hornsey 1956. [4611]

1916 2½ h.p. A.J.S., 3-speed, latest model, ridden 700 miles only, condition genuinely as new, specification as list; £53.—Robinson's Garage, Green St., Cambridge. [4771]

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MAY BE FOR £10 OR £100,  
BUT THE RESULT IS INVARIABLY  
THE SAME—  
WILLING SERVICE AND ASSURED  
SATISFACTION.

## MOTOR CYCLES: New Models in Stock.

Model K. 2½ h.p. INDIAN Lightweight, 3-speed gear ..... £49 10 0

Model B. 5 h.p. twin INDIAN, 3-speed gear, kick starter ..... £70 0 0

2½ h.p. CALTHORPE - J.A.P., Enfield 2-speed, var. ignition ..... £37 16 0

2½ h.p. CALTHORPE Lady's, 2-stroke, Enfield 2-speed, variable ignition ..... £35 14 0

4 h.p. CALTHORPE Lightweight Combination, twin engine with Enfield 2-speed countershaft gear, variable magneto, handle starter, complete with highly finished coach-built Sidecar ..... £70 7 0

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Model E. 2½ h.p. LEVIS, 2-speed ..... £47 10 0

Model H. 2½ h.p. GOVENTRY EAGLE, 2-stroke, with countershaft 2-speed gear ..... £44 2 0

No. 1. 2½ h.p. NEW IMPERIAL Light Tourist, 2-speed, variable ignition ..... £38 0 0

Model K. 4½ h.p. B.S.A., 3-speed countershaft gear, chain-cum-belt drive, kick starter ..... £64 0 0

2½ h.p. ALLOYS ALLON, 2-stroke, countershaft drive, and 2-speed gear ..... £42 0 0

No. 180. 6 h.p. ROYAL ENFIELD Sidecar Combination, 2-sp., and handle starter ..... £94 10 0

Model A. 3½ h.p. ZENITH Standard, Gradua gear ..... £62 7 6

Model C. 4½ h.p. ZENITH Standard, Gradua gear ..... £65 16 9

Model E. 6 h.p. ZENITH Standard, Gradua gear ..... £76 4 6

Model G. 8 h.p. ZENITH Standard, Gradua gear ..... £77 7 9

No. 6. 4½ h.p. JAMES, 3-speed ..... £66 5 0

4½ h.p. JAMES, 3-speed, complete with Sidecar and apron ..... £81 12 0

No. 7. 3½ h.p. JAMES twin solo model ..... £66 5 0

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## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1915, 4½ h.p., lamps, horn, etc., excellent condition; £50, with Mills-Fulford sidecar, hood, screen, etc., £60.—Roland Winn, 8, Knighton Drive, Leicester. [4624]

1916 4 h.p. A.J.S. Combination, practically new, Lucas accessories, wind screen, and apron, run about 800 miles; 90 gns., or offers.—Box 451, c/o The Motor Cycle. [4590]

2½ h.p. A.J.S., late 1915, 3-speed, Lucas 3 gn. lamp set, Lucas horn, Watford speedometer, extra heavy Dunlop on back, absolutely perfect; £46.—Thorpe, 8, Gloucester Mansions, Cambridge Circus, W.C. [4579]

1915 2½ h.p. A.J.S., in good condition, 2-speed, hand clutch, fitted with Binks 3-jet carburettor, lamps, and horn, etc., must sell, nearest cheque to £42.—Apply, S. Parkinson, c/o J. Oxley, 14, Mary St., West Hartlepool, Durham. [X1191]

A.J.S. 6 h.p. Combination, late model, complete with spare wheel, hood, screen, speedometer, 3 Lucas best lamps, Stewart horn, two 700x80 and two 650x65 tyres, everything in first-class condition; cost £130; only done 5,000 miles; 50 miles trial run to prospective buyer; first offer over £90 secures this ideal turn-out.—Ashton, Grocer, Newtown, Wigan. [X0900]

### Alldays.

1916 Allon, 2½ h.p., 2-speed, unused, shop-soiled only; £36.—Jones, Garage, Droitwich. [X0870]

ALLONS in stock.—Jones, Garage, Broadway, Muswell Hill. Easy payments arranged. [4849]

ALLON, 2-speed, only used for few weeks; £37/10.—The Purley Motor Garage, Ltd., Purley. [4501]

ALLON, late 1915; little used, good condition; £26.—Jack, 89, Astonville St., Southfields, Wimbeldon. [X1300]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [X0796]

ALLONS.—All 1917 models delivered from stock; liberal deferred payments, exchanges.—Lamb's, below.

ALLON, 1915, 2-speed, 2½ h.p., Cowey speedometer, electrically equipped; £36/10; deferred payments if desired.—Lamb's, below.

ALLON, 1915, 2-speed, with hand clutch, all accessories, in fine order; £36/10.—Lamb's, below.

ALLON, 1915, single speed, all accessories, still has original tyres on; £27/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 169, and Hornsey 1956. [4610]

ALLON, 2½ h.p., 2-speed, and clutch, as new, and fully equipped; £42/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X1240]

RIDER TROWARD, 78, High St., Hampstead.—Three Alldays: One 1916 Allon, 2-speed, 29 gns.; one 1915 ditto, 25 gns.; one 1915 4 h.p. clutch model, 4-stroke, 24 gns.; exchanges. [4739]

### Ariel.

ARIEL, 3½ h.p., and sidecar; £12, no offers.—28, Bagley's Lane, Fulham. [4633]

ARIEL, all models in stock; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [4850]

ARIEL, 3½ h.p., 3-speed lamp and sidecar, good running order, Bosch mag.; £22.—Fleming's Garage, Castle St., Salisbury. [X1195]



## MOTOR CYCLES FOR SALE.

## Ariel.

**A**RIEL, 3½ h.p., free engine, just thoroughly overhauled, fast, reliable; £28.—Particulars, F. Taylor, Saltdean, Louth. [4797]

**A**RIEL, 3½ h.p., semi T.T., with variable pulley gear, fast, most excellent condition; £24, bargain.—Layton's Garage, Bicester, Oxon. [4869]

**C**OLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

**A**RIEL, guaranteed 1917 combination, just arrived, £95/10; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [4613]

**1916** 5-6 h.p. Ariel Combination, almost new, all black finish, done 2000, all possible accessories in splendid order and condition guaranteed; £80; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [4851]

## Auto-Wheels.

**A**UTO-WHEEL of Luxe and Premier 3-speed cycle, acetylene lamp, excellent condition; £12, or near.—N. 37, Castletown Rd., West Kensington. [4625]

**A**UTO-WHEELS, B.S.A. de Luxe, 1916 model, ridden approximately 40 miles, 11 gns.; and 1914 Standard, with new Palmer tyre, £6/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4607]

## Bat.

**B**AT-J.A.P., 1914, 6 h.p., countershaft gear, chain drive, Broomfield sidecar; £48.—Collier's, Deal St., Halifax. [4798]

**B**ATS—P. J. Evans, Birmingham agent.—Immediate delivery 4-5 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [4717]

## Bradbury.

**B**RADBURY, 1912, 3½ h.p., in real good order; a bargain, £14.—c, Warren St., London. [4841]

**B**RADBURY, 4 h.p., and sidecar, N.S.U. 2-speed gear, running order; £20.—Tolliday, 22, Loampit Vale, Lewisham. [X1192]

**B**RADBURY, 1913, 4 h.p., Bosch, B. and B., Bowden 2-speed, free engine, spring wheel, wicker sidecar, Kempshall and Dunlop, perfect order; £35.—Cobb, 13, Orchard St., Wombwell, Barnsley. [X1336]

## Brough.

**B**ROUGH, late, horizontal twin, little used, and perfect; £47/10.—Geo. Smith, 268, Lavender Hill, Moleham Junction. [4619]

## B.S.A.

**B**.S.A., new latest models H and K in stock, no waiting.—Moss, Wern. [X1365]

**C**OLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**B**.S.A.'s, guaranteed 1917 model H, all-chain, £66; actually in stock.—Lamb's, below.

**B**.S.A., guaranteed 1917 model K, belt-cum-chain, £64; easy payments, exchanges.—Lamb's, below.

**B**.S.A. 1916 Model H, 3-speed, kick start, Lucas lamps, Stewart horn, tail lamp, original tyres, oversize rear tyre, Phoenix coach sidecar, hood and screen; £68/10.—Lamb's, below.

**B**.S.A. 1916 Model K, with Phoenix sidecar, all accessories; £63; deferred payments.—Lamb's, below.

**B**.S.A., 1914 model K, 4½ h.p., 3-speed, kick start, and B.S.A. Cmolet sidecar, £44/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [4603]

**1916** T.T. B.S.A., all-black finish, demonstration machine; £43/10.—Pleatow, Grimsby. [X1331]

**1912** B.S.A., 2-speed, free engine, excellent condition; £25.—248, Bentley Rd., Doncaster. [X1413]

**B**.S.A.—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. Phone: Hornsey 2562. [4852]

**B**.S.A., 1913, beautiful combination, 4 h.p., Bosch, 2 speeds; £35/10.—1, Ebner St., Wandsworth. [4757]

**B**.S.A. 4½ h.p. Models H and K's in stock for immediate delivery, £64 and £66.—Russell, Lawrence St., York. [4283]

**L**ATE 1913 3½ h.p. B.S.A., clutch model, splendid order; must sell, £24.—436, Whitehorse Rd., Thornton Heath. [4732]

**1913** 2-speed B.S.A., chain drive, all accessories, guaranteed perfect; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [4853]

**31** h.p. B.S.A., 1913, single speed, clutch, ran 3,500 miles, accessories, spares, spare tank; £30, or nearest offer.—L2,556, c/o The Motor Cycle. [4865]

**B**.S.A., 1917 models, in stock for immediate delivery, combinations from 60 gns., solo machines £64.—P. J. Evans, John Bright St., Birmingham. [4718]

**1913** B.S.A. Motor Cycle and coachbuilt sidecar; inspection invited; in excellent condition; £36.—Apply, B. Martin's Terrace, Abercromby, S. Wales. [X1270]

**1913** 2-speed B.S.A., belt drive, all accessories, in splendid condition; £30; easy payments if desired.—Jones, Garage, Broadway, Muswell Hill. [4854]

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Extra batteries, 1/3.

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Extra 3-cell battery, 1/6.

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" " torches, 4d.

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## MOTOR CYCLES FOR SALE.

## B.S.A.

**B**.S.A., 1915, 3½ h.p., 2-speed, free engine, all accessories, first-class condition; £45, or exchange.—S. D'Eath, 15, The Parade, Mitcham, Surrey. [4569]

**1917** B.S.A. in stock. Catalogues free. Spare parts per return. Lia. belts, as fitted by makers, 8/6, post paid.—Albert L. Pitts, Redditch. Tel.: 91. [X0525]

**B**.S.A., 1916, 4½ h.p., chain drive, 3-speed countershaft, and coachbuilt sidecar, all accessories, tyres never been punctured.—Box L2,504, c/o The Motor Cycle. [4517]

**1914** B.S.A., 4½ h.p., 3-speed, kick start, chain drive, Cowey's speedometer, lamps, horn, 1915 Hercules 14 gn. sidecar, all equal new; £50.—43, Grays Rl., Cardiff. [X1185]

**B**.S.A. 1912 Machine, fixed speed, heavy Dunlop tyre on back, new belt, Bosch mag., B.B. carburettor, in perfect running order; accept £13.—W. Judd, Hine Ball, Braunston, Oakham. (D) [X1308]

**B**.S.A. New Models in Stock, 4½ h.p. 3-speed countershaft chain-cum-belt, model K, £64; all chain, model H, £66; cash, exchange, or extended terms quoted; Montgomery sidecars to match from 10 gns.—Elice and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

**1916** B.S.A., belt-cum-chain, with 2 lamps, separate generators, mechanical horn, purchased Sept. 20th, ridden under 200 miles, new, and unscratched; owner unable ride through illness; quick sale £56, no offers.—Captain Cunard, Scaldwell Manor, near Northampton. Station: Brixworth. [X0325]

## Calthorpe

**1915** Calthorpe-Jap, 2½ h.p., Enfield 2-speed; £24.—Newnham, 223, Hammersmith Rd., W. [4764]

**C**ALTHORPE, 2½ h.p., 2-stroke, 2 speeds, very fine condition; 21 gns.—30, Talbot St., Burnley. [X1344]

**SOLE** Bristol Agents for Calthorpes; immediate delivery.—Derby Motor Co., Bishopston, Bristol. [X0355]

**C**ALTHORPE-J.A.P., 1916, 2½ h.p., 2-speed, free engine, excellent condition; £30.—9, High West St., Gateshead. [X1321]

**C**ALTHORPE, 1914, 4 h.p., 3 speeds, and coachbuilt sidecar, speedometer, in new condition; £35.—6, Warren St., London. [4837]

**C**OLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**C**ALTHORPE-J.A.P.'s and 2-strokes; immediate delivery from stock of all models; cash or exchange. A few 1915 shop-soiled only.—Colmore the Agents, Calthorpe the motor cycle, 261, Deansgate, Manchester. [0815]

**C**ALTHORPE-J.A.P., 1915, 2½ h.p., Enfield 2-speed gear, free engine, P. and H. lamp set, speedometer, horn, tools, watch case, equal new; £32; only reason selling, joining up.—Box L2,552, c/o The Motor Cycle. [4654]

## Coventry Eagle.

**C**OVENTRY Eagle, 2½ h.p., 2-stroke, 2-speed; £45/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

## Chater-De Dion.

**C**HATER-DE DION, 2½ h.p., in good condition; £15.—3, Abbotshall Rd., Catford, S.E. [4647]

## Chater-Lea.

**C**HATER-LEA 5 h.p. Twin J.A.P. Combination, in real good order and condition; a bargain, £18.—6, Warren St., London. [4846]

**C**HATER-LEA, 3½ h.p., very low and fast, Bosch mag., B. and B., new Dunlop heavy tyre, spares, and all accessories; sacrifice £12.—1, Boswell St., Radford, Nottingham. [4538]

**C**HATER-LEA, 1915, 8 h.p., 3-speed, enclosed chain drive, kick-starter, coachbuilt sidecar, usual accessories, condition and appearance perfect, £75, or nearest offer.—Holden, Perseverance Mills, Wibsey, Bradford. [4684]

## Chater-Lea-Jap.

**C**HATER Coach Combination, 5 h.p. J.A.P. twin, 2 speeds, handle starting, good tyres; great bargain, £18/18.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [4758]

**R**IDER TROWARD, 78, High St., Hampstead.—1914 Chater-Lea-Jap 8 h.p. combination, new Sturmy-Archer 3-speed countershaft gear box, handle-bar clutch, kick-start, new carburettor, pilot jet, equipped for paraffin; bargain, 38 gns. [4752]

## Clyno.

**C**LYNO 6 h.p. Twin and coachbuilt sidecar; great bargain, £35.—Haines, 169, Lower Clapton Rd., N.E. [X1374]

**C**LYNO, 1913-14, 6 h.p., 3-speed countershaft chain drive; £39/10.—Motor Exchange, Horton St., Hants. [4799]

**C**LYNO, 6 h.p., kick starter, 2-speed, 1916 sidecar, new tyres, all accessories; 30 gns.—Hayes, 108, Euston Rd., N.W. [4566]

**L**ATE 1914 Clyno, No. 6 sidecar, 3-speed, clutch, kick starter, spare wheel, wind screen, new tyres; £55.—Lieut., Norfolk Hotel, Arundel. [4787]



## MOTOR CYCLES FOR SALE.

## Clyno.

**C**LYNO Combination, 1912, 6h.p., in splendid order, wind screen, adjustable tappets, new tyres, lamps, spares; £28.—39, Chepstow St., Walton, Liverpool. [X1234]

**19**12-13 5-6h.p. Clyno Combination, 2-speed, kick start, Bosch, excellent condition, accessories; any examination: sacrifice 30 gns.—Sergt. Owens, Dane Bridge, Much Hadham, Herts. [4645]

**L**ATE 1913 6h.p. Clyno, thoroughly overhauled and renewed in every particular part a few weeks ago, receipted bills showing £25 paid for this available, new 1916 cylinders, pistons, bearings, and cones, new Palmer cords and tubes, new chains, Binks, fully equipped with speedometer, lamps, horn, watch, special Clyno sidcar, and spare wheel, a smart, most reliable, and economical machine, as good as new; price £55, lowest; owner wishes to buy car; any fair trial in neighbourhood.—Rev. B. Kitchen, Feniton, Horton, Devon. [4551]

## Connaught.

**C**ONNAUGHT, 2½h.p., 2-stroke; £20, with lamps.—Colmore Depot, 31, Colmore Row, Birmingham. [X1236]

**C**ONNAUGHT, 2½h.p., 2-stroke, footboards, etc.; £18/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X1241]

**C**ONNAUGHT, latest improved models; immediate delivery.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [4598]

**P.** J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [4713]

## Coventry Eagle.

**C**OVENTRY Eagle, 1916, 6h.p., 3-speed, countershaft, coach sidcar; £69/10; little used.—Motor Exchange, Horton St., Halifax. [4801]

## Douglas.

**19**10 Douglas, perfect condition; £10.—248, Bentley Rd., Doncaster. [X1409]

**19**12 Douglas, in good order; bargain, £20, or close offer.—Howley, Devizes. [4695]

**19**12 Douglas, 2 speeds, complete lamps, etc.; £23.—Cross, Jeweller, Rotherham. [X1359]

**19**12 Douglas, splendid condition, new tyre; £20.—17, Broomfield Rd., Coventry. [X1228]

**19**13 Douglas, in fine order.—Smith, 16, Haverstock Hill, opposite Chalk Farm Tube. [4821]

**D**OUGLAS, 2-speed, excellent order; £20/10.—Gardener, 6a, High St., Homestead. [4532]

**D**OUGLAS, 2½h.p., 2-speed, good condition; £15.—A. E. Tippet, Blockwater, Scorrier, Cornwall. [4702]

**D**OUGLAS, 4h.p., 1914, 2-speeds; a bargain, £45; with sidcar, £52.—6, Warren St., London. [4848]

**19**13 Douglas, 2-speed model, excellent condition; £35.—The Purley Motor Garage, Ltd., Purley. [4502]

**19**13 2½h.p. Douglas, splendid order, all accessories; quick sale £20.—Healy, 7, Woburn Place, W.C. [4697]

**D**OUGLAS, 1914, 2½h.p., 2-speeds, perfect condition; £35.—H.P.O., 65, Eardley Crescent, Earl's Court. [X1181]

**D**OUGLAS, 1912, 2-speed, tyres as new, good running order; what offers?—Garrett, 121, Holly Rd., Aldershot. [4706]

**D**OUGLAS, 3-speed, 2½h.p., condition perfect, accessories, spares; £47.—Dryland, Kingston, Herefordshire. [4559]

**19**12 Douglas, 2-speed, footboards, fest, reliable, splendid engine, accessories; £25.—21, Robert St., N.W. [4574]

**D**OUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil. Tel.: 50. [5855]

**19**16 W.D. Douglas, 2½h.p., all accessories and spares; £48; as new.—S. J. Riley, Elmhurst, South Av., Stourbridge. [X1038]

**19**14 2½h.p. 2-speed T.T. Douglas, in perfect condition; £37; seen any time.—Bounds' Garage, 223, High Rd., Kilburn. [4627]

**19**14 Douglas, 2½h.p., splendid condition, new tyres, spare belt, valves, tools, etc.; £36.—58, Garfield Rd., Lavender Hill, S.W. [4545]

**T**HE Plum of the Week.—2½h.p. Douglas, 2-speed, 1913, lamps, horn, etc.; first £28 secures, no offers.—Millards, Chesterfield. [X1385]

**D**OUGLAS, 1914, 2½h.p., model V, 2-speed, complete, perfect condition; £40.—Metzgar, Airship Station, Wornwood Scrubbs. [X1272]

**19**13 T.T. 2½h.p. Douglas, 2-speed, tyres and belt as new, thoroughly overhauled throughout; £32 gns.—Railway Garage, Staines. [4828]

**D**OUGLAS, 1912, 2½h.p., 2-speed, complete; £26; cannot repeat the value this machine offers.—Laytons' Garage, Bicester, Oxon. [4871]

**D**OUGLAS, 2½h.p., £15/10; 1913 2-speed, wants little attention, £26/10; 1914, single-speed, £28.—Motor Exchange, Horton St., Halifax. [4800]

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## CARS AND LIGHT CARS.

**K**NIGHT JUNIOR, 1914, 12 h.p., 2-seater, sporting body ..... £145

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**G.W.K.**, 1915, detach. wheels, domed guards, all black finish, speedometer and mech. horn ..... £165

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**FORD**, 1916, 20 h.p., 5-seater, shop-soiled ..... £125

**MORGAN** Grand Prix No. 1, water-cooled, all access. GARDEN, 1915, 6 h.p., M.A.G. engine, 2-speed, all lamps, windscreen ..... £92

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**MINERVA**, 24 h.p., 5-seater, hood and screen. A bargain ..... £55

## SIDECAR OUTFITS.

**REX**, 1914, 6 h.p., 2-speed, modele de luxe ..... £38

**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidcar ..... £32

**INDIAN**, 1913, 7 h.p., coach-built Sidcar, 2-speed, and spring frame ..... £42

**ZENITH**, 1914, 6 h.p., countershaft clutch model, with sporting underslung Sidcar ..... £60

**RUDGE**, 1913, 5-6 h.p. Multi, with Rudge Sidcar ..... £29

**ENFIELD**, 1912, 6 h.p., 2-speed twin, Enfield Sidcar ..... £46

**RUDGE**, 1913, 3½ h.p. Multi, coach-built Sidcar ..... £33

**B.S.A.**, 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidcar, only done 500 miles ..... £68

**SCOTT**, 1914, 3½ h.p., 2-sp., and Scott Sidcar Chassis ..... £52

**ZENITH**, 1915, 3½ h.p., twin, clutch, and C.B. Sidcar ..... £52

**HUMBER** 1915 6 h.p. opposed, twin 3-sp., Combination cost £110 ..... £75

**ENFIELD**, 1914, 6 h.p., 2-speed Combination ..... £55

**MATCHLESS**, 1914, 8 h.p., 3-speed, J.A.P. engine, just re-camelled ..... £60

**RUDGE** 1915 3½ h.p. Combination, like new ..... £73

**PORTLAND-J.A.P.**, 1914, 8 h.p., B.S.A. 3-speed, and Sidcar ..... £42

## SOLO MODELS.

**D**OUGLAS, 1911, 2½ h.p., 2-speed, spring forks ..... £20

**RUDGE**, 1913, 3½ h.p. Multi, T.T. bars ..... £33

**IVY**, 1915, 2-stroke, single-speed ..... £18

**NEW HUDSON**, 1913, 3½ h.p., 3-speed J.A.P. engine ..... £34

**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £28

**RUDGE**, 3½ h.p., Phillipson pulley, 1915 improvements ..... £37

**BROWN**, 3½ h.p. model, Bosch magneto ..... £14

**INDIAN**, 1915, 3½ h.p., 3-speed twin ..... £52

**ROVER**, 1912, 3½ h.p., T.T. clutch model ..... £20

**D**OUGLAS, 1912, 2½ h.p., single-speed ..... £16

**ALLDAYS ALLON**, 1915, 2-speed, 2-stroke ..... £32

**NEW HUDSON**, 1915, 2-stroke, as new ..... £24

**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equip. .... £47

**ENFIELD**, 1910, 2½ h.p. twin, Grady gear ..... £14

**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, twin ..... £56

**LEVIS**, 1914, 2½ h.p., 2-stroke, countershaft ..... £18

**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, as new ..... £53

**INDIAN**, 1914, 7-9 h.p., T.T. clutch model ..... £41

**F.N.**, 2½ h.p., 2-speed, lightweight ..... £17

**IVY**, 1915, 2½ h.p., 2-stroke, 2-speed, as new ..... £21

**NORTON**, 1915, 4 h.p., T.T., all accessories ..... £49

**D**OUGLAS, 1912, disc wheels, all accessories ..... £24

**D**OUGLAS 1914 "W", 2-sp., kick-start, all accessories ..... £45

**INDIAN**, 1915/6, 5 h.p., 3-speed, like new ..... £48

**ENFIELD**, 1915, 3 h.p., 2-speed, full equipment ..... £34

**ALLDAYS ALLON**, 1916, 2½ h.p., 2-speed, 2-stroke ..... £40

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**HARLEY-DAVIDSON**, Model 16F, T.T. bars ..... £80 15

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**ROYAL ENFIELD** 6 h.p. Combination ..... £94 10

**ROYAL ENFIELD**, 3 h.p., twin, 2-speed ..... £57 15

**ROYAL ENFIELD**, 2½ h.p., 2-speed, 2-stroke ..... £44 2

**B.S.A.**, 4½ h.p., 3-speed, all chain, H., 1917 model ..... £66 0

**B.S.A.**, 4½ h.p., 3-speed, chain-cum-belt, K., 1917 model ..... £64 0

**INDIAN**, 7 h.p. Powerplus, model G ..... £75 0

**INDIAN**, 7 h.p. Powerplus, and Sidcar ..... £104 0

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**LEVIS**, 2½ h.p., s-speed, Popular model ..... £32 0

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## MOTOR CYCLES FOR SALE.

## Douglas.

**D**OUGLAS Specialists.—Gibb, Gough, London Rd. Gloucester. Gibb, the International Douglas rider winner of numerous cups and gold medals. [2211]

**D**OUGLAS, 2½h.p., 2-speed, clutch, engine just over hauled by makers, exceptionally fast and power ful; £29.—117, Hazelbank Rd., Hither Green, S.E. [475]

**D**OUGLAS, 1912 model, 2½h.p., 2-speed, F.E., gear engine, etc., excellent, lamps, horn, footboard price £25.—Newham, 223, Hammersmith Rd., W. [476]

**D**OUGLAS, late 1912, 2½h.p., 2-speed, clutch, perfect condition; £26, or exchange higher power T.T.—McFarlane, 295, Edge Lane, Droylsden, Man chester. [4731]

**D**OUGLAS, 1913 model, purchased 1914, 2 speeds kick starter, in absolutely new condition, and very little used; £38.—McVoy, Grocer, opposite G.C. Station Wembley. [4861]

**D**OUGLAS, 2½h.p., late 1913, T.T. model, splendid condition, all accessories, Klaxon, owner buying light car; £37.—Seen c/o Private, 126, Euston Rd. London. [4651]

**C**OLMORE Depot, Birmingham, Manchester, Leicester and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

**19**16 2½h.p. War Office Douglas, all-black, 2-speed ridden once only, condition indistinguishable from new; £52/10.—Robinson's Garage, Green St., Cambridge. [4765]

**D**OUGLAS, 2½h.p. T.T., late 1913, 4,000, perfect very fast, climb anything normal on top; trial; deposit; owner in army 18 months; £33.—Clark, See tion, Tynemouth. [4872]

**D**OUGLAS, 1914, T.T. 2½h.p., 2 speeds, kick starter, clutch, tyres as new, lamp, speedometer, horn, and spares, fine order; buying car.—Dickinson, Pinehurst, Pyrford, Surrey. (D) [X1277]

**D**OUGLAS, 1915, 4h.p., 3-speed, lamps, horn, speedometer, watch, all accessories, not used this year; seen by appointment; £58.—Frederick Nowell, 282, Earl's Court Rd., S.W. [4705]

**D**OUGLAS, 1913, 2-speed clutch model, all accessories, really fine order, £36/10; another, 2-speed without clutch, £32/10.—Lamb's, 151, High St., Walthamstow, and Hornsey 1956. [4605]

**D**OUGLAS, 2½h.p., 2-speed, new October, 1914, perfect condition, just overhauled, tyres equal new, Brooks saddle, F.R.S. lamp, mechanical horn; £33/10.—Nixon, Boxgrove, Carshalton Park Rd., Carshalton. [4723]

**T.T.** Douglas, 1914, 2½h.p., 2-speed, free engine, light pistons, long exhaust, purchased 1915, good condition, fast and reliable; offers above £36.—Apply, Sup.-Lieut. Williams, Queenborough Pier, Sheerness. Tel.: Sheerness 141. [4573]

## Elswick.

**E**LSWICK, 1914, 3½h.p., 3-speed, water-cooled, kick start, coach combination, all accessories; £29/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4608]

## Enfield.

**2**½h.p. Enfield, 1912-13, twin; 10 gas.—Smith, 11, 24 Nascot St., Watford. [4544]

**E**NFIELD S.—Immediate deliveries.—Jones, Garage, Broadway, Muswell Hill. [4855]

**C**OLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

**E**NFIELD 3h.p. Twin, 1915, splendid condition, all accessories; £38.—Rev. Shaw, Farnworth, Widnes. [X1044]

**6**h.p. Enfield Combination, 1913, lamps, horn, etc., in splendid running order; £35.—Malpass, Bonhill, Matlock. [X1302]

**C**HEAP.—3h.p. Enfield, ridden about 200, purchased last spring; £46, or close offer.—4, Chepstow Rd., Newport, Mon. [4561]

**E**NFIELD 1914 6h.p. Combination, 3 lamps, other accessories; £55; deferred terms if desired.—Lamb's, below. [4561]

**E**NFIELD 1915 6h.p. Combination, all accessories, tip-top order; £65/10; deferred terms, exchanges.—Lamb's, below. [4561]

**E**NFIELD 1916 6h.p. Combination, 3 lamps, speedometer; £79/10.—Lamb's, below. [4561]

**E**NFIELD, guaranteed 1917, 3h.p. T.T. model; 65 gns. deferred terms if desired, exchange.—Lamb's, below. [4561]

**E**NFIELD, guaranteed 1917 3h.p. touring model, 3-speed, kick start, actually in stock; 55 gns.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 163, and Hornsey 1956. [4612]

**E**NFIELD 1914 Combination, excellent condition, almost new tyres; bargain, £50.—Colmore Depot, High St., Leicester. [X1278]

**19**16½ Enfield Combination, hood, screen, lamps, etc., as new; £74, or nearest offer; any trial.—O.B., 497, Old Ford Rd., Bow. [4576]

**19**16 Enfield Combination, Lucas dynamo lighting set, almost new; £85, lowest.—G., 5, Rugby Mansions, W. Kensington. [4720]



## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD. 6h.p., guaranteed 1917 combination, latest fittings; £94/10; deferred payments, exchanges.—Lamb's, below.

ENFIELD 1917 8h.p. Combination, actually in stock, with rearest fittings; £96/12.—Lamb's, below.

ENFIELD, 1917, 8h.p. electrically equipped combination, hood and screen, 700x80 tyres, £120/7; 2-seater sidecar 50/- extra; quite the latest from works.—Lamb's, below.

ENFIELD, 8h.p., guaranteed 1917 combination, hood and screen, £102/2. All above positively in stock, and may be purchased on deferred payment terms by mutual arrangement; exchanges entertained; special terms for short-term payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 169, and Hornsey 1953. [4604

1916 Enfield Combination, new July, 150 miles; nearest 75 gns., or exchange 1916 solo and cash.—34, Devonshire Rd., Bexhill. [X1419

8h.p., 6h.p. Enfield Combinations, 3h.p. twins and 2½h.p. 2-speed 2-strokes; immediate delivery from Jones, Garages, Broadway, Muswell Hill. [4856

ENFIELD 6h.p. Combination, 1913, 2-speed, Amal, Bosch, heavy Dunlop tyres, all accessories; £38, or near offer.—D. Jones, The Bridge, Sandycroft, Chester. [X1045

ENFIELD Combination, 6h.p., late 1914, speedometer, new tyres, pillion seat, perfect order; any trial; £60.—B., 201, Uxbridge Rd., Shepherd's Bush. [4622

ENFIELD Combination, 90 gns.; 3h.p. twin, 55 gns.; 2½h.p. 2-stroke, £45.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0833

ENFIELD, 3h.p., 1916½, 2-speed, kick start, Lucas lamps, mechanical horn, little used, perfect condition; £48; good combination wanted.—Gilbert, Bilton, Rugby. [X1268

ENFIELD Coachbuilt Combination, 1916, 6h.p., perfect condition, complete set lamps, speedometer, tools, tyres perfect; any trial; £76.—120, High Rd., Lee, S.E. [4557

1916 2½h.p. Enfield, 2-speed, 2-stroke, with 2 Lucas lamp sets and Lucas horn, genuinely as new, ridden 50 miles only; £40.—Robinson's Garage, Green St., Cambridge. [4773

ENFIELD, 3h.p., 1916 model, in splendid condition, very little used, Palmer cord tyres, lamp, horn, speedometer, 2-speed and kick starter, fast and reliable; £44.—Box 447, c/o The Motor Cycle. [X1309

ENFIELD Combinations, new models in stock, 6h.p., 2-speed, £94/10; your present machine can be taken as part payment. We supply on the best cash, exchange, or easy payment terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492

1916 6h.p. Enfield Combination, hood, screen, Lucas head, rear, and side lamps, horn, mirror, oversize tyres, special mudguards, spare 2-gallon tank, and special toolbox, only done 2,700 miles; sacrifice £80, cost £115; like new.—Alexander, 19, Westminster Terrace, Glasgow. [4549

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all 1917 models, including lighting set combination, special 8h.p. with hood and screen, and standard 6h.p. combination, also 3h.p. standard and sporting models, and 2½h.p. 2-stroke; prices from 42 gns. [4714

## Excelsior.

EXCELSIOR (American), 1916, 7h.p., 3-speed, and coach sidecar, brand new; £77/10 spot cash.—Motor Exchange, Horton St., Halifax. [4802

AMERICAN Excelsior, 7h.p., 1916 model, engine recently overhauled, numerous spares, including new tyres; £60, or near offer.—Box 443, c/o The Motor Cycle. [X1262

SPECIAL Offer of a limited number of brand new latest type 1916 model American Excelsior motor cycles, 7-9h.p., 3-speed, with mechanical lubrication, hand and foot control to clutch, etc.; £65; sidecars, enamelled to match, from £14 to £20; immediate delivery.—To be obtained only from the Premier Motor Co., Aston Rd., Birmingham. [4700

## F.N.

5-6h.p. F.N., 2 speeds, clutch, in perfect condition throughout; £35, or exchange 1914 Triumph.—James, Lynn Rd., Wisbech. [X1423

F.N., 1914, 5h.p., with coachbuilt sidecar, speedometer, lamps, fine condition; £40, or near offer.—Wright, Quailly, Milngavie, Scotland. [X1322

## Gamage.

GAMAGE, 1914, 2½h.p., Bosch mag., B. and B., running order; £10.—Rose, Wickelwood, Norfolk. [X1421

## Government.

1914 1916 Government Lightweight; best offer above £20.—9, Holley St., Smethwick. [X1356

## Grandex.

1914 Grandex-Pup, 2½h.p., 2-speed, 2-stroke, excellent condition, smart machine; £24/10.—Newnam, 223, Hammersmith Rd., W. [4763

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## SPARE PETROL TANK

Specially designed for PARAFFIN CONVERSIONS, with large filler cap, union cock, T piece, and two feet of copper tubing, the whole forming a complete outfit. Capacity 1 quart, length 7½ in.



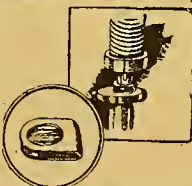
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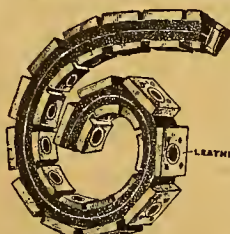
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## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, like new; £60, or offer.—Auston, Harwich Rd., Colchester. [4642

HARLEY-DAVIDSONS, 1916 models; immediate delivery from stock.—Colmore Depot, 261, Deansgate, Manchester. [0830

HARLEY-DAVIDSON Combination, 7-9h.p., 1915, speedometer, accessories, perfect; offers.—X., 64, Wallgate, Rotherham. [X1040

LATE 1915 Harley-Davidson Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0861

COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802

HARLEY-DAVIDSON, late 1915 combination, almost as new, lamps, watch, speedometer, spares, etc.; sacrifice £65.—6, Lorenzo St., Pentonville Rd., London, W.C. [4592

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, with Montgomery coachbuilt sidecar, horn, lamps, tools, and spares, in perfect condition, not ridden since overhauled by makers; £63.—Horns, Colley Manor, Reigate, Surrey. [X1281

RIDER TROWARD, 78, High St., Hampstead.—Three Harleys: One 7-9h.p., 3-speed, dynamo lighting, 20 gn. sidecar, new April, 64 gns.; one ditto, new November, 61 gns.; one ditto, solo, 52 gns.—'Phone: 5392. [4740

HARLEY-DAVIDSON, 1916 models, delivered from stock on the best terms for cash; exchanges or easy payments; sidecars in stock to fit. Get in touch with us before deciding.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552

HARLEY-DAVIDSON, the Silent Grey; immediate delivery of 1916 models; all new 1915 types sold out; one or two second-hand bargains in F and J models from £60.—Send your orders to Colmore Depots, 261, Deansgate, Manchester, and 31, Renshaw St., Liverpool. [0817

1916 Model 11J 7-9h.p. Harley-Davidson, 3-speed, with dynamo electric lighting outfit, fitted with special coachbuilt Gloria sidecars, enamelled to match, complete combination now listed at £115, only used for a few hundred miles, and guaranteed as new; £95.—The Premier Motor Co., Aston Rd., Birmingham. [4701

## Henderson.

HENDERSON, 4-cyl., 2-speed chain drive; £46/10, or exchange.—Motor Exchange, Horton St., Halifax. [4803

1916 Henderson Combination, fully equipped, and only run a few hundred miles; what offer?—Longman Bros., King St., Acton. 'Phone: 1578 Chiswick. [4660

HENDERSON 1915, magnificent combination, little used, in excellent condition; £70; consider fast solo machine part.—H. Wareing, 182, Portland St., Southport. [X1377

HENDERSON, 8-10h.p., 4-cyl., 2 speeds and clutch, automatic lubrication, fitted with Mills-Fulford Express de Luxe sidecar, shop-soiled only; £85, usual price £94/15; easy purchase terms arranged.—Harrods, Ltd., Motor Car Dept., Brompton Rd., S.W. [4680

## Humber.

1914 3½h.p. 3-speed Humber, lamp, etc.; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0863

1912 3½h.p. 2-speed Humber, handle-starter, very good; £20, offers.—Stocks, Thurlstone, Penistone. [X1382

HUMBER, 3½h.p., 3-speed, brand new; £56.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842

HUMBER Motor Cycle, 3½h.p., free engine, 2-speed gear, with sidecar, perfect condition; £32/10.—H. Phillips, 228, High St., Watford. [4644

BEST Bargain Ever Offered.—2½h.p. Lightweight Humber, 3-speed gear; any trial; used very little; accept £19, no offers.—Bon Marche, Chesterfield. [X1387

HUMBER 2h.p. Lightweight, Bosch mag., B. and B., engine just re-bushed, excellent condition throughout; bargain at £14/10.—3, Norbury Parade, Norbury, S.W. [4649

HUMBER, 1912, 3½h.p., 2-speed, free engine, in new condition, splendid mount; £25, or near offer considered; expert trial.—Gilbert Smith, New Road Bakery, Kidderminster. [X1266

## Indian.

INDIAN, 7-9h.p., 1914, electric equipment; £32/10.—Claverly, Oxted, Surrey. [4694

7-9h.p. Red Indian, clutch, 1913, T.T. model, perfect. £28.—80, Bishop Rd., Southport. [X1353

INDIAN, 1915, 3½h.p. twin, 3 speeds, practically new; 40 gns.—6, Warren St., London. [4845

INDIAN 1916 Powerplus Combination, run 300 miles only; a bargain, £90, or close offer.—6, Warren St., London. [4844

INDIAN, late 1915, 4h.p., new condition, and fully equipped; £38.—Colmore Depot, 31, Colmore Row, Birmingham. [X1239



## MOTOR CYCLES FOR SALE.

## Indian

INDIAN Combination, 7h.p., 2-speed, spring frame, 1913½, splendid condition; £37.—Cross, 230, Archway Rd., Highgate, N. [4724]

INDIAN, 1915, 3½h.p. twin, 3 speeds, excellent condition; price £45.—Connought Motor Co., 29, Long Acre, London. Regent £440. [4563]

1915 Indian, 7h.p., T.T. clutch, fine condition, little used, 2 new tyres; owner called up; best offer.—H., 22, Bramah Rd., Brixton, S.W. [X1326]

1914 Indian, with Millford sidecar, good running order, new tyre on rear wheel; nearest offer to £45.—12, Midland Rd., Swadlincote. [4635]

7-h.p. Indian, 2-speed, clutch, T.T. bars, condition as new; £40; exchange lower power twin.—Howard, 172, St. Ann's Rd., Tottenham. [4688]

RIDER TROWARD, 78, High St., Hampstead.—1915 Indian combination, 3-speed, clutch, kick start, underslung coach sidecar; 53 gns. [4749]

INDIAN 7-h.p. O.B. Combination, 1915, electric lighting, extraordinarily good outfit; price £65, worth much more.—Laytons' Garage, Bicester, Oxon. [4670]

INDIAN, 3½h.p., 2-speed, clutch, good running order, new heavy Dunlop and chains, £22; sidecar if required, £3; owner away.—Rowland Williams, East Molesey. [4696]

INDIAN 7h.p. Powerplus, Swan torpedo coachbuilt sidecar, Lucas head, tail, sidecar lamps, Lucas gunner horn; £80.—2nd Lieut. Taylor, Southsea Castle, Portsmouth. [X1284]

1916 7h.p. Powerplus Indian Combination, electric lamps and horn, spring frame, 3-speed, clutch, speedometer, new condition.—Madcock, Oakengates, Shropshire. [X1196]

INDIAN, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [4716]

INDIAN, T.T., 1915, 5h.p., 3-speed, clutch, kick start, electrically fitted, tools, original tyres, perfect condition, as new; first cheque near £49 accrues.—N. Hinson, 22, Addison Rd., Reading. [4666]

LATE 1914 7h.p. Spring Frame Indian Combination, 3 new tyres and chains, overhauled, and in perfect condition; any trial or examination; £52/10.—White, Hemfield House, Ince, Wigan. [X1186]

INDIAN Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £83.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [4711]

BIRMINGHAM Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex stock, 5h.p., 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [4712]

1916 Indian, 5h.p., 3-speed model, clutch, kick start, fitted with light coachbuilt sidecar, lamps, and all accessories, very little used, equal to new; price £60.—R. Bamber and Co., Ltd., Birkdale, Lancs. Tel.: 44. [X0377]

P. J. EVANS, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5h.p. 3-speed model, £70; 7h.p. T.T. Powerplus, £75; 7h.p. 3-speed spring frame, and electric light, £78; special de Luxe 7h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [4710]

INDIAN Combination, 1915, 7h.p. model C, 3-speed, kick start, just overhauled by manufacturers, coachbuilt Canoelet sidecar, tyres as new, everything complete with lamps, mechanical horn, speedometer; genuine purchaser driven 100 miles; price 60 gns.; seen Saturday or Sunday; write for appointment.—46, Lady Margaret Rd., Southall. [X1362]

## Ivy.

RIDER TROWARD, 78, High St., Hampstead.—1915 Ivy, 2-speed, 2-stroke; 24 gns. [4745]

IVY, 1915 (purchased new August), 2-stroke, 2-speed, sound condition, not used since July; £20, no offers.—Neaum, Auctioneer, Fordingbridge. [4785]

IVY, 1916, 4h.p. J.A.P., 3-speed Sturmer-Archer countershaft Lucas lamps, electric horn, not done 3,000, in splendid condition; cost £68, what offers?—Huntley, Rimac House, Saltfleetby, Lincs. [4553]

## Ixion.

SOLE Bristol Agents for Ixions; immediate delivery.—Derby Motor Co., Bishopston, Bristol. [X0036]

## James.

JAMES No. 6 Combinations in stock; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [0829]

COLMORE Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

RIDER TROWARD, 78, High St., Hampstead.—1915 James Canoelet combination, cost £90, mileage 2,500, as new; 53 gns. [4753]

1916 James Combination, as new, all latest fittings; cost £95, for good 2-seater car, or sell £72.—Gortley, 12, Glenisla Gardens, Edinburgh. [X1319]

JAMES.—P. J. Evans, John Bright St., Birmingham.—Immediate delivery, all models, including 2-stroke, 3½h.p. twin, and 4½h.p. big single. [4715]



## ACTUALLY IN STOCK.

ARIEL 5-6 h.p. Combination ..... £93 10  
B.S.A., 4½ h.p., chain drive, 1917 model, £66 0  
B.S.A., 4½ h.p. belt-cum-chain, 1917 model, latest fittings ..... £64 0

Just arrived from Works, Canoelet Sidecars from £13 gns. extra.

ENFIELD, 6 h.p., Std. Comb. and their latest Sidecar, 1917 outfit ..... £94 10

ENFIELD, 3 h.p., kick-start and touring models, T.T., 1917 ..... £57 15

ENFIELD, 8 h.p., 1917, Combination ..... £96 12

ENFIELD, 8 h.p., 1917, Comb., 2-seater, with hood and screen, dynamo lighting set ..... £120 7

These Outfits have quite the latest fittings, having just arrived from Works.

HARLEY-DAVIDSON, Model r6f, and their newest Sidecar ..... £101 16

NEW HUDSON, 2½ h.p., 2-sp., just arrived £38 0

LEVIS, 2½ h.p., Popular ..... £32 0

LEVIS, 2½ h.p., Mod. E, 2-sp., Enfield gear, rustless rims ..... £47 10

CALTHORPE-J.A.P., 2-sp., Enfield gear ..... £37 16

COVENTRY EAGLE, 2½ h.p., 2-sp., 2-str., superior finish, special price ..... £39 10

ALLDAYS ALLON, single-speed ..... £38 0

ALLDAYS ALLON, 2-speed ..... £42 0

ALLDAYS ALLON, 2-speed, clutch ..... £45 0

## Sidecars.

INDIAN, suitable for 5 h.p., cut price.... 15 gns.

INDIAN-CANOELET for 5 h.p. .... 13 gns.

INDIAN-PHOENIX for 7-h.p. .... 14 gns.

2 ENFIELD Box Carriers ..... each 15 gns.

1 PHOENIX wicker Sidecar, nearly new £6 10

1 PHOENIX Coach, shop-soiled, usual price, £8 15s. .... £7 15

Deferred Payments on New and Second-hand Machines, 5% extra, payable at least quarter down and balance in 12 monthly instalments. Substantial discounts in 1, 3, and 6 months.

## Second-hands.

ENFIELD, 6 h.p., 1916 Comb., 3 lamps, speedometer ..... £79 10

RADCO, 1914, 2½ h.p., single-speed ..... £15 15

WOLF-PECO, 2-str., 1916, k/start, hand clutch, ridden about 200 miles, all access., lamps, unused ..... £31 10

B.S.A., 1916, Auto-wheel, ridden 40 miles £11 11

ELSWICK, 1914, 3½ h.p., 3-speed, coach Sidecar, and accessories ..... £29 10

T.D.C., 1916, 2½ h.p., 2-sp., spare tank, original tyres ..... £24 10

DOUGLAS, 1913, 2½ h.p., 2-sp., and access. £32 10

ALLON, 1915, 2½ h.p., 2-sp., Cowey speedometer, and accessories, etc. equipped £36 10

AUTO-WHEEL, 1914, Standard model, new Palmer tyre ..... £6 10

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MATCHLESS Combination, 1915, 7-h.p. M.A.G., all chain, 3-speed countershaft, new tyres, electric light; £75.—42, Park St., Camden Town. [4571]

MATCHLESS and Coachbuilt Sidecar, torpedo body, 8-10h.p., very fast, good condition, late 1913 model, lamps, front and rear; a bargain, £40.—Lt. Collis, St. Peter's Vicarage, Southborough, Kent. [4539]

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2 h.p. Minerva, mag., fine little bike; £10, or near offer.—248, Bentley Rd., Doncaster. [X1412]

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NEW Hudson, 2½h.p., 3-speed, free engine, fine condition; £23/10.—Motor Exchange, Horton St., Halifax. [4806]

NEW Hudson, 2½h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

RIDER TROWARD, 78, High St., Hampstead.—1913-14 New Hudson coachbuilt combination, new sidecar, 3-speed; 33 gns. [4751]

NEW Hudson, Mark IV., 2½h.p., bought new last December; new price £49/7; 3 speeds, kick start, foot clutch, all accessories; £30.—Hunting's Motor Dept., Harrow. [4656]

1915 New Hudson, 4h.p., 3-speed countershaft, all accessories, in fine order and condition; £54; easy payments arranged.—Jones, Garage, Broadway, Muswell Hill. [4857]

NEW Hudson, 1915, 2½h.p., 2-speed countershaft gear, free engine, splendid condition, lamps, wind screen, accessories; leaving England; £25.—Gooding, 38, St. Luke's Rd., Bayswater, London, W. [4781]

## New Imperial.

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

RIDER TROWARD, 78, High St., Hampstead.—1915 (November) New Imperial, 2-speed; 24 gns. [4746]





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## An Unsolved Problem.

**W**EATHERPROOFING is a problem which has been with us since the earlier days of the motor cycle. The question is quite forcibly brought before one's notice each succeeding winter, and from the remarks one hears by both motor cyclists and non-motor cyclists, it is clear that the lack of protection on the average motor cycle is a deterrent to many. The subject becomes quite a hardy annual, but there is nothing objectionable in that fact so long as the problem remains unsolved. It is common knowledge that many firms have devoted much time and trouble to provide adequate protection for the riders of motor cycles.

In some cases really useful fittings have been the result, but few have been standardised, as makers attach so much importance to the question of appearance, and have banned the shields as unsightly. But this question of neatness can be overdone and efficiency sacrificed. After all, a motor cycle is not exactly pretty to gaze upon, and we believe the majority of readers would stipulate efficiency and adequate protection before appearance any day.

What surprises us in particular is the refusal of most firms to standardise the admittedly efficient and simple type of shield which extends from above the footrests and sweeps under the crank case. Not only are the rider's nether limbs protected in this manner, but also the transmission system. It is highly probable that if a lead were given by one or two of the largest firms other manufacturers would quickly follow suit, but the regrettable fact remains that efficient mud shields are still absent from the average mount. We must confess that we are not in favour of half-encasing wheels to obtain cleanliness on account of the fear of clogging, and also the effect on the steering due to wind pressure; but our correspondence proves that there is a really pressing demand for a shield to ward off rain and mud from the rider's feet and legs,

and an underpan to keep down dirt scattered by the front wheel.

What is there against deflecting mud and grit which, in the ordinary course of events, coat crank case, silencer, and gear, and find their way in to the transmission system, obviously to its great detriment? The country practitioner in particular will never use the motor cycle in winter until it has been rendered weatherproof, and so amply protected that the rider need not of necessity don overalls, the fitting and removal of which constitute such a nuisance when frequent calls have to be made.

There is evidence that manufacturers specialising in sidecar outfits at any rate are devoting more attention to the question of protecting the rider's legs, as well as the working parts of the machine, and we would like to see the movement extended to solo machines. Two sidecars belonging to experimentalists which we examined the other day were remarkably well protected, and there is no valid reason why every machine should not be equally well shielded. A clean motor cycle and a clean rider are the finest advertisements the pastime could have. After the war, in order to stimulate effort in the direction under discussion, competitions must be organised with the special object of testing the efficiency of "weatherproof" shields and mudguards, and we hope that the Auto Cycle Union is alive to this crying need.

In the meantime, we direct attention to an article in this issue by Dr. René Camus, of the French Army, who, in an attempt to solve the problem, takes the bull by the horns and designs the whole machine with an eye to protection from mud and water.

Dr. Camus's idea is to enclose the whole of the engine mechanism and protect it from the elements by aluminium plates. This arrangement necessitates the fitting of a blower to assist the cooling process. After all, there is no reason that, with the present reliability of a motor cycle engine, all the vital parts should be exposed.



## In the Zone of the Fiercest Fighting.

Photographs taken near Verdun, the scene of the recent great French Victory.

It will be recollected that the Germans approached to within three or four miles of Verdun in their great attack, which commenced in the spring and lasted until July. Up to the time of the Allies' great attack on the Somme, the intensity of the fighting which occurred in front of this city had never been equalled on any front during the war; it even eclipsed Ypres in the persistency and tenacity of the attacks and repulses. A month ago the news was flashed throughout the world (with the exception of Germany and Austria) that the French had swept the Germans back from the famous fort of Douaumont, and also recovered in a few days ground which had cost the Germans months of fighting and thousands of lives to gain. The French victory was one of the most dramatic that has occurred on the Western front.

IT is not usual for photographs taken so close to the fighting line to be passed by the Censor, and these, which have been passed by the Ministère de la Guerre, have in consequence an added interest. They show well the terrible damage done by the Boches.

In No. 1 a passage is shown leading beneath a bridge on the Meuse, which is quite in view of the enemy—an "unhealthy" spot we should say—and one on which no one is allowed in daylight.

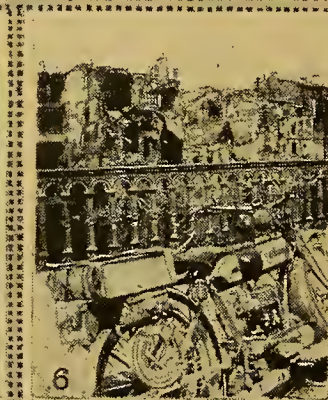
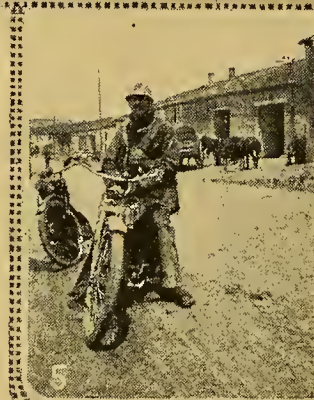
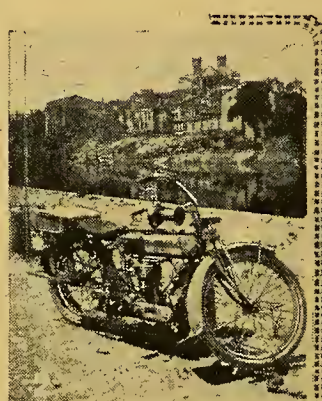
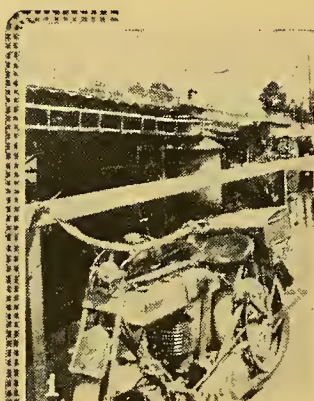
In No. 2 will be seen the beautiful and famous River Meuse,

which flows by the scarred banks of the city, the cathedral showing in the distance. No. 3 also shows a distant view of the cathedral, and the photographer's Triumph in the foreground.

No. 4 is a general view of the graceful little town, and might well be taken for a peaceful English scene, and in this instance the photograph does not suggest the brooding horror that hangs over the city. No. 5 shows a despatch rider at the headquarters of artillery.

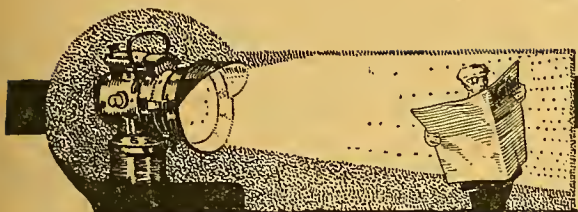
The ruthless damage of the churches is portrayed in No. 6, and No. 7 also depicts the abject desolation seen from a bridge after a terrific bombardment.

The sender of these exclusive pictures is H. E. Plateau, E.M., and it will be noticed that a foot-controlled gear is fitted to his Triumph machine in place of the standard arrangement.



These photographs have been approved by the French Ministère de la Guerre.





## Occasional Comments

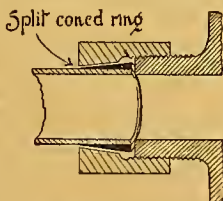
"By Ixion"

### More Motor Cycling Missionaries.

A parson tossed me a missionary report the other day. Such reports are often dull documents, but he drew my attention to the fact that some of the clergy working new districts of large area under the "Archbishops' Western Canada Fund" are using Indian motor cycles for their rounds. As the men concerned are English curates on loan from English parishes, I rather wonder they don't use English machines; perhaps the rear sprung Indian frame is concerned in the answer, as the roads are probably the limit. Anyhow, as one would expect, the clerical riders seem uncommonly pleased with the Indian, and as those of them who don't use motor cycles perform their lengthy Sunday trips on ponies or on Ford cars, I imagine the ministers with the most scattered districts get the motor bicycles. They apparently preach about four times a Sunday, and I expect the rides freshen them up considerably for the final service of the day. It must be a nice question whether over winter surfaces they really prefer the pony, the car, or the motor cycle as a means of locomotion.

### Twin Inlet Pipings.

I asked the other day when any motor cyclist could honestly say a good word for the type of inlet pipe union employed on his twin-cylinder, my own experience being that it is almost uniformly difficult to make airtight when once disturbed. In fact, it is quite the routine in some garages to swathe the unions of such machines with insulating tape when an owner comes in with complaints of bad running, and many of the knowing amateurs have long since adopted the tip even with new models; I had to apply it to a certain 1916 twin when I called to take delivery of it at my nearest railway station; it would not start till the leaks had been caulked, despite a complete union with compressible washers inside it. My challenge evoked one reply, relating to a machine which I never rode—the old Premier V twin. This had a split cone sliding on the two ends of the inlet pipe, and the female locking ring was also coned internally. The cone and ring necessarily centred each other, as the ring drew up the thread on the engine stub, and the device is obviously sound.



A sound device for obtaining an airtight inlet pipe union on twin-cylinder motor cycles.

### Overheated Sparking Plugs.

An eminent plug maker informs me that the overheating of sparking plug electrodes does not depend so much as I had fancied on the thickness or thinness of the points as on the surface area exposed to the flame of the explosion. He considers that the ideal plug is one with an electrode exposing the minimum surface area to the flame in proportion to its powers

of heat conductivity. A thick and highly exposed electrode may absorb more heat than its stem can conduct away in time, and the ideal sparking gap (as a preventive of overheating) would consist of two cones with only their tips exposed, supposing proper arrangements could be made for conducting away heat through their bases. (This looks as if my old claim for bigger plugs were sound!) Many plugs are spoilt by having their electrodes riveted or brazed to their foundations, a joint which always interferes very seriously with conductivity. Similarly, it is bad practice to terminate the insulator as a cone surrounding the central electrode; the cone absorbs the maximum amount of heat, and transfers it by conduction into the stem of the electrode, which is already overcrowded, so to speak, with heat attempting to escape from its tip. But if the insulator ends in a hollow cone, the heat is conducted into the screw-threaded portion of the body, which never shows any signs of having been overheated. But the real crux of plug making occurs when the designer is asked to make a reliable plug for an oily engine which is also a terrific "revver," for the cure of sooting is the cause of overheating, and the plug which can burn its points clean is also the plug which has been designed not to keep cool!

### The Choked Jet Factor.

One trade magnate told me frankly that he would have fitted a certain rather expensive automatic carburettor to all his machines three years ago but for the mugs who compose so large a percentage of his customers. He explained that his standard carburettor was extraordinarily simple to tackle. If it needed a different jet, or if the jet choked, a single spanner and a little care in tightening a light brass part down on to a fibre washer was the only work entailed. But each year brought him many angry letters and many returned parts, because so many buyers are incapable of performing such a simple job accurately. He felt that if he fitted a comparatively complex vappriiser with several petrol joints and several small and flimsy parts, he would be asking for trouble with his customers, and he was very probably right. The corrective lies in a study of motor car practice. All European motor cars are equipped with complex carburettors composed of delicate parts, and it is the exception for a motor car manufacturer to be bothered by silly customers in this way, simply because his carburettor is carefully adjusted prior to delivery, and is further adequately protected from the ingress of dirt. As it gives no trouble, the owner does not tinker with it. If motor cycle designers fit proper strainer gauzes to their tanks, proper filters to their supply pipes, and efficient dust screens to their air intakes, their customers will be more likely to leave the carburettor undisturbed; and in that case there will be less difficulty in adopting carburettors having many delicate parts.



# THE ALL-WEATHER MOTOR CYCLE.

How to Produce a Motor Cycle which shall be Clean in all Weathers.

By Dr. René Camus, Médecin Chef, French Army.

**A**S will be generally agreed, one of the improvements most important to effect in order to make the motor cycle a really practical thing is to obtain cleanliness. At present, from the point of view of the mechanism and road qualities, the motor cycle may be considered really efficient. Almost the only requirement left unsatisfied is the highly important one of adequate protection. The question, therefore, is how to construct a machine which will carry its rider over the road without gathering up and depositing upon his clothes the dust or the mud of the roadway, and whose engine, apart from its usefulness as a means of propulsion, ceases to throw over the clothes of the rider the oil which he innocently poured into the tank.

The problem appears simple enough at first sight, and one easy to solve with proper mudguards and an oil-tight engine. But the engine needs a current of air, and where air passes during running, mud and dust also pass. Also, however oil-proof the engine may be, sooner or later it will get an immoderate amount of oil, and some of this will exude. In my opinion, therefore, in order to remedy these two faults it is necessary to be able to enclose the engine completely in a case, and to provide for its cooling by other means than the current of air while running. Water-cooling would be ideal if it were not heavy, but why not employ air-cooling with a suitable blower? In this manner our clean motor cycle may be produced. The designs herewith give an idea of it.

## A Detachable Unit.

For the frame I use a model recalling the Scott frame, which is a marvel (as is all the rest of the machine), but modifying it as necessary and in such a way that all the mechanical block, engine, gear box, etc., can be withdrawn from the frame without dismounting any essential part. Fig. 1 represents the frame alone, without wheels or engine. Fig. 2 the little accessory frame in which the power unit is mounted. Thanks to this arrangement all the machinery is contained in a limited space by upright metallic pieces forming a kind of skeleton case, which can be closed by aluminium plates, thus allowing an easy and frequent inspection.

In this little frame will be mounted, fixed upon the front tubes, the inclined engine, having before it the magneto and carburetter; at the back will be placed the gear box below and two ventilators conveying the air over the cylinder through two tubes issuing from

each side of the cylinder. Whatever may be the type of engine, two or four-stroke, the cylinder wings will be placed in the direction of the current of air.

As is shown by fig. 3, the engine, the two ventilators (whose axle is common), and the gear box are united

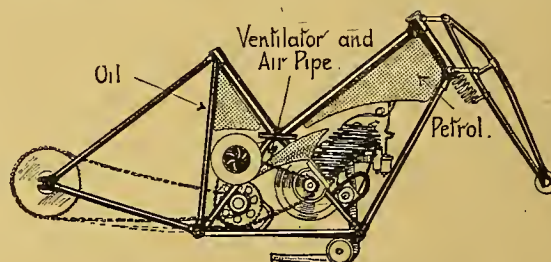


Fig. 3.—Showing the ventilator and air pipe.

by the same chain passing over three pinions. Another chain drives the magneto. The petrol and oil tanks will be fitted in the front part of the frame above the engine unit.

With the complete mechanism entirely enclosed in a case, the only openings are the two circular orifices at the back on the right and left by which the ventilators take in the air, and the orifices at the right and left through which the warm air passes. We have thus obtained a rigidly constructed frame, an engine, sheltered from rain, mud, and dust, from which the oil will not be thrown upon the rider.

## The Mudguarding.

Now it is necessary to protect the motor cyclist against the mud and dust of the road. As we no longer have to arrange for a passage for cooling the engine we can place the mudguard in a better position and just as we wish. In order to obtain efficient protection, we must know the manner in which the mud is thrown. Besides that due to the centrifugal force of the wheels, there is the mud which is splashed up under the front and back tyres, to right and left. In order to stop this, the wheel must be surrounded at two-thirds of its circumference by a flat mudguard, very large, about three times the diameter of the tyre (fig. 4). The lateral walls (side valances) of the actual mudguard serve but little to retain the thick mud, and they may be discarded. The mud coming from the back tyre would be stopped by the protectors doing duty as footrests as in the Scott (fig. 5). The mud which is thrown up sometimes in the front above the

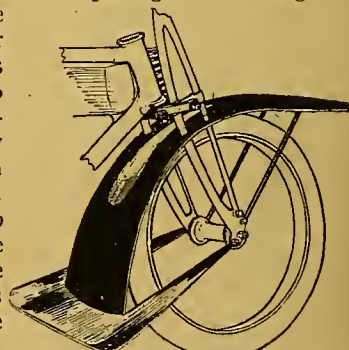


Fig. 4.—Unconventional mudguards of sensible size and design.

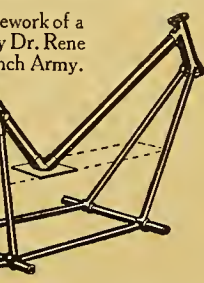


Fig. 1.—The framework of a suggested design by Dr. René Camus, of the French Army.

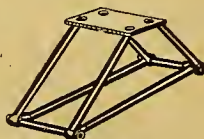


Fig. 2.—The auxiliary frame in which the power unit is mounted.



**The All-weather Motor Cycle.—**

mudguard will be avoided by extending this forward. The mud thrown under the machine will be stopped by the footrests, which will cover all the lower part of the frame.

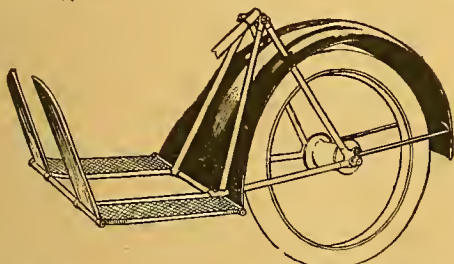
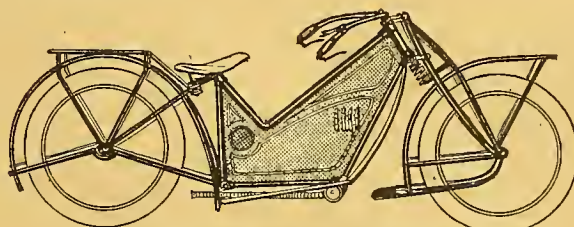


Fig. 5.—Rear mudguard and footboard, an arrangement which would appeal to Colonial riders.

Up to now very little has been said about the mud thrown by the rear wheels. That, however, must not be neglected. We shall stop this mud as in the case of the front wheel with a large flat mudguard without lateral walls, but getting larger at the front where it joins the footrests.

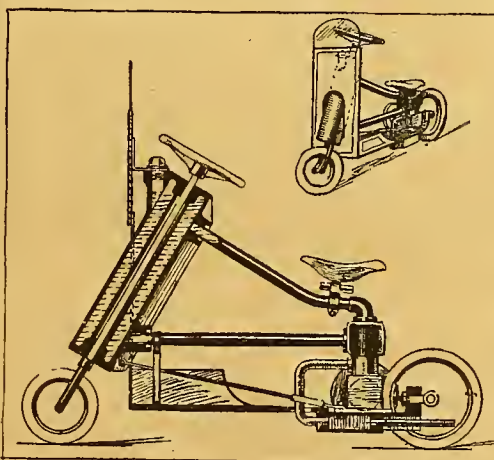
It seems to me that with a machine thus made one could drive without any fear of getting dirty. In addition it is easy to understand that suggestions of the type described here can be easily improved further so as to produce a machine very nearly approaching the ideal. The system of protection against mud does not prevent the use of the most modern carriers, supports, etc. In short, the enclosed engine, cooled by a strong current of air, whether in hill-climbing, running slowly, or travelling at speed, will give equally satisfactory results as the present type of air-cooling system.



Dr. Camus's complete mud-proof motor cycle of quite revolutionary design.

## ANOTHER MINIATURE MOTOR CYCLE.

FROM time to time additions to the number of "motor scooters" or "auto-ped cycles" make their appearance, usually emanating from U.S.A., but the latest invention of this type is from an English source, the patentee being Mr. E. V. Hammond, 88, Louisville Road, Balham. The water-cooling system forms the frame, a cylindrical tank or radiator supports the steering column, and the flow and return pipes, from a water-jacketed two-stroke engine, make up the triangular frame. Mud-shields are provided in front, in one with the footboards, and a glass windscreen is fitted in front of the steering wheel, which is preferred to handle-bars. Truly it is a quaint contrivance, and, despite its novel features, one cannot help smiling at the prospect of such a machine ridden by a tall man. The inventor is bent upon keeping the rider warm at all costs, the saddle being clipped on to the rising hot water tube, but this



A novel "motor scooter" with a water-cooled engine and friction drive. Are we soon to see staid city men tobogganing along the highway on mechanical "auto-peds"? The sight would certainly be entertaining.

is counteracted by the absence of a back mudguard; thus whilst the rider's knees and legs are being well toasted, his back will be subjected to an ever increasing poultice of cold mud. We presume petrol is the motive power, but there is no provision in the specification for the tank or oil.

Springs are not forgotten, although it may appear so from the illustration, but a cunning device embodies springs inside the front forks. Friction drive on a tyre tread will slip directly wet roads are encountered, and so provision is made for pulling the back wheel into harder contact with the driving pulley when necessary.

It is an exceedingly ingenious machine, but whether it will prove efficient is very doubtful,

and, even so, whether members of the British public will go tobogganing about our streets and roads, somewhat after the manner of the comic trick cyclist of the music halls, is quite another matter.

## WAR TIME ROAD DESTRUCTION.

MANY of our fine main roads have during the last two years deteriorated to an alarming degree. The bad conditions are generally attributed to the increased amount and heavier nature of the traffic occasioned by the war and the lack of labour for repairing. This is, of course, correct to a certain extent, but the damage done could be reduced by fully 50% if the proper speed limit of 12 m.p.h. for the heavy war lorries were rigidly

enforced. During a recent week-end run one of our staff encountered several 3 ton war lorries on a famous main road, now notorious for its atrocious surface, being driven at speeds varying from 18-30 m.p.h. This reckless driving is undoubtedly the prime cause of the extra destruction of the road surfaces. In addition to the damage to the roads, this speed cannot possibly be good for the springing and vital parts of the lorries themselves.



## Lamps Lighted from the Magneto.

A Device which gives Sufficient Light to comply with the Lighting Regulations.

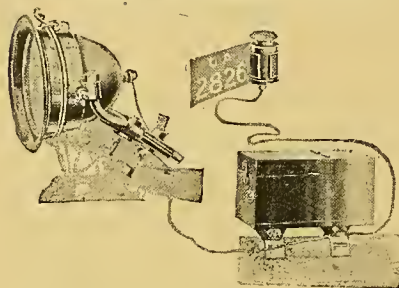
THE question of lighting by means of the current from a magneto has been discussed on more than one occasion in these columns. Various devices have been described and illustrated by which the magneto has been utilised to illuminate a tail lamp.

A few days ago we inspected the F.R.S. magneto lighting set fitted to a 2½ h.p. twin Douglas. It is claimed for this set that quite sufficient continuous

ing. At slow speeds the magneto does not provide a sufficiently strong current to light the lamp and at the same time start the engine.

The amount of light derivable from the magneto depends on the size of the magneto machine and the speed at which it revolves. This set, although more suitable for high-speed engines, because of the engine speed, has been used on a 3½ h.p. Triumph. Three wires come out of the coil box, one going to each lamp and one to the magneto cut-out terminal. The special bulbs used are very small and provided with metallic filaments. As an instance of the amount of light given by the head lamp with only a flash light bulb, Mr. F. R. Swinburne told us that it was sufficient to draw the attention of the police, who insisted upon the lamp being screened with paper. One of these lighting sets has been in use on a Douglas machine for forty miles a day (using the light during daylight for the purpose of a test) for eighteen months.

The complete set comprises head lamp and handle-bar brackets, tail lamp to fit number-plate, the box containing the converting coil and dry battery switch, spare bulb and all wiring, and is sold at 65s., nickel-plated or ebony black. The size of the head lamp is 6in. face with a 5in. glass, and the box measures 6in. long by 3½in. deep by 3in. wide. Mr. F. R. Swinburne is most enthusiastic concerning the possibilities of this method of lighting, and told us that, although he would always use a more powerful light for long night journeys, it was just the thing for short trips.



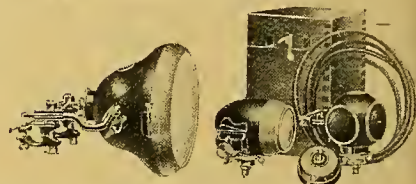
F.R.S. magneto-lighted head and tail lamp. The box on the top tube contains a special coil, three-way switch, and dry battery. The third wire is connected to the magneto switch terminal.

current is produced for a head light and tail light for all ordinary purposes under the lighting restrictions and at touring speeds. The only addition is a small wood box attached to the top tube. This contains a coil for converting the magneto current into a suitable one for lighting bulbs, and a dry battery for use while the machine is stationary and for start-

### Battery-lighted Sets.

The makers of this novel form of lighting are also marketing the F.R.S. battery lighting sets. One of these sets we illustrate, consisting of a 7in. head lamp with a 5½in. glass, handle-bar fittings, egg-shaped sidecar lamp, and ball-shaped tail lamp. The complete set, with accumulator case 8in. by 5½in. by 5in., costs £5 10s. A smaller set, but without the sidecar lamp, is £4 8s. These lamps have four-volt four candle-power bulbs and adjustable focus.

Still another device of great service during restricted lighting is an adapter



F.R.S. battery-lighted lamp set for use on sidecar combinations. The set consists of handle-bar bracket, head, side, and tail lamps, accumulator in wood case, switch, and wire.

for converting an ordinary gas head lamp to an electric one. This consists of a flash lamp bulb fitted to a clip which slips over the acetylene burner, the bulb facing the lens reflector, and the wire which connects it to the battery passing through one of the holes in the bottom of the lamp. The adapter, complete with accumulator in a leather case, and the necessary wire to connect it up, costs £1.

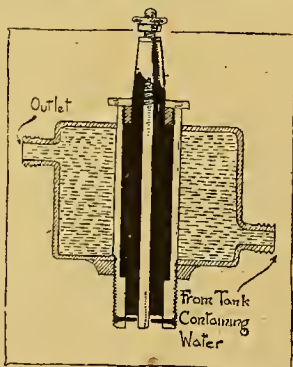
## Water-cooled Sparking Plugs.

THE subject of efficiently cooling sparking plugs has many times been brought forward in *The Motor Cycle* and caused a considerable amount of interest. Two readers have submitted designs which they have tried and found most satisfactory. The first is one sent by Cpl. H. Ramsey, who is a fitter attached

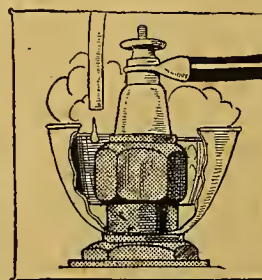
to an A.S.C. company in France. He tells us that, owing to inferior fuel, they had been experiencing considerable plug trouble, due to overheating. He accordingly had a special plug made with a water jacket, which, as will be noticed from the illustration, encases the whole metal body of the plug and a considerable length of the insulator. An inlet and an outlet are provided at the top and bottom of the jacket, and are connected by means of copper tube to a small water tank arranged in any convenient position in the frame of the machine. Cpl. Ramsey has tried two of these plugs in a Clyno outfit, which runs seventy to eighty miles regularly every day, and the results have proved quite satisfactory.

### A Still More Simple Device.

A somewhat simpler design is the one sent by Mr. G. W. Perian. This is merely a cup designed to take the place of the copper asbestos washer of an ordinary plug, so that when the plug is screwed into position the body of the plug is practically standing in a metal bowl. Into this bowl water is dripped from a small tank attached in any convenient position.



A war zone method of water-cooling the sparking plug.



Another device easily made for keeping the plug cool.

We are told the improvement in running is wonderful, and that only a very small drip of water is required to keep the metal cool and to allow for evaporation. The device is certainly extremely simple, and can be tried by anyone.



## POST-WAR PROGRAMMES.

### Further Advance Particulars of New Model Motor Cycles.

**I**N spite of the Order relating to the manufacture of new motor cycles, firms will continue to make plans for after-the-war production. Arranging a well thought out programme will not interfere with their present munition work, but it will place them in a good position, when hostilities cease, to get to work immediately, and save valuable time.

The Ixion Motor Manufacturing Co., Ladywood, Birmingham, intend concentrating on their two-stroke models after the war, and have decided to fit a clutch and two-speed gear to both the ladies' and men's models, in place of hub gears previously used.

#### A Spring Frame L.M.C.

The L.M.C. Co., of Monmouth Road, Birmingham, have decided to fit as an after-the-war production a spring frame to the 6-7 h.p. twin-cylinder model. This embodies an old design of Mr. Lloyd's which he introduced some years ago, but we are not at liberty to say anything further concerning it beyond the fact that it was proved to be a practical and sound design in the early days. With improvements which experience has provided, it will doubtless be eagerly sought for by this firm's Colonial clientele. The L.M.C. will be built on the clean and solid lines of English machines, with particular attention to special Colonial requirements, such as high engine clearance, large

capacity tank (not necessitating any alteration to seat level, which will be as low as before), spring frame, round base rims, 28in. x 3in. tyres, and the L.M.C. spring fork reconstructed. A three-speed countershaft gear will be incorporated, and a specially-designed sidecar chassis made to suit the spring frame.

The 4½ h.p. single-cylinder model is to be redesigned.

#### Levis Lightweight and Flat Twin.

A new Levis post-war two-stroke model will be called the Baby 2-3 h.p. This is the 60x70 mm. Levis which in several hill-climbing and other competitions was officially referred to as a 1.9 h.p. There were only six of these machines built for competition purposes, but after the war the model will be standardised as above. The engine will be the result of experience gained from the model which won the Calthorpe Hundred Guinea Cup Trial. The 2½ h.p. model E and the 2¼ h.p. Popular will also be continued.

With regard to the twin-cylinder horizontally-opposed two-stroke 4.2 h.p. model, it is proposed to fit this to a duplex frame and also a dropped top tube frame. We saw some of these 4.2 b.p. engines running on test. They are attached to a bed which is not fastened down in any way, yet with the engine revolving there is an entire absence of vibration. They should make an ideal two-stroke for a sidecar outfit, and we

look forward to their introduction at a later date.

#### Druid Forks.

The post-war arrangements in connection with the Druid fork show that the makers intend to keep pace with engine power by strengthening the fork of the 3½ h.p. single-cylinder model and improving it in all details. It was most strongly emphasised that this firm does not believe in grease lubricators for the various joints of the fork, the reason being that from their experience grease hardens through exposure to the weather, and that more often than not it causes the seizure of a bearing, which may result in the end of the spindle being twisted off. In all forms of spring fork made on the lines of the Druid, there is a certain amount of lateral play which cannot be avoided, and in the opinion of the makers the best method of taking up this wear is to supply thin washers for insertion between the faces of the joint. They also recommend in all cases that oil should be used for lubrication, and not grease. The experience they have gained during the past is, of course, enormous, as there are a very large number of machines in use fitted with Druid forks.

With regard to the foregoing advance details of after-the-war plans, it is, of course, useless for readers to make enquiries of the firms in question, as it is impossible to give deliveries yet awhile.

## DEVICE FOR USING HEAVY FUEL.

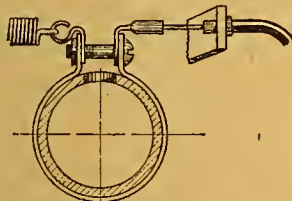
**W**E have received from Mr. H. Locke, of Manchester, a description of a device he has adopted on his 3½ h.p. fixed gear Premier for the utilising of heavy fuels. The machine has a Senspray carburettor, was originally fitted with tank-controlled magneto, and to obviate the ugliness of a spare tank

hole was drilled in the induction pipe and a clip placed around. This device was made controllable from the handlebars by Bowden mechanism, a third lever being fixed on the top of the standard controls.

By this means the machine was made capable of running on pure paraffin with extreme flexibility. The speed is by no means slow, fifty-seven miles per hour

having been obtained without undue effort, so we are told, and six miles per hour on a 3½ to 1 gear without a knock.

The mudshield is extremely efficient, and was made from 22 gauge tinned sheet iron, the edges being bent round 1½ in. iron wire, and the whole being given three coats of enamel. An opening was cut in the shield, which allows the air current to impinge against the cylinder.



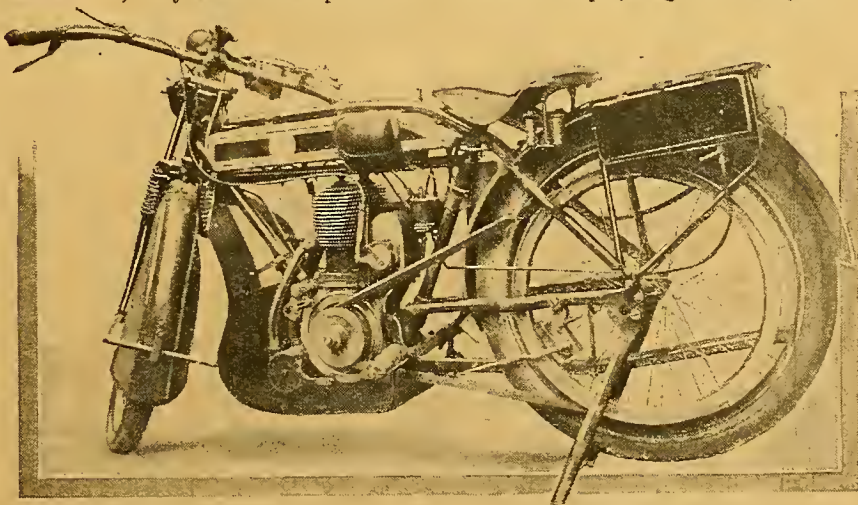
Sketch of clip which rotates round the induction pipe uncovering extra air intake.

clipped on the top tube the owner fixed one in one of the pannier bags, and made the tube to run direct to the jet. Thus an easy start can always be made, no matter what fuel is in the carburettor.

The petrol is simply turned on and the jet flooded. After the engine fires the paraffin can, of course, be used.

To obtain slow running on the heavy spirit it was found necessary to use a larger jet and higher level; also, several ganges were placed in the induction pipe to assist the vaporisation.

The big jet, however, caused overheating, and to overcome this an extra air



Mr. H. Locke's Premier, showing toolbag used as a casing for the spare petrol tank. Note efficient mudshield.



## Despatch Carrying in German East Africa.

The men whose duty it is to carry messages on motor cycles between posts often hundreds of miles apart, and frequently quite alone in this wild country, have strange stories to tell, and the following short article graphically describes a few of the trials these brave motor cyclists cheerfully endure.

HE was gathering a few dried sticks preparatory to making a fire when I called him over and invited him to use our Primus to boil his billy can. Accepting with thanks, he put his tin on the stove, and then set about getting his blankets down for the night.

"He" was a South African despatch rider attached to our M.M.G.S. armoured car, which at that time was acting as a "mobile blockhouse" on outpost duty.

In this distressful country the army is nearly always on the move, and the D.R. has no base billet to return to each night. He must carry absolutely every atom of his kit and equipment with him, and the luggage carried on my new friend's B.S.A. would have made some of our home riders open their eyes.

### An Extensive Kit.

Firmly strapped across the carrier were a large kit-bag and a roll of blankets done up in a waterproof sheet, surmounted by a mess-tin and a tin of "bully." On the near side a spare belt was coiled up under the pannier bag, and on the off side a despatch and map case. The saddle down tube carried a spare inner tube in its leather case and a spare water bottle. Bags holding flour, coffee, and sugar were tied to the handle-bar, together with an enamel drinking mug and a tin of beef fat. Attached to the front fork was a long rifle holster, in which were a rifle and signalling flags, while on the other side of the fork were a native spear and a bow and arrows—souvenirs. A spare pair of puttees wrapped round the tank served as knee-grips.

The rider himself—a tall, well-built, sun-brown Colonial—wore just a tunic shirt, open necked and with sleeves rolled up, and riding breeches and leggings. On the road he carried water bottle and haversack on either shoulder, with his knife, spoon, and fork shoved down the top of one legging and pipe down the other—decidedly unpleasant articles to fall on in the rather likely event of a spill.

After tea or dinner, or whatever you like to call a meal of bully, coffee, and dough cakes fried in fat—our staple food out here—we sat together on the back of the car, and, with pipes pulling well on sweet Boer tobacco, exchanged motor cycling experiences. He told me that the D.R.'s Corps was recruited at 5s. 6d. a day about the beginning of this year, and after very little training landed in G.E.A., all equipped

with new B.S.A.'s. The majority of the men had been through the German West African Campaign.

### British and American Machines.

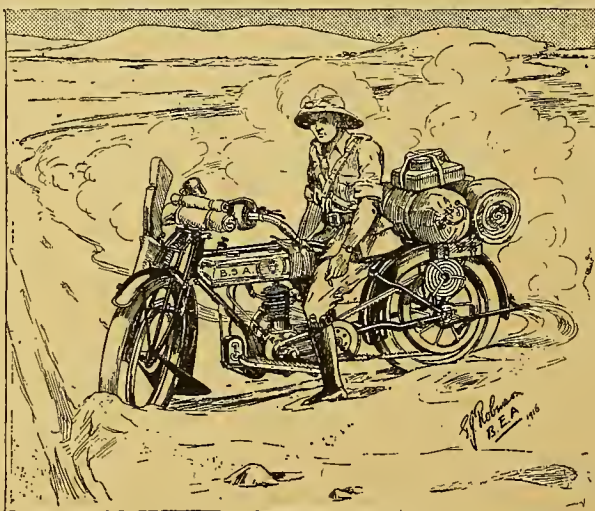
"Of course," he said, "you fellows out from home feel these roads far more than we do. They have plenty of roads in S.A. with six inches of sand like these, but you are used to riding on billiard tables. Woh! how low your cars are!"—(I recalled a few merry moments when our Rolls-Royce had sat on its under-shield and running boards in the mud, with its wheels gaily whizzing round)—"and the bicycles hit their crank cases on twigs in the road. The Americans are much better in this respect, and that is why they are so popular down below. Still,

on the whole, we prefer English makes; they are so well made. See how these have stood up to it!"—nodding his head towards the B.S.A. "It's a terrible load they've got, especially over these roads, but now we trust 'em more than horses. Wish the clutch were on the handle-bars, all the same, and I've had to bend the bar out, too.

### Joining up Again.

"Almost all of us are going to come home to join up again and see what France is like after this. I wonder what sort of a job despatch riding is over there; out here we have to cook all our own 'scoff,' such as it is, never seeing a trace of civilisation, and riding through the sandy bush for hours on end. But I suppose slithering through shell fire all day must be very merry hell. Naturally, we get our share of excitement here. There is always the danger of the Askari potting you from the bush, and only a few days ago I was riding alone in the early morning, and came across a lioness and two cubs lying in the road. You should have seen me shin up a baobab tree at the double!

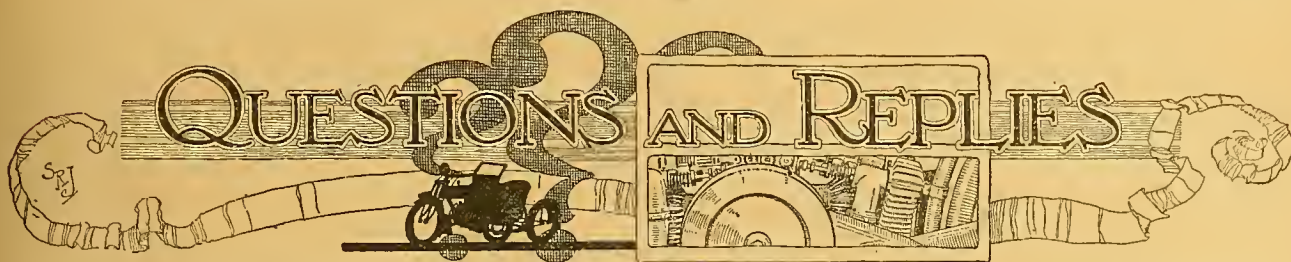
"My longest run? I once did from X—to Y—that's 300 miles, on my own in three days. That was before the roads had been so badly cut up, though. We usually do about forty miles a day when with the column. Do you happen to have any motoring papers from home, by the way? Have not seen one for years, it seems, and I used to be very keen on following the trials and things at home. *The Motor Cycle*—thanks very much. Move off five o'clock, don't we, Right ho! Good night, old man. Give me a shake if there's anything doing in the night." MILES.



A MOTOR CYCLIST D.R. IN GERMAN "EAST."

An equipment worthy of the name. A load frequently carried hundreds of miles by despatch riders in German East Africa. All available space is utilised, even the gap at the top of the leggings, where knife, spoon, fork, and pipe are snugly carried.





A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Jet Sizes.

**Q.** (1.) How are the jets numbered for B. and B. and Senspray carburettors? Are the higher numbers larger in size than the lower numbers, or vice-versa? (2.) How many miles per gallon ought I to get from a  $3\frac{1}{2}$  h.p. single-cylinder machine with three-speed gear and coachbuilt sidecar? The machine is fitted with Senspray carburetter, No. 40 jet, and I am getting eighty miles per gallon, carrying one passenger. I usually travel a little over twenty miles per hour. Is this result good? (3.) Would results be as good with a 5-6 h.p. twin combination?—W.J.U.

**A.** (1.) The numbers marked on most carburettors represent thousandths of an inch. Consequently the larger the number the larger the jet. (2.) The mileage you are obtaining is quite good. (3.) No, we do not think you would obtain such a large mileage per gallon.

### Knocking.

**Q.** My machine is a recent pattern 6 h.p. twin-cylinder sidecar combination, and has recently taken to knocking. Knocking occurs on hills, and on very slightly rising ground when the throttle is opened after slowing. The machine has travelled only about 600 miles, and I am wondering whether the trouble is due to causes other than carbon deposit. For a very little movement of the throttle lever the slide seems to me to open a good deal. In these conditions, if the throttle lever were opened quickly after slowing, would this be likely to cause the trouble? I have only recently been troubled, and until I heard it on this machine did not know what a "konk" was. The engine is extremely difficult to turn round when cold, necessitating a copious priming with petrol. I fear that this is likely so to dilute the oil as to render it inefficient as a lubricant. What can be done?—A.J.H.

**A.** The trouble cannot well be due to carbon deposit, as you have run so short a distance, and so it is a little early to expect carbon deposit to cause knocking. Have you tried closing the air when knocking begins? A partially choked jet will also cause knocking. Make sure the engine receives sufficient oil. It may also quite well be due to the use of an unsuitable plug or plugs which cause pre-ignition. If you use a good single-point plug of first-class manufacture this should cure the trouble. Opening the

throttle quickly after slowing up might cause knocking if you did not first retard the spark. Injecting petrol does not dilute the oil, because as soon as the engine warms up the petrol evaporates.

### Clutch and Gear Box Lubrication.

**Q.** I have a 1916  $4\frac{1}{2}$  h.p. combination, and shall be glad of your help in regard to clutch lubrication and brakes. The makers recommend their "special lubricating oil" for the clutch and gears, but I have not been able to obtain this, and have been given (by a local repairer) a tin of Mobiloil T.T. This seemed satisfactory at first, but afterwards there was difficulty in getting the clutch to free, and I concluded that the oil was too thick. After flushing out with paraffin and refilling with two parts of T.T. and one part of paraffin (to thin the lubricant down) I have obtained satisfactory results up to the present. I am anxious to know if there is any objection to thinning the oil with paraffin, and, further, could not I use heavy cylinder oil, say, diluted with equal parts of paraffin for the gear box and clutch, and so save having to keep two grades of oil on hand?—J.V.G.

**A.** Engine oil thinned down by means of paraffin is perfectly satisfactory for metal plate clutches. If too fierce, add more oil, and if not sufficiently fierce, add more paraffin. The gear box should be lubricated with a very heavy oil—the heavier the better. It would, therefore, not be really suitable for the clutch unless much diluted with paraffin. Do not add paraffin to the oil for the gears.

### THE BRITISH MAGNETO AND "THE MOTOR CYCLE."

Those motor cyclists who have the interests of their country at heart will be interested in a booklet which is now ready, reviewing the efforts of "THE MOTOR CYCLE" in fostering a British magneto industry. It is well to recall that "THE AUTOCAR" and "THE MOTOR CYCLE" were the only two journals which, BEFORE THE WAR, openly exposed the fact that the British motor trade was entirely dependent upon German magnetos. We shall be pleased to supply a copy of this pamphlet to any motor cyclist who cares to make application to the Editor.

### Imperfect Combustion.

**Q.** I have a  $3\frac{1}{2}$  h.p. 1914 motor cycle fitted with a B. and B. automatic carburetter. I find that after a run, either a long or short distance, on taking the carburetter down, there is a quantity of petrol in the induction pipe. Should this be so? I have tried to remedy this by raising and also lowering the shoulder on the carburetter needle, but it makes no difference, except in the matter of the engine requiring more air or less air, as the case may be; but the petrol still lies in the induction pipe. Ought this to be so? If not, please tell me what is wrong. I may say I only get between fifty and fifty-eight miles per gallon with a sidecar.—G.D.

**A.** No; there should be no unvaporised petrol in your pipe. The trouble will undoubtedly be cured by fitting a warming pipe to the carburetter, so that the fixed air is taken in hot. This should also improve your consumption. The whole carburetter system should be kept as warm as possible, including the induction pipe; this might be lagged with several layers of insulation tape to prevent radiation of any heat.

### Popping Back through the Carburetter.

**Q.** I should be obliged if you would tell me the reason for my 1914 7 h.p. twin popping back through the carburetter. I am running on 50% mixture of petrol and petrol substitute. In extracting a bent exhaust valve from the front cylinder I had the misfortune to break the valve guide about  $\frac{1}{4}$  in. below the cylinder head. Would this lead to its popping back? The engine will take no extra air at all, though I have banded all the carburetter unions with insulating tape.—G.S.A.

**A.** There are many reasons for the trouble of which you complain in your letter, such as the possibility of impurities in the petrol substitute (but this is not likely), to the air entering the carburetter not being warm enough, or, very possibly, the trouble might be caused by a partially stopped jet, especially the pilot jet, or to the level in the float chamber being too low. The level should come to a point just below the top of the jet. It is hard to say if the breakage of the valve guide would cause the trouble, but provided the valve closes properly and there is a fair length of guide left it is hardly likely that this would allow of the leakage of sufficient air to cause the popping back.



**Refusal to take Air.**

**?** Since adjusting the control wires of my carburetter I find the engine will not take as much air as previously without misfiring or stopping. What would be the likely cause?—W.D.

The fact that the engine will not take as much air as previously may be due to an air leak at the induction pipe or carburetter unions, or to a partially choked jet. It is, of course, possible that the engine actually takes as much air as it did, but the alteration in the control wire renders the position of the levers different for a given opening. If this is the cause, it may be found that the carburetter will now take a slightly larger jet, as the air slide now opens further.

**Liability for Accident.**

**?** Will you kindly give me advice on the following accident, which occurred on the highway in Meopham Parish, Kent: I was passing with my motor cycle and sidecar on the right-hand side where the Kent County Council was repairing the centre of the road. The road was 18ft. 10in. wide, with a rough high bank each side. The part of the road in repair was 6ft. wide, and had been broken up with lumps of stone, and men were working on it. Between the broken road and the bank on the right-hand side where I passed it was 6ft.; on the left-hand side 6ft. 4in. As I was passing the foreman was at work on the edge of the broken road. My sidecar mudguard and wheel knocked his leg, rendering him unfit for work. I was running the machine on low gear, and travelled at low speed, sounding a 7in. foot bell for a long distance. He was apparently unable to hear, as he is deaf. Finding he did not move, I steered my machine so that the footboards touched the bank, to try and avoid the accident. Now he wants me to pay 17s. per week all the time he is laid up. Do you think I should be justified in doing so?—E.W.

We submitted your query to our legal adviser, who replies as follows: "It certainly seems to me that, even if there was any negligence on the part of your correspondent, the man who was knocked down was guilty of contributory negligence. He knew of the difficulties in connection with the road, and, in spite of the fact that he was deaf, he was working in a dangerous position close up to the edge, apparently without troubling to see whether anything was coming. At the same time, it is always very difficult to know just what conclusion a judge or jury would come to with regard to facts similar to those disclosed. It is, of course, quite clear that a driver must take into account that persons in the road may be deaf, or blind, or drunk, and it would be very easy for it to be held that your correspondent should have been going so slowly through this narrow part that she could have pulled up without colliding with this man. She does not say how many weeks the man has been laid up. If the claim is only a small one, or it is possible to settle for a reasonable amount, it would be much better than running the risk of an action."

**Speedometers and Tyre Sizes.**

**?** I shall be extremely obliged if you will tell me, if I transfer a speedometer from a motor cycle fitted with 26in. x 2 1/2in. tyres to one equipped with 650 mm. x 65 mm. tyres, what difference it will make in registering the mileage and speed.—F.T.R.

With the 650 mm. x 65 mm. tyres you will get a very slightly higher reading; but we do not fancy the difference will be sufficient to be noticed, or cause any real inconvenience.

**Noises in Engine.**

**?** I should be much obliged if you would give me your opinion re the following: My machine is a 1915 5-6 h.p. twin Hazlewood-Jap. A bumping sound has set in, together with a dull scrape. The former occurs at speed; the latter at any time. I dismantled the machine, and found side play, very slight, but sufficient to cause the flywheels to bump against the crank case. There was no direct end play to the connecting rods, but more perceptible rock in the back than in the front. The scrape is evidently against the oilguard for the back cylinders. It is slight but annoying. (1.) Will it do any harm if allowed to continue? (2.) Would a washer or small bush fitted on the main driving-shaft chain side inside crank case put matters right regarding the bump. (3.) Should I have the big end rebushed to take up the rock as above? (4.) As I use the machine for business purposes daily, wet or fine, how long would the repair take and probable cost? (5.) The machine has wonderful power and speed in spite of the above; but when it is running slowly on top or second with the throttle one-quarter open (or less), and air in any reasonable position, a choke sets in, causing the machine to proceed in jerks.—W.T.

You should make sure that the flywheels are not loose on the shaft. This might easily cause the symptoms you mention, though when the engine is down you might not readily notice the looseness. Try a thin washer on pulley side and gear side spindles, which will prevent any

end play. (1.) If the trouble is caused as you say, no damage will be done. (2.) Probably not unless there is clearly undue end play. (3.) This would be the best course, but should not be necessary unless there is considerable end play. (4.) We cannot tell. Ask the repairers for an estimate both of time and cost. (5.) Possibly this is caused by an air leak, causing misfiring.

**READER'S REPLY.****Bournemouth to Cheltenham.**

This alternative gives easier gradients, less tortuous road, equally good surfaces, and the mileage is almost identical. The writer knows both routes well, and the scenery is equally interesting. Bournemouth, Christchurch, Ringwood, Ford- ingbridge, Salisbury, Wilton, Madding- ton, Tilshead, West Lavington, Devizes, Chippenham, Malmesbury, Cirencester, Cheltenham.—R. PEARCE.

**EXPERIENCES WANTED.**

"F.B." (Birmingham).—6 h.p. A.J.S. sidecar. Upkeep and reliability.  
"W.A." (Cardiff).—Grado and Philip- son pulleys, also Mabon gear, fitted on a 3 1/2 h.p. single-cylinder.  
"K.B." (Yorks).—1916 Harley-David- son 7-9 h.p. Consumption, speed, reli- ability, and hill-climbing capabilities.

**RECOMMENDED ROUTES.****BIRKENHEAD TO LEAMINGTON.—H.C.C.**

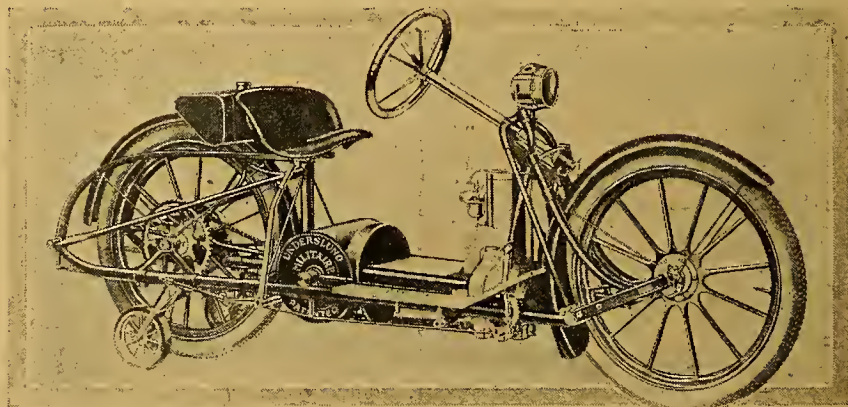
Birkenhead, Chester, Whitechurch, Weston, Gailey, Brownhills, Erdington, Castle Bromwich, Stonebridge, Kenil- worth, Leamington.

**MANCHESTER TO GLASGOW.—B.S.**

Manchester, Pendlebury, Bolton, Chor- ley, Preston, Garstang, Lancaster, Kendal, Penrith, Carlisle, Gretna Green, Eccle- fechan, Lockerbie, Beattock, Abington, Lesmahagow, Hamilton, Glasgow.

**BURGH TO BIRMINGHAM VIA NOTTINGHAM.**

Burgh, Wainfleet, Boston, Donington, Holbeach, Wisbech, March, Peter- borough, Wansford, Stamford, Oakham, Melton Mowbray, Nottingham, Long Eaton, Ashby-de-la-Zouch, Tamworth, Sutton Coldfield, Birmingham.



The latest model of a curious American design known as "The Militaire." It is another attempt at a car on two wheels. A single-cylinder engine supplies the power, while the appearance of the large casing under the seat seems to suggest that friction drive is the type of gearing employed.



## A 5 h.p. BROUGH FLAT TWIN.

An Entirely New 692 c.c. Model, the Latest Production of the Brough Factory, the Outcome of Several Years' Experience with Horizontal Twins.

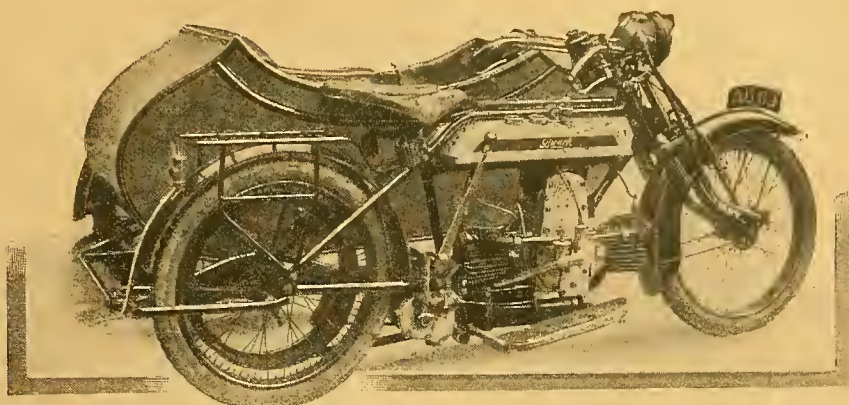
AT the present time, as will have been gathered from recent issues of *The Motor Cycle*, there is something akin to a boom in "flat twins," as we have styled these horizontally-opposed engines. Some twelve machines are already well known to the motor cycling public, and among them the productions of Messrs. W. E. Brough and Co., of Basford, Nottingham.

The  $3\frac{1}{2}$  h.p. model of the firm, or, as they are pleased to call it, "The Pup," has proved its worth, not once, but many times, in competition, and it speaks well for the machine that it seldom appears in the second-hand market, and when it does, always commands a very high figure.

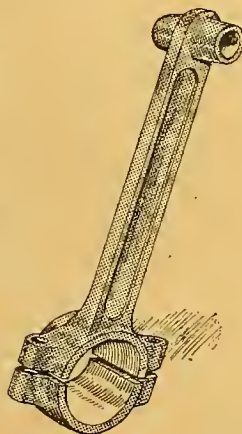
The larger machine now makes its appearance in an improved form, and, without overstating the case, we may say that it is a very fine product in every way, but, unfortunately, for the present, it is not obtainable, for the simple reason that Messrs. Brough are much too busy on important Admiralty work, which must not be delayed or interfered with in any way. The 5 h.p. flat twin must remain in being only, so far as two or three models are concerned, awaiting

the termination of the war, when it will take its place as a standard model. Messrs. Brough are convinced of the superiority of flat twins over singles, and this after extensive experience over a period of twenty years of engine manufacture.

The specification of this outfit, for it is intended to be sold as a complete combination with a new flat twin Brough, specially de-



Threequarter rear view, showing the rotund shape of the body, designed to accommodate tools and spares without disturbing the passenger.



Connecting rod of the new flat twin Brough, showing split big end.

signed sidecar, may briefly be stated thus:  
CYLINDERS.—Horizontally-opposed, each  $70 \times 90$  mm. = 346 c.c.

TRANSMISSION.— $\frac{1}{2}$  in. chain to countershaft, Sturmey-Archer three-speed gear, and  $1\frac{1}{2}$  in. belt to driving wheel.

MAGNETO.—Thomson-Bennett.

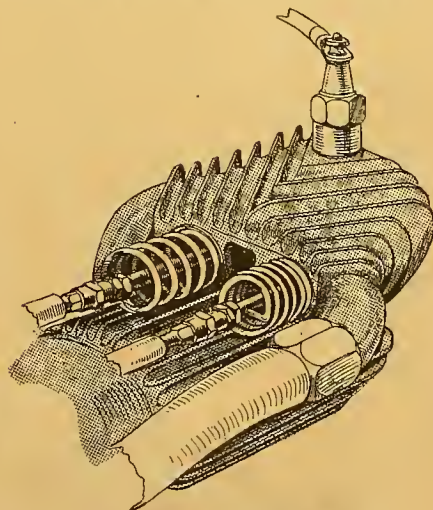
CARBURETTER.—Caudel-Hobson, with hot air jacket.

Frame of special design, rendering removal of cylinders an easy matter, leaving the crank case *in situ*.

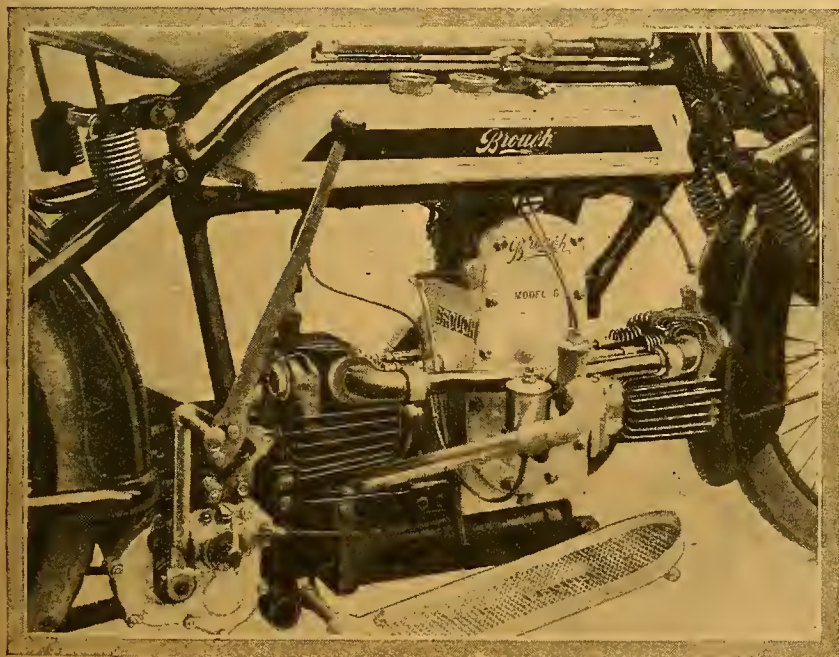
Splash lubrication by drip feed.

### Features of the New Engine.

The cylinder casting of the new 5 h.p. engine is a fine piece of work, the fins being arranged horizontally on the cylinder itself and "herring boned" over the



A cylinder of the latest Brough, showing air passage in cylinder to assist in cooling the valve pockets. Note herringbone fins.



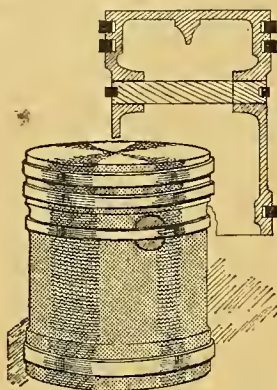
Power unit of the latest 5 h.p. flat twin Brough, from which the clean design will be appreciated. Notice the hot air collector for the carburetter.

valve pockets. Between the pockets is an air passage to assist cooling. The cylinders are staggered to the extent of one inch, and bolted to a very cleverly designed crank case casting in aluminium. The latter is entirely in one piece, with a large cover plate forming the off side of the chamber and secured by twelve nuts. All corners and edges are rounded, and particular attention given to making the engine unit as clean and plain in its lines as possible. Absence of dust-collecting corners and general simplicity have always been the striking features of the smaller



### A 5 h.p. Brough Flat Twin.—

Brough machine. Lubrication is very efficient, the oil being fed directly over the big ends, and dropping into the crank case, to be utilised again on the splash system.



Piston of the new "5," which has two rings at the top, one at the bottom, and a "keeper ring" for the gudgeon pin.

The valves are placed horizontally, side by side, above the cylinders, are of large diameter, and easily accessible in either cylinder. The whole power unit is held rigidly in the frame. The back part of the frame is carried underneath the crank case, and the front down tube carries the crank case at the top, which arrangement facilitates the ready removal of either cylinder. The crankshaft is well balanced and of substantial design, as also are the connecting rods, which latter have the usual crank type big ends. The piston has two rings at the top and one at the bottom, with a keeper ring over the gudgeon pin.

The Thomson-Bennett magneto, placed above the crank case, is gear driven. It is interesting to note that Messrs. Brough have been fitting this magneto from the early days of the war in place of the Bosch, and it has given entire satisfaction. The usual outside flywheel is fitted, with the chain sprocket on the outer side connecting the power *via* a half-inch chain to the standard Sturmey-Archer gear and clutch (handle-bar controlled).

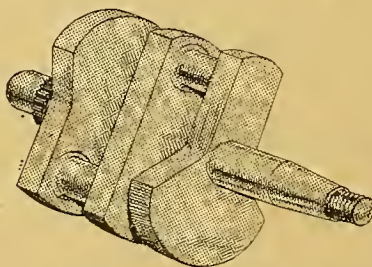
The exhaust is carried by easy sweeping pipes into a cast aluminium box

carried under the crank case. No baffle plates are used, but the engine runs very quietly.

### The Frame.

The head of the frame is particularly strong, and has cast integral with it two lugs for sidecar attachment. The forks are specially made, the main blades being very wide. Two gallons of fuel may be carried in the tank, whilst the oil compartment is partitioned off in the centre of the right hand side, the control being by plunger pump and visible drip feed.

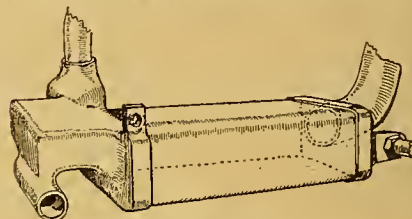
The sidecar is of special design, being roomy and having a capacious locker at the rear end. That the springing is efficient and well thought out we were able to prove later during a short run on the rough suburban roads of Nottingham. The sidecar is being made especially for this machine by the Derwent Sidecar Co., of Borrowash, Derby.



Balanced crankshaft of usual design, with cranks set at 180 degrees.

After a thorough examination of the machine we were invited to take a trial trip in the sidecar. The first noticeable feature was acceleration; as soon as the gear is changed from low to top the speed jumps to 25 m.p.h. in a few yards, and this speed can be maintained on a give-and-take road on a mere whiff of gas, whilst the quiet purr of the engine is very pleasant. But as the throttle is opened the big reserve of power is drawn upon, and very high speeds, for a sidecar combination, can be maintained whenever the road permits; 45 m.p.h. is easily reached on deserted stretches of road. No doubt 50 m.p.h. can be attained without undue effort, and this, with rider and passenger of normal weight, about 12 stone

each. The engine can be throttled down to about 10 m.p.h. on top gear, and it pulled steadily at this speed up a gentle rising gradient without labour.



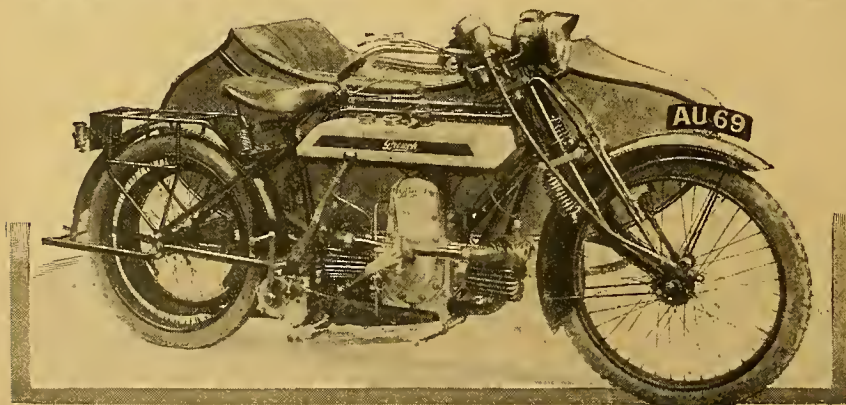
The exhaust box design and its special brackets.

ing in any way. All horizontally-opposed engines show a marked reduction in vibration from that to which we have become accustomed on the single and V twin types; but this superiority is particularly noticeable in the Brough. It is excellently balanced, for even when revving fast on the stand the usual tremor was almost absent. Without doubt Messrs. Brough have perfected a splendid example of the horizontally-opposed engine, which will add greatly to the cult of the "flat twin."

### AVERAGE PRICES.

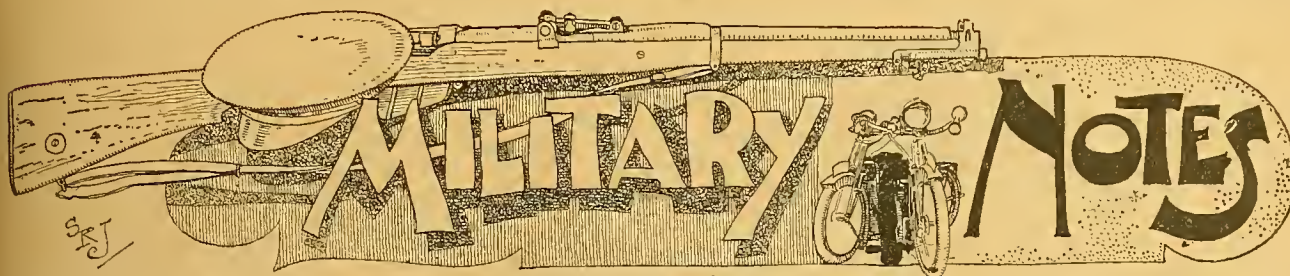
WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted, otherwise the last average is given, if within four weeks.

Make.	Year.	H.P.	Average for last week.	Latest average week obtainable.
A.J.S. ....	1915	6 3-sp. sidecar ..	—	£75
" .....	1916	6 3-sp. sidecar ..	—	£92
" .....	1916	2½ 3-speed .....	—	£54
Alldays .....	1915	2-stroke, 2-sp. ....	—	£31
Ariel .....	1916	5 3-sp. sidecar ..	—	£80
B.S.A. ....	1916	4½ 3-sp. sidecar ..	—	£63
" .....	1916	4½ 3-speed .....	—	£58
" .....	1915	4½ 3-sp. sidecar ..	—	£55
" .....	1913	4½ 2-sp. sidecar ..	—	£37
Calthorpe ..	1915	2½ 2-speed .....	—	£26
" .....	1916	2½ 2-speed .....	—	£30
Clyno' .....	1914	6 3-sp. sidecar ..	—	£54
Connaught ..	1914	2-sp., 2-stroke ...	—	£22
Douglas .....	1916	2½ 2-speed .....	—	£39
" .....	1914	2½ 2-speed .....	—	£36
" .....	1913	2½ 2-speed .....	—	£32
Enfield .....	1916	6 2-sp. sidecar ..	—	£77
" .....	1915	6 2-sp. sidecar ..	—	£65
" .....	1914	6 2-sp. sidecar ..	—	£53
" .....	1915	3 2-speed .....	—	£39
H.-Davidson ..	1915	7-9 3-sp. side ar. ..	—	£65
Indian .....	1916	Powerplus sidecar ..	—	£85
" .....	1915	7 3-sp. sidecar ..	—	£65
" .....	1913	5 3-speed .....	—	£48
James .....	1914	4½ 3-sp. sidecar ..	—	£43
" .....	1916	4½ 3-sp. sidecar ..	—	£85
Levis .....	1915	2½ 2-stroke .....	—	£44
" .....	1916	2½ 2-stroke .....	—	£25
Matchless ..	1915	6 3-sp. sidecar ..	—	£63
" .....	1914	6 3-sp. sidecar ..	—	£53
New Hudson ..	1915	4 3-sp. sidecar ..	—	£54
New Imperial ..	1916	2½ 2-speed .....	—	£29
" .....	1915	2½ 2-speed .....	—	£25
P. & M. ....	1914	3½ 2-sp. sidecar ..	—	£40
Premier .....	1914	3½ 2-sp. sidecar ..	—	£44
Rex .....	1914	6 3-sp. sidecar ..	—	£45
Rover .....	1914	3½ 3-sp. sidecar ..	—	£41
" .....	1915	3½ 3-sp. sidecar ..	—	£55
Rudge .....	1915	3½ Multi sidecar ..	—	£45
" .....	1914	3½ Multi .....	—	£30
Scott .....	1914	3½ 2-sp. 2-stroke/c. ..	—	£42
Sunbeam .....	1914	3½ 3-sp. sidecar ..	—	£58
" .....	1915	3½ 3-sp. sidecar ..	—	£79
Triumph .....	1914	4 3-sp. sidecar ..	—	£45
" .....	1914	4 3-sp. sidecar ..	—	£42
" .....	1915	2½ 2-sp., 2-stroke ..	—	£36
" .....	1913	3½ 3-sp. sidecar ..	—	£34
" .....	1913	3½ 3-speed .....	—	£30
Willis .....	1914	8 2-sp. sidecar ..	—	£60
Zenith .....	1914	6 Gradua sidecar ..	—	£44



The complete Brough sidecar outfit. A three-speed countershaft gear with combined chain and belt transmission has been adopted on this new model.





## ARTILLERYMEN'S "BATH TUBS."

PLANS are announced in the United States for the formation of a horseless regiment of heavy artillery, the guns to be hauled from point to point by caterpillar tractors, described as similar in construction to the "land Dreadnoughts" or "tanks" on the British Front.

It is instructive to learn that the artillerymen, who heretofore have ridden horses, will hereafter ride on motor cycles with "bath tub" attachments, each cycle carrying three men.

## AT GALLIPOLI AND SALONIKA.

WE recently had a visit from Lt. Cyril Paterson, the competition and racing motor cyclist. He joined the colours in October, 1914, and left this country in the summer of last year, hoping to get a commission in the R.E. He went to Gallipoli, and was in the furious fighting during the Suvla Bay landing, when the R.E.'s were employed as infantry. He was severely wounded, recovered at Cairo, was sent home for a brief space of time, and then joined the Salonika Expeditionary Force. He has seen fighting on the Somme, from which scene of operations he has just returned wearing the ribbons of the Military Cross and the Croix de Guerre. He mentioned that he had seen a despatch rider wearing his gas helmet and riding along a log road all out on a Triumph with T.T. handle-bars. This weird figure, he said, leaping from log to log, and swaying about in a most alarming manner, was like nothing on earth.

## D.R.'s AS AIR PILOTS.

WE have received a letter from an Australian D.R., who is the ex-secretary of the West Australian M.C.C. He tells us that during twelve months motor cycling in France, he met numerous Australians and New Zealanders who were either D.R.'s or drivers who have been sent home for a course of aviation. Many motor cyclists and drivers in the Flying Corps are being sent home for this course, their practical experience and knowledge of motors, and the nerve and dash that they acquire in the execution of their duties being considered of great assistance in the making of suitable pilots.

## THREE-INCH TYRES ON TRIUMPHS.

WE have received a further letter from the Front, emanating from a section using 3in. tyres on their War Office Triumph machines. Some doubt was expressed at first as to the possibility of fitting such a large tyre to a Triumph machine, on account of the clearance necessary. Our informant tells us that it is possible to put a 3in. tyre inside the standard mudguard, but not advisable. He himself rode a machine for some weeks in fine weather with the standard guard and a 3in. tyre, but the wheel clogged very easily as soon as the rain started. The writer further states that manufacturers of the different makes of motor cycles at the Front even now do not know what is wanted in the way of clearance. The

slight increases effected are inappreciable, and it only needs the right consistency of mud in France to bring a machine to a standstill—even a comparatively thin layer on *pavé* will do it.

## HEROES OF THE TANKS.

IN a list of war honours, containing twelve hundred names, published in the *London Gazette*, are the awards of the Military Cross to the following officers associated with the heavy armoured car tanks:

SEC.-LT. JOHN ALLAN manoeuvred his Tank with great skill under heavy shell fire over difficult and unknown ground, and brought it into a good position for enfilading the enemy's trenches, which he succeeded in doing with good effect.

SEC.-LT. FRANCIS J. ARNOLD commanded his Tank with great courage and determination. Later, the Tank being held up, he and his crew continued to fight with their revolvers.

SEC.-LT. E. C. K. COLLE fought his Tank with great gallantry, reaching the third objective. Later, on several occasions he went to the assistance of the infantry, and finally brought his Tank safely out of action.

SEC.-LT. A. H. BLOWERS on several occasions assisted the infantry and enabled them to advance.

LT. F. A. ROBINSON'S Tank got ditched, and he and his crew dug for fourteen hours under heavy fire, eventually getting the Tank out and back to the assembly point.

SEC.-LT. W. H. SAMPSON enfiladed an enemy trench and captured fifteen prisoners.

SEC.-LT. E. L. PURDY fought his Tank for five and a half hours with great gallantry, beating off continual enemy bombing attacks.

LT. A. E. ARNOLD went to the assistance of another Tank. He also rescued a wounded man, and, although himself wounded, brought his Tank safely out of action.

SEC.-LT. H. G. F. BOWN fought his Tank, which was disabled, with great gallantry, reaching his third objective. He put two machine guns out of action.

SEC.-LT. L. C. BOND in his Tank put a machine gun out of action and captured the team.



R.E. MOTOR CYCLIST DESPATCH RIDERS ATTACHED TO THE CLYDE DEFENCES.

Cpl. Heyes. L.-Cpl. Leonard. L.-Cpl. Burgin. L.-Cpl. Collins. L.-Cpl. Stewart. L.-Cpl. Service (artificer).

(We are indebted to Cpl. Heyes for the photograph.)





### TIMES TO LIGHT LAMPS.

GREENWICH TIME.

Nov. 23rd	...	...	4.31 p.m.
" 25th	...	...	4.28 "
" 27th	...	...	4.26 "
" 29th	...	...	4.24 "

### Dynamo Lighting for Solo Machines.

We hear of a new dynamo lighting set for solo machines which is all ready for the market, but cannot be manufactured at present, owing to the great demand for more urgent war material. We shall publish particulars at the earliest possible moment.

### The Simple Runabout.

The question of a simple form of runabout as an alternative to the sidecar combination is a constantly recurring topic. In Wednesday's issue of *The Light Car* there is a three-page illustrated article on the subject, wherein a number of the older patterns and some of the latest designs of cycle cars are reviewed and criticised.

### Death of a Gallant Motor Cyclist.

When the super-Zeppelin was brought down in Essex on September 24th, a young Essex farmer, a Mr. Alfred Wright, set out on his machine in the pitch darkness to call the military, but unfortunately he collided with a motor car and sustained injuries resulting in his leg having to be amputated. We greatly regret to learn that he has just died in hospital.

### Overseas Mails Lost.

We draw the attention of our Overseas readers to the fact that there were a number of Overseas mails on the *Arabia*, and we think it likely that there may be many letters on board addressed to *The Motor Cycle*, since we hear continually from Adelaide, Melbourne, Sydney, Straits Settlements, Ceylon, etc. Will Overseas readers kindly note, and duplicate any communications which may have been posted round about the dates announced in the press?

### Motoring in Switzerland.

We recently dined with M. Jules Neher, the managing director of Motosacoche, Ltd., makers of the famous M.A.G. engine, who was on a brief visit to England. He told us that there was a great scarcity of petrol in Switzerland, and that everyone had to use benzole, which gave great trouble in cold weather, as it froze much too easily. He told us, with great joy, that Motosacoche machines were now used exclusively by the Swiss Army. Though a neutral, M. Neher is very pro-ally in his sympathies.

### The Second-hand Show—Closing Scenes.

We paid a visit to the Agricultural Hall on Saturday morning, to have a glance at the second-hand show on its last day, and arrived just before the auction of the unsold cars and motor cycles began. This was in the hands of Mr. S. G. Cummings, who is well-known in the motoring world. There were few additions to the machines we reviewed last week, the most notable being a Carden cycle car, which appeared to be in good order. Bidding was not particularly brisk, as few people were present. Altogether the promoters of the exhibition are satisfied with the results, forty motor cycles out of ninety-two entered were sold, while the proportion of all vehicles sold was about 50% of the entries. That a show of this kind can be made a success, Messrs. William Glass and Co. are quite sure; so much so in fact that they have booked the hall for a date in March. If properly advertised before-hand, and held at a period when second-hand sales are looking up, we are inclined to share the promoters' confidence, as there is no doubt that, owing to the rarity of new goods and the consequent difficulty of obtaining them, any exhibition which helps the sale of second-hand motor cycles is likely to meet with success.



THE HEAVIEST MOTOR CYCLIST.

In our issue of Sept. 14th we reproduced a photograph of the tallest motor cycle agent in the world. It is a coincidence that the heaviest, Mr. Ove Bendixen, weighing 305 lb., should also live in the same city—Copenhagen. Mr. Bendixen is seen mounted on a flat twin Indian.

### SPECIAL FEATURES.

#### THE ALL-WEATHER MOTOR CYCLE.

By Dr. Rene Camus.

#### MANUFACTURE UNDER PERMIT.

Makers' Opinions and Experiences.

#### ANOTHER FLAT TWIN.

### The "All-weather" Motor Cycle.

This old topic is once again revived by the publication of an article in this issue, written by Dr. René Camus, of the French Army. Only two or three motor cycle manufacturers standardise efficient mudshields.

### 28 x 3in. Tyres on Triumphs.

In further reference to the paragraph regarding this subject in our issue of November 2nd, Pte. Barnett informs us that the tyres used were Dunlop 28 x 3 as fitted to American rims. He says that there is plenty of clearance for the larger tyres, and that not only is greater comfort obtained but the rims suffer less from damage through striking pot-holes at speed. This opinion does not tally with the letter reviewed in our military notes.

### A South African Record Route.

The Johannesburg-Durban Route seems to be keeping South African motor cyclists busy. No sooner are new figures set up than some rival starts out to beat them. We know not of the failures to beat records, but we do know that the original record of about 18½ hours has been pared down to 12 hours 33 minutes for the 421 miles journey. London-Edinburgh in 12½ hours is quite good going, but S.A. roads cannot be compared with British surfaces.

### Another Missing Motor Cycle.

Mr. W. H. Trevellich, of Barnet, informs us that his motor cycle has been lent under rather curious circumstances. On Wednesday afternoon, November 15th, a soldier called at his house and asked permission to borrow his motor cycle to ride into the town to obtain spares for his own machine, which had broken down, and which he had left at an inn in the neighbourhood. He at the same time left two "On His Majesty's Service" letters addressed to the War Office to be looked after till his return. The machine was lent, and has not been seen or heard of again.

The official envelopes, it appears, were found to contain sheets from a newspaper. The description of the missing machine is as follows: 1911 1½ h.p. Singer, with inclined engine, 1½ in. tyres, new Hutchinson on back, raised handle-bars, new filler caps, T11 marked on crank case.



**The New Prohibition Order.**

While visiting a motor cycle factory near London the other day, we were informed by the manager that he had applied for and obtained a permit from the Minister of Munitions to finish fifty-two partly completed machines.

**Flat Twins of Large Capacity.**

The value of the opinion of a writer in a contemporary to the effect that horizontal engines over 350 c.c. are not successful can be gauged from the fact that the following makers, among others, are now producing engines over the size stated: A.B.C. Motors, Ltd., W. E. Brough and Co., H. Collier and Sons, Ltd., Douglas Bros., and Humber, Ltd.

**Rover Company Balance Sheet.**

The profit of the Rover Co., Ltd., for the year ending August 31st is £61,097, which, with the amount brought forward, gives an available balance of £101,457 16s. 3d. A 10% dividend is being paid; which absorbs £11,224. To the general reserve is placed £20,000, war contingencies reserve £30,000, and the balance of £40,233 to be carried forward to next year. The Chairman (Col. W. F. Wyley, J.P.), in moving the adoption of the directors' report, mentioned that they had disposed of the motor cycle part of the business.

With regard to the above, the company referred to by Col. Wyley is the New Rover Cycle Co., Ltd.

**The Colombo Motor Cycle Volunteer Corps.**

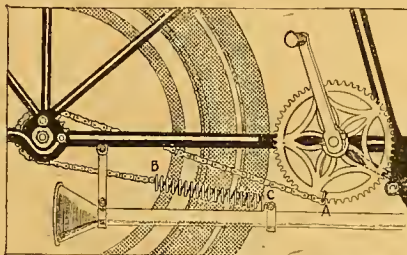
We mentioned recently that a Motor Cycle Volunteer Corps was being formed in Colombo, Ceylon. The most recent news is that the detachment had their first "parade" on November 6th, outside the Racecourse, and took the oath before Capt. F. J. Hawkes, who is O.C. for the Colombo detachment. Afterwards he explained to them the work they were expected to do. "Their activities," he said "would extend over the whole of the island, acting, if necessity arose, as despatch riders. It would be essential for them to go through machine-gun drill, signalling, infantry drill, and rifle practice." After a discussion the tunic of the Royal Flying Corps was decided upon as being the most suitable uniform for their work.

**Contents of this Issue.**

Among the chief contents of this issue will be found a series of photographs in and around Verdun taken by a motor cyclist attached to the staff of the French Army (page 446), and an article on "The All-weather Motor Cycle" (pages 448-449), curiously enough by a Médecin Chef of the French Army, Dr. René Camus; another novel motor scooter (page 449); some specimens of water-cooled sparking plugs (page 450); some exclusive details of post-war programmes of different manufacturers (page 451); impressions by a Midland motor cyclist on despatch riding in German East Africa (page 452); an illustrated description of a new 5 h.p. flat twin Brough (pages 455 and 456); manufacturers' opinions of the new Order prohibiting the manufacture of new motor cycles (page 462); the Reading-Standard trade carrier page 461; items of interest from Overseas (page 462).

**A Simple Kick-starter.**

To convert the pedalling gear of a three-speed hub geared motor cycle to a kick-starter is a comparatively simple matter with Triumphs or other similar motor cycles. The sketch illustrates the manner clearly. Fix a chain to the chain wheel at A, and from B to C



The pedalling gear of a three-speed hub-gear motor cycle converted into a kick-starter.

fix a strong tension spring. On the other side of the motor cycle fit a longer crank case bolt, or stop, to catch the crank at correct position. The fixing can be adjusted to suit the required position of the k.s. crank by altering the left crank on the bracket spindle.

**Humber, Limited.**

The directors of Humber, Ltd., in presenting their report for the year ended 31st August, 1916, state that the accounts show a net profit on the year's trading of £51,293 13s., to which has to be added the sum of £48,659 brought forward. A 12% dividend is to be paid on the preference shares in discharge of two years arrears, £10,000 to be added to the building fund, and £50,174 carried forward.

**The National War Funds.**

For the week ending November 18th the principal war funds stood as follow:

The Prince of Wales's Fund	£5,977,580	0	0
(£5,474,475 distributed)			
British Red Cross Fund	5,257,754	13	6
The Queen's Fund	170,190	5	11
Tobacco Fund	119,258	0	0

**Definition of Motor Spirit.**

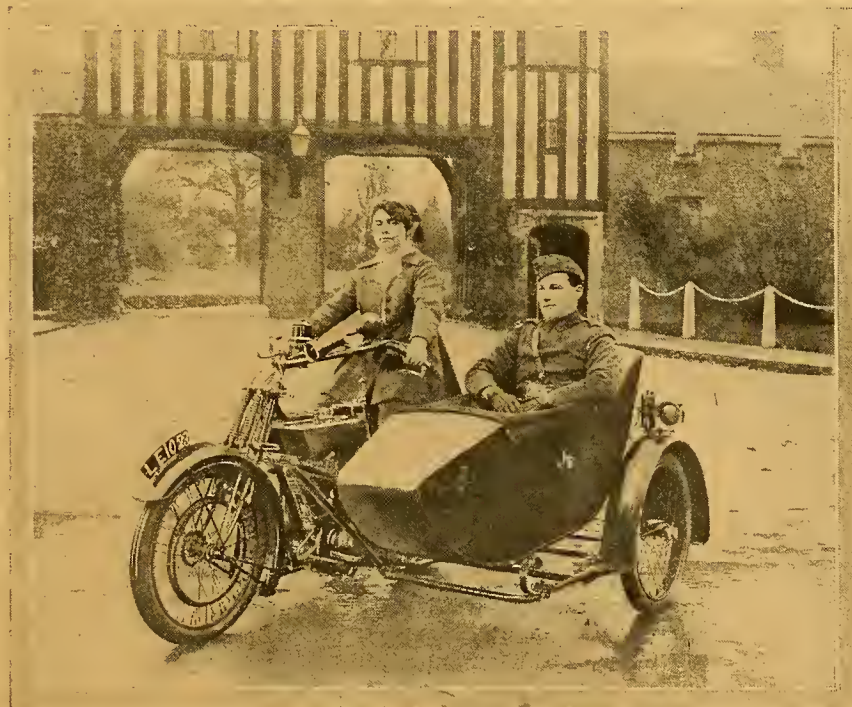
The question as to whether the use of paraffin and other substitutes is covered by the recent Order restricting the use of motor spirit is now definitely settled. The Home Secretary says the term "motor spirit" should be interpreted as being only such spirits as were liable to duty under the Finance Act.

**Pistons of Aluminium Alloy.**

Some doubts have been expressed in certain quarters regarding the suitability of aluminium alloy for the manufacture of motor cycle pistons, because motor cycle engines are for the most part air-cooled. In this connection it is interesting to note that in America an alloy, magnalite, has been adopted for use in a 35 h.p. air-cooled car. This fact should allay any doubts as to the possibility of aluminium alloy being used with success on a motor cycle.

**Flat Twins—Still They Come!**

Another flat twin—a type of engine with which *The Motor Cycle* has been so closely identified—is described and illustrated in this issue. The machine in question is a new Brough rated at 5 h.p., and of a design so clean that comment is at once evoked. It will be recalled that the Brough Company has already had several years' experience of horizontal twins, and the present model is the outcome of valuable data gained on road and track.



Mr. and Mrs. Coates, of Hendon, are enthusiastic users of the Royal Enfield. They have since 1913 covered well over 20,000 miles, including various competitions in which they were keenly interested, as well as tours in Scotland, Wales, the Lakes, and Devonshire.



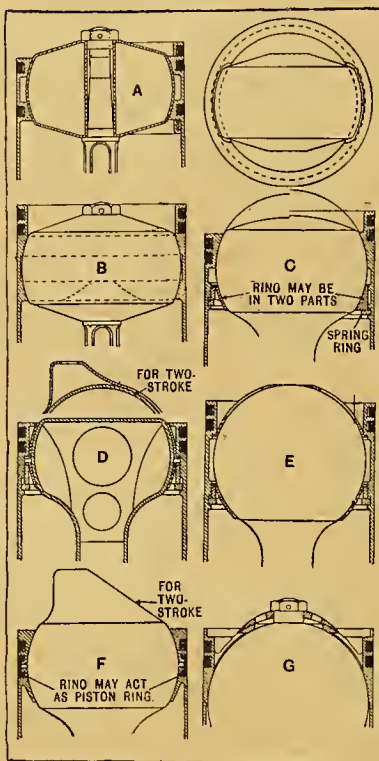
## Connecting Rod and Piston Head in One Piece.

A VERY novel piston and connecting rod construction is described in *The Autocar* of last week, in which, to put the matter quite briefly, the piston head is replaced by a bulbous head attached to the connecting rod and surrounded by a sleeve which carries the piston rings and forms the piston skirt. Whether such a construction is likely to become common in motor cycle engines is a moot point, but the designs are certainly interesting and ingenious, while a reduction of weight is claimed. Another advantage is that the part of the bulbous head which comes into contact with the heat of the explosion does not become oily, and so accumulate carbonised oil.

The end of the connecting rod is spherical, or partly spherical, in shape, and the seating is ground to the same radius, and it will be interesting to observe whether or not this will remain gastight.

Several methods of attachment have been devised. In A and B the head is first slipped into position in the sleeve, turned through an angle of 90°, and secured to the connecting rod by means of a nut.

In the types C, D, and E the head is made in one piece with the con-



Designs of pistons and connecting rods, showing various methods of eliminating the gudgeon pins as suggested in the accompanying article.

necting rod, and held in position by the lower seating, which is, in turn, secured by a split ring. In D a strengthening web will be noticed, and also an alternative form of head which is suitable for two-stroke machines.

In the drawing marked F, in addition to a two-stroke head, as in D, there is shown an outer sleeve in two pieces, which are held together by a ring possessing two inwardly projecting flanges. In this case the big end must be passed through the lower flange before the engine is assembled.

In the case of G, the enlarged connecting rod end is attached to a perforated spherical head by a bolt, which has free play in the head, a perforated washer ground to the same radius as the outside of the head, and a nut. The A, B, and G types would have a distinct advantage in the case of an engine with a detachable head, which is that, on the nut being removed, the pistons can be slid bodily out of the engine for the examination or renewal of piston rings.

These pistons are the design of Messrs. T. J. Biggs, H. Henry, and H. W. Hindley, and open up quite new ideas in the matter of engine construction.

## The Magneto Position.

ONE of the burning questions of the day in the motor industry is that which concerns the production of magnetos in this country. For the past three years *The Motor Cycle* has urged manufacturers to create and develop the British production, but until comparatively recently the necessity was not realised, and although the position to-day is encouraging, the supply is not nearly equal to peace time demands. In *The Autocar* of November 25th will be found a leading article reviewing the position, and making suggestions which are of great interest to all concerned in the building up of national industries. The chief point unquestionably in the establishment of a magneto industry is the laying of sure foundations, and these things are, says the writer of the article, "Government protection after the war, and the confidence of British motorists." With regard to the first, it has been suggested that all British magnetos or other ignition apparatus, including parts, should be protected in the following manner:

1. (a) Countries now at war against us: total prohibition of imports for at least five years, after this period a minimum of 33⅓% import duty.

(b) All other countries a minimum of 33⅓% import duty for five years, and 20% minimum after five years.

2. All Government departments should purchase only British-made magnetos, or ignition apparatus, and specify them for all subsidised vehicles.

3. No undertaking should be allowed to manufacture magnetos or other ignition apparatus in this country if they are in any way controlled by capital obtained from enemy countries or subjects.

4. It should be insisted upon that all goods be plainly marked, on the article itself, in a position to be clearly visible, the name of the country of origin.

5. That all advertising relating to foreign-made goods should clearly state the country in which the goods referred to are manufactured.

The suggestions are quite practicable, and there is no doubt that unless something of the kind be done the newly created British industry will not survive.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.



## The Reading-Standard Trade Carrier.

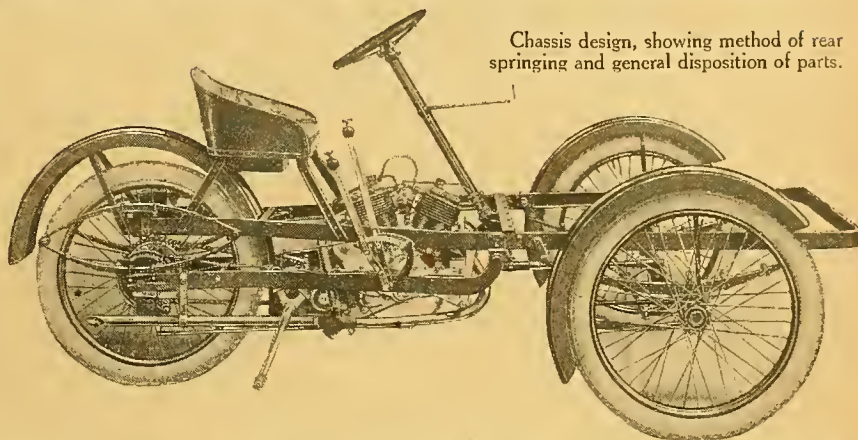
Channel Steel Frame, sprung front and rear, 12 h.p. Air-cooled Twin Engine.

A MOTOR cycle trade carrier very popular in the United States is the Reading-Standard. and a consignment of these has recently reached the Metropolis. The design is distinctly good, the vehicle being efficiently sprung, not only in front but at the back; also, the frame is not without interest, as it consists of a main channel steel frame, a single piece of steel suitably stayed by means of cross members, narrowed behind and widened in front. The back wheel is carried on an inner frame, which is hinged to the centre of and carried below the main frame. This inner frame supports the power unit and gear box, which is exactly the same as is fitted to the Reading-Standard motor bicycle. The two frames are connected at the rearmost end by means of full elliptical springs, thus completely insulating the driver from road shocks.

### Engine Details.

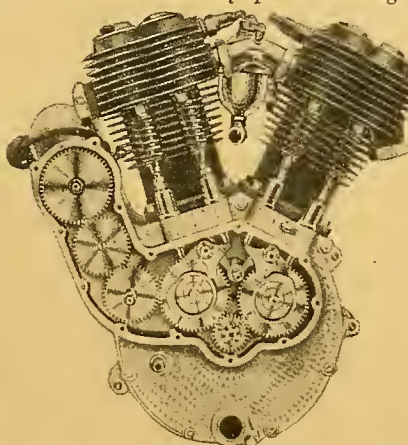
The Reading-Standard engine is a well-finished V type cycle motor having a bore and stroke of  $3\frac{1}{2}$  in.  $\times$   $3\frac{1}{2}$  in., and a cubical capacity of 68 cubic inches ( $85.7 \times 95.25$  mm., 1,100 c.c.), which is rated at 12 h.p. The valves are arranged side by side, while the carburetter is the well-known Schebler automatic. The lubrication is effected by means of a mechanical pump, which keeps a constant level of oil in the crank chamber from the oil reservoir in the cylindrical tank, which also carries a considerable supply of petrol.

The gear box is of the ordinary three-speed type and has a kick-starter incorporated with it. The control follows standard car practice throughout, the left pedal actuating the multiple-disc clutch, and the right pedal the external brake on the back hub. The change-speed lever working in a quadrant is fitted in the usual position, and there is also a side brake lever operating the internally expanding brake. The clutch, it may be mentioned, has an interlocking device, preventing the gear lever from being moved unless the clutch is withdrawn, which is common on American machines.



Chassis design, showing method of rear springing and general disposition of parts.

The transmission is by chain. Direct wheel steering is fitted. Altogether the Reading-Standard tradesman's tricar seems to be of a very practical design.



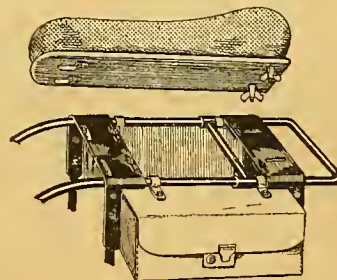
12 h.p. Reading-Standard twin-cylinder engine with cover removed, showing timing gear and pinion drive to magneto.

and should prove to be an economical vehicle for the purpose of delivering goods. It has been tested with a load

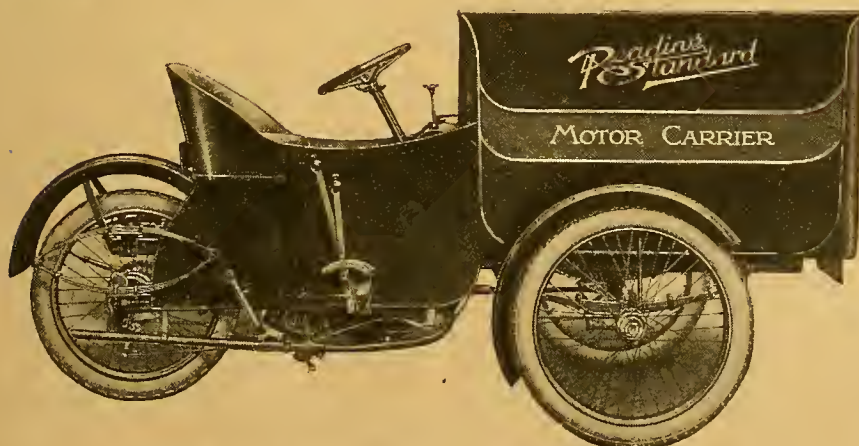
of 8 cwt., excluding the driver, and is supplied with various types of bodies. The London agents are the Reading-Standard Motor Cycle Co., 28, Baker Street, Portman Square, W.

### IMPROVED PILLION SEAT.

A RECENT improvement which has been made to the Tanpillion motor cycle seat, made by Messrs. Frank Ashby and Co., Princep Street, Birmingham, is an arrangement of the attachment clips, which allows the seat to be fitted to any size of carrier and to take pannier bags as well. The adjustability is provided by means of



The new Tanpillion seat.



Side view of the capacious van body of the Reading-Standard carrier.

slots, and the plates are enabled to slide one over the other to suit the distance between the side tubes of the carrier. The amount of adjustment is about 3 in.

Another recent addition to the Tanpillion seat is a backrest, which will be found a distinct advantage for long journeys. The seat can be supplied with or without the backrest.

### REPAIRING WATERPROOFS

IT is impossible to effect a neat and permanent repair of waterproof garments, but a few more weeks' wear can be procured by lightly drawing the edges of any gash together with needle and cotton, and then solutioning a canvas patch on the inside, after the manner of repairing a tyre. After such a repair, cut the stitches out, or they may catch on something and produce fresh tears.



## MANUFACTURE UNDER PERMIT.

Some Motor Cycle Manufacturers' Opinions and Experiences.

IT would appear, from information which has reached us since the Prohibition

Order of the Minister of Munitions was circulated, that all manufacturers are not being treated alike. We know of an instance where a firm received permission to go ahead with all the motor cycles lying about its works in an incomplete state, whereas another firm could not obtain such permission, and has been informed that there is little hope of receiving assent. In Birmingham a light car firm has received permission to proceed with work on hand, and a firm building sidecar bodies in Coventry has been told that the Order does not affect them, though we believe that 99% of people reading the Order would interpret it as covering bodies, which, after all, go to complete a new machine. Another firm of light car manufacturers which asked for permission to continue manufacture received

forms for filling-in purposes, but before they could have been received and considered by the authorities, the necessary permission came to hand.

### Tot Homines, Quot Sententiæ.

One Midland manufacturing concern has on hand scores of sets of parts of motor cycles, and could, if allowed, build up many complete motor cycles for Overseas markets independently of outside material. In such cases as this, it will be agreed that national interests would best be served by the manufacturers being allowed to assemble the machines and export them, particularly as there are only a few eligible men in the whole of the factory, these being necessary to superintend the operations of the ineligible.

A firm with whom we spoke has in stock sufficient material and parts for nearly a thousand machines. If permits

cannot be obtained to assemble and deliver these as required, stock will deteriorate, and may possibly be thrown on its hands.

Another trader's opinion was that Government should allow a period in which stock could be assembled and delivered, and then, unless on Government work, further production should cease. This trader was indignant that the Order was sprung on him, as it were, and that no previous official notification was given.

That the Order was quite correct, was the opinion of yet another manufacturer, and that it would bring all motor cycle manufacturers into line, whereas previously, while a controlled firm could not deliver any motor cycles at all, or only two or three here and there for private orders, others were assembling and sending out machines in fairly large quantities.

## OVERSEAS TRIALS.

A Splendid Performance of a Sidecar Combination under Appalling Weather Conditions.

ONE of the most strenuous reliability motor cycle tests of moderate duration yet held in Australia was arranged under the auspices of the Victorian M.C.C. on September 23rd. The course was from Melbourne to Marysville and back—a distance of 122 miles. It is a stiff test at any time, owing to the mountainous nature of the country. Rain had fallen for some forty hours previous to the time of starting (9 a.m.), and continued to fall throughout the day. The competitors knew that the travelling conditions would be strenuous, and only twenty-five of the forty-six entrants faced the starter, the larger number of the machines used being sidecar combinations; in fact, there were but four solo machines participating. That it proved a great struggle against the elements is shown by the fact that only four competitors completed the course, only one of whom finished the journey within the time schedule. This was J. H. Rhodes, who, with his wife in the sidecar of a 7 h.p. Indian combination, covered the 122 miles of heavy flooded roads in 5h. 46m., exclusive of one hour spent in having lunch at Marysville.

In the circumstances, it stands out as a most meritorious performance. There were two classes of competitors—sidecar and solo machines—each of which was again divided according to engine power, high and low, but none whatever in the latter category finished. Those who completed the course are as follow:

	Time.
1. Mr. and Mrs. J. H. Rhodes (7 Indian sc.)	5h. 46m.
2. H. A. Parsons and Miss M. Garland (7 Harley-Davidson sc.)	6h. 30m.
3. H. Pannach and E. J. Jackson (7 Excelsior sc.)	7h. 3m.
4. N. Galsworthy (7 Indian solo)	6h. 59m.

### Appalling Conditions.

Reports of the appalling condition of the roads came to hand from contestants who were forced to return. In Watson's Creek Valley (Christmas Hills) a culvert was washed away, necessitating a detour, but several plunged into the water unaware. It was after passing Yarra Glen that trouble and danger confronted the riders. Along the flats north of the line the water was steadily rising. Some who passed over in the morning could not force a passage back after lunch, the water in places being 2ft. deep, while

the road was submerged in many instances for half a mile in length. Here and there a neck of land or an isthmus, sometimes an islet, showed the course of the highway. Many of the competitors ran off the road proper, and had to jump into the water knee deep to aid the engine to pull through the mud. One rider, in curving too sharply on the Blacks' Spur, turned a somersault; another, by some means, lost his sidecar, which broke away, and was last seen rocking like a cockee boat in the mountain torrent.

One of the chief causes of delay was through water reaching the magneto, when several of the instruments had to be dismantled and dried. With such heavy going there was much low gear work, and oiling freely for safety caused fouling of plugs. But worse was the ingress of water into the crank chamber, one rider having to stop and drain the case twice—a most unusual proceeding. Tyre troubles fell to some, and changing tubes or covers was dirty work. It is significant that *no machines having belt drive came through*, while those which finished had change-speed gears in addition to chain transmission.

### The Johannesburg-Durban Record.

Six days later this was again reduced by the Enfield to 15h. 51m., and the Indian, as reported in our issue of November 16th, replied with 14h. 50m. On October 13th the Enfield knocked another thirty-eight minutes off the previous best, and so at present the record stands in favour of a British machine at the excellent figures of 14h. 12m. (29.6 m.p.h.).

### The Solo Record.

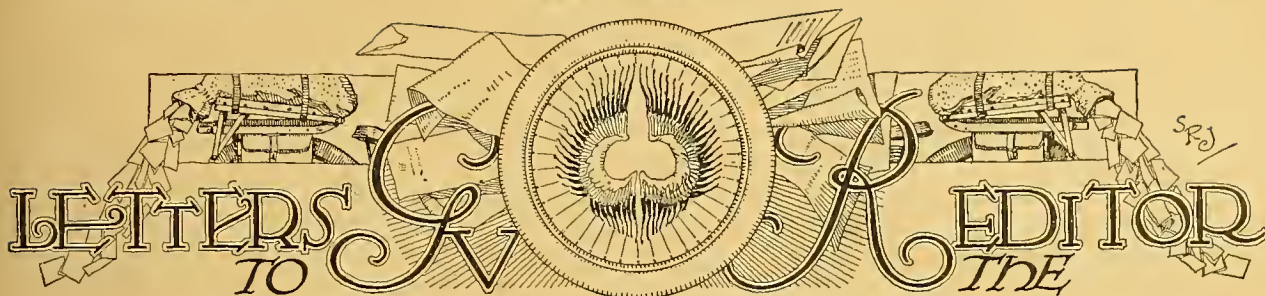
While the sidecar record-breaking attempts were in progress Messrs. Shimwell also took the solo record in hand, sending P. Flook (Triumph) and G. Usher (B.S.A.)

over the route. The former met with bad luck, but the latter finished the journey in 15h. 39m. On the occasion of the last Enfield success Flook made another attempt, and accomplished the extraordinary time of 12h. 33m. In 1914, under more favourable conditions and a slightly shorter course (415 miles, against 421 as at present), Adams (Rudge) accomplished the trip in 11h. 30m. (average 36.09 m.p.h.), while in the previous year McKeag (Bradbury) finished in 14h. 46m. Flook's average on a three-speed Triumph was over 33.5 m.p.h. We understand that Dunlop tyres were used throughout.

### The Sidecar Record.

This record is attracting a considerable amount of interest and enthusiasm in South Africa at the present time. The sidecar record was begun by Messrs. Williams, Hunt and Co. taking a passenger to Durban in 18h. 29m.—twenty-three hours being the time taken by the mail train. This was in September, 1915. A year later Messrs. Shimwell Bros., feeling confident that this could be beaten by an English machine, sent an Enfield over the route in 18h. 24m. At the third attempt Owen and Rosenthal, on an Indian, regained the record (16h. 43m.).





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Heriford Street, Coventry, and must be accompanied by the writer's name and address.

### The Flat Twin at the Bar.

Sir,—I should like to confirm all that "Ixion" states. Firstly, as to limits of size. There are a large number of F.T. engines developing 25 e.h.p. at 550 revs., water-cooled, running on paraffin, and used in this country on agricultural tractors.

In *Internal Combustion Engineering*, Vol. III., page 364, there is illustrated and described a F.T. engine having a bore of 3½ in., and a stroke of 3½ in. = 904 c.c., built by Messrs. Dixon Bros. and Hutchinson for wireless telegraphy. The Ivel Co., of Biggleswade, has made a large number of F.T. engines of 6½ in. bore × 6 in. stroke = 5,312 c.c., also for agricultural tractors, and running on paraffin.

I am at present designing a F.T. engine of 7 in. bore × 8 in. stroke, to develop 30 h.p. at 550 revs., on paraffin, water-cooled, capacity in cubic inches = 615.74 = 10,089 c.c., which will be used on agricultural tractors after the war.

I have compiled a list of over thirty F.T. engines of American make, varying from 4 in. bore × 5 in. stroke, to 8 in. bore × 10 in. stroke, particulars of which I would be pleased to send you for publication if desired. VULCAN.

Gainsborough (Lincs.).

### Overheated Sparking Plugs.

Sir,—Having been particularly interested in the controversy on sparking plugs, recently appearing in the columns of your ever welcome journal, I thought perhaps my experiences might be of interest.

Out here one gets a variety of plugs through one's hands, and it is regrettable to say that the majority are far from satisfactory. Broken porcelains, loose mica packings, and overheating are quite common occurrences, and these are all to be met with on first-class British plugs. In the early part of 1913 I happened to come across a couple of Mascot single point plugs, marketed by Messrs. Blumel, of Wolston, the electrode being about ⅜ in. diameter.

After having done numerous laps at Brooklands in a Singer car, they gave perfect satisfaction both during practice and in the T.T. of that year, and later in the Grand Prix run at Amiens. In the whole of my experience they have been the only plugs to compare favourably with the German article with which the British market was flooded in pre-war days. I doubt if this particular type of plug is now obtainable, however.

It is a well-known fact that the later edition of the single point Bosch was by no means the success of its prototype.

In closing, I must add the usual disclaimer.

B.E.F. F. G. BALL (L.-Crl.), A.S.C., M.T.

Sir,—In reply to Mr. Cosh's letter I would strongly recommend him to try Lodge racing plugs air-cooled.

I ride a lightweight Villiers two-stroke engine, and was troubled for a considerable time by the mysterious stoppages such as several of your correspondents appear to have experienced. The garage here attributed it to overheating, due to my hardly being in the lightweight class, but as there were no signs of seizure this explanation did not satisfy me.

My last plug was a Lodge two-stroke, but it was as bad as the rest. It had a waterproof terminal, which I cannot think a good thing for a hot engine, as it is bound to hinder radiation from the central electrode.

To assist the cooling of the plug, I made a radiator out of a strip of aluminium, with a hole in the centre the size of the screw on the plug, and it is slipped over the thread before the washer. The ends are bent back at about 45°, and punched all over to increase the cooling surface. The

results have certainly so far been most satisfactory, and I wonder why this fitting has not been put on the market.

In turn I would like to put two queries—

1. Why does no maker turn out a model ready fitted for using substitute fuels, with a compartment in the tank for petrol, and some system of warming the intake? and

2. Why do makers of two stroke engines class a 226 c.c. as 2½ h.p. and a 349 as 2¾ h.p.? The powers are as 9 to 11, and the volumes as 11 to 17, or as 4½ to 3½ h.p.

Dunbar.

F.R.N.C. (CAPT.)

### Electric Lighting for Motor Cycles.

Sir,—I have been very much interested in Mr. Hursley's experience with electric lighting from a dry battery, but do not see why one should use batteries when the magneto will do the work well. The light obtained is quite a revelation, and has to be screened in order not to be caught by the "special." As the light required while stopping is only of short duration, the battery or accumulator need not be a bulky one, and the one fitted by the makers lasts quite a long time.

I fitted the F.R.S. set about a year ago, and used it for about 4,000 miles. My mount has a Dixie magneto. I also have had another set fitted to a Douglas, using it as well for head and tail illumination, and this has now run for some 2,500 miles without the slightest trouble. The magneto in this case is a Bosch.

My first set included F.R.S. lamps, but for the Douglas set I converted acetylene lamps into electric by fitting F.R.S. adapters. The whole lighting set is a nice arrangement, consisting of a box about 4 in. × 3 in. × 3 in. in size, and having everything inside. It clips to the top tube, and requires no other fitting or wiring up. Three wires protrude, one for the head lamp, one for the tail, and one for the magneto. The switch is on the near side of the driver and watertight.

I hold no brief for the F.R.S. Co., but simply state my experience as a satisfied rider. F.I.H.

Edgbaston.

### Will the Single-cylinder Survive?

Sir,—I have been tempted to write you for the first time since 1912, when I first read your paper. By the correspondence which has been raging in your pages anent the eternal question, is the even torque of the twin to be preferred to the greater reliability and economy of the single? this, to my mind, is entirely a matter of choice. Many prefer the feeling of sitting above a single with a bit of a tug to sitting above a twin revving at rather a high speed. Happily, however, there are some points which all motor cyclists are agreed upon. Chief among these points is the fact that the motor cycle is no better cooled than its ancestor of 1906-7, and is a great deal less economical. As far as cooling goes, the A.B.C. is a step in the right direction, but it would be interesting to know why Mr. Bradshaw chose cast iron for his cylinder head in preference to aluminium, why he did not make his heads detachable, and why copper rings shrunk on to a plain steel cylinder were passed over when he was arranging his cooling. Another point: why should it not be possible to build a motor cycle with only three or, at the most, four sizes of nuts on it? My machine is a 5-6 h.p. twin of first-class make, about which "Ixion" once waxed very eloquent. If it has one size of nut it has ten, and similar variety of threads.

W. B. TOBEY.



### American Machines.

Sir,—Seeing remarks in your paper on American "crudities," by Capt. Lindsay and others, I would like you to publish my experience as a novice with one of the culprits. My machine, a Harley 7-9 h.p., was new on July 16th, 1915, and I have driven it over 6,000 miles with Millford tandem sidecar attached. It has cost me nothing in repairs or renewals, not wanting any, and had no adjustments except for tightening the chains and clutch. The clutch has had very hard usage, and shows no sign of wear. On a journey to Blackpool and back (about 245 miles) with a load of 33 stone I never needed bottom gear, and consumed three and a half gallons of petrol (70 m.p.g.), which is my average consumption. The machine runs as well now as when new, and has never let me down, and I have yet to find in my ordinary course of travelling the hill which the "silent grey" will not "romp up." If any of your correspondents come my way I shall be pleased to take them for a short run. Usual disclaimer.

Mansfield.

HARLEY.

### Bearing Pressures.

Sir,—I have read the article on "Pressure Bearing," by "A.A.S." in *The Motor Cycle* of October 19th, and am really afraid lest the ordinary reader will be misled, and think the long stroke engine a bugbear upon the road. Really the article ought to have been headed "The Advantage of the Medium Stroke Engine over the Long Stroke Engine." While "A.A.S." has tried to overthrow the long stroke engine, I am pleased to think in reality he has only helped it on. But "A.A.S." ought to know that the long stroke engine was designed and not thrown together without thought.

In the first place, why use a larger crank pin? Is not one with a  $\frac{3}{4}$  in. diameter bearing large enough? Of course, a larger crank pin can be used in the long stroke, if desirable, just as in the medium stroke, by allowing for an arc recess in the flywheel rim, assuming the rim to be  $1\frac{1}{2}$  in. in width.

Then again, the small end bush of the long stroke engine is  $1\frac{1}{2}$  in. in width. Surely this is wide enough for a bearing of  $\frac{3}{4}$  in. diameter; but, if one needed a wider bearing, 3 mm. could easily be machined off the bosses inside the piston.

Furthermore, with regard to cylinder lubrication. If "A.A.S." will spin the flywheels of his long stroke round (with cylinder off) he will find the oil rise  $1\frac{1}{2}$  in. above the crank case. This means that when the cylinder is on the throw of oil is 2 in. up the cylinder wall; also there are four oil grooves in the skirt of the piston and four  $\frac{3}{4}$  in. holes in the waist of the piston, thus carrying the oil to the piston rings, therefore the cylinder gets ample oil, for there is always a certain amount of oil in the waist of the piston, and always a fresh supply being thrown up by the connecting rod and wheels. If however, as "A.A.S." assumes, the long stroke engine is starved of oil, will he tell me how it is one finds the cylinder and piston top carbonised?

We will suppose the gudgeon pin of the long stroke engine travels  $\frac{3}{4}$  in. in its bearing, and the gudgeon pin of the medium stroke engine travels  $\frac{1}{2}$  in. in its bearing. The medium stroke engine will wear oval quicker, and will produce a knock sooner because it has less bearing surface.

I think "A.A.S." makes a mistake in saying the cylinder wear will be greater on the long stroke because of the connecting rod swinging at a greater angle. Will "A.A.S." prove to me that a cylinder wears oval on its greater bearing surface, i.e., rear and front cylinder walls, as he assumes? Piston and cylinder wear are relatively of little value, and when wear does take place it is caused not so much by the piston, but by the piston rings. This can best be proved by a long or short stroke engine cylinder wearing large at the top and by the fact that in the horizontal gas engine, which has the weight of its piston to carry, after many years' hard wear the liners (cylinders) will be found to be very little out of rotundity. The only stroke the piston gives any real wear to the cylinder is the firing stroke, when the piston is tilted, and receives its greatest pressure from the explosion.

CYRIL J. NORTH.

Sir,—The reply of "A.A.S." to my letter leaves me still unconvinced, and I still regard his article as lacking in the fairness which an unbiased investigator should display. May I, therefore, ask for space for a short answer to his letter?

BR8

(1.) I may leave this point to makers, but still do not agree with "A.A.S."

(2.) I have shown "A.A.S." to be wrong here, and he does not contradict my figures; but now that the point in question works out the other way he says that "The slightly greater speed makes little difference. In his article he said: "The long stroke engine suffers wear for a greater distance of its bearing travel." In this case greater speed involves greater distance. How can these two statements be reconciled? "A.A.S." cannot have it both ways. Further, he tries to place upon me the onus of having said, or argued, that the smaller the bearings the better. This I did not say; but still, so far as friction alone is concerned, provided that the bearings are of sufficient area to retain the requisite film of oil, it is true.

(3.) I agree that on a motor cycle a connecting rod as long as would otherwise be desirable is not a practical proposition.

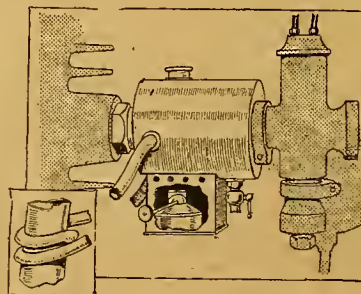
(4.) There was no fallacy in my statement. I am, of course, aware that a long lever and light weight can be balanced by a short lever and a heavy weight, provided that the weight be heavy enough, which is not so in this case. In the two engines compared the advantage is about 12 to 11 in favour of the long stroke, and the gear can therefore be higher by that amount. In consequence P (for the long stroke engine) will equal 31.6 lb. instead of 38 lb. (page 335).

(5.) In his article (page 335) "A.A.S." says, "It is important to note the  $v^2$  factor in the given formula, as this, combined with the lesser radius (the italics are mine), will always render the short stroke engine the smoother running of the two when the other conditions are equal." Other conditions naturally include  $v^2$ , and whether "A.A.S." does or does not suggest what I stated in my last letter (November 9th) I will leave your readers to decide. All whom I have asked agree that he does. I have taken "A.A.S.'s" advice to read the end of his article carefully, and, in consequence, I am impelled to ask him a simple question. Did he, or did he not, at the time he wrote his article hold the opinion that the smaller radius, *per se*, meant that the pressure of the unbalanced force would also be smaller? If he did not, then his use of the English language is unfortunate; if he did, he was wrong.

JOHN BONYTHON.

### A Suggested Vaporiser.

Sir,—I enclose a sketch of an appliance for a motor cycle carburetter, enabling the rider to start up at any time and run on paraffin or some other heavy petrol substitute. It merely consists of a cylindrical-shaped water jacket which



A remarkable idea for a vaporiser suggested in a letter by C. L. Whatley.

is slid on to the induction pipe, forming a vaporiser. A thickish pipe is taken from the water jacket, coiled once or twice round the exhaust pipe, and returned to the jacket. A small oil or spirit lamp is placed well out of the way of "dripping" fuel under the jacket. This is lighted, and in a very few minutes a start from cold can be made with heavy fuel (this is, of course, done more quickly if the cold water contained in the jacket is drained out through the tap and hot water injected). Just before or after the start the lamp is extinguished, and as soon as the engine has started the exhaust pipe becomes hot, and therefore keeps the whole vaporiser at a very high temperature as long as the engine is in motion. A hot air intake from the exhaust, by means of a flexible tube, might also be added.

C. L. WHATLEY.

[We should like to ask our correspondent whether he has tried this device, and what causes the water to circulate and maintain its heat.—En.]



**Steatite Insulators.**

Sir,—We trust we may be permitted to comment upon "Ixion's" note on page 379 of your issue of the 2nd inst. regarding steatite insulators. In the first place, and as the original British makers of fused steatite plug insulators, we must take exception to your contributor's sweeping statement that ordinary steatite plugs, *e.g.*, steatite plugs other than certain German ones, "droop like a lily, and hang down like stalactites after two minutes' running." This is a very grave reflection on British makers and calls for explanation.

In the first place, the mineral steatite is commercially infusible when pure. Certain other minerals, such as potash, soda, felspar, etc., have the property of acting as fluxes at various temperatures, and are, in consequence, employed by potters in this connection to reduce the non-melting or refractory elements such as steatite or flint in the production of what is known as the "body." It will be obvious that if a violent excess of flux is employed a body can be made incorporating a proportion of steatite which will, nevertheless, fuse at a low temperature; while, on the other hand, the proper proportion of the correct flux will result, when combined with the purest quality of steatite, in the production of a body which will not fuse or become crystalline except under most terrific heat. The word "steatite," therefore, is open to abuse, as a material may be made to incorporate much or little of this substance, the virtue of which may in a large measure be lost by being mixed with other ingredients.

Quite recently we examined a steatite insulator upon a plug of well-known English make, and found it to be largely composed of powdered firebrick (which assists to stiffen the more fusible elements) plus a certain quantity of steatite and a large addition of material fusible at a low temperature. Even this did not "droop like a lily" until it attained a heat too brilliant for the naked eye to endure, and far exceeding a heat sufficient to cause auto-ignition. Given sufficient heat all insulators—German steatite or otherwise—will droop like a pat of melted butter.

Unfortunately for themselves, other plug makers have not, so far as we are aware, any knowledge of the composition of their steatite insulators, and, in consequence, are unable to control it; but a more important point is that any insulator or exposed portion of the plug which attains anything more than a dull red heat will cause auto-ignition. From this it may be assumed that the fault in your contributor's case almost certainly lay in the unsuitable *design* of his plugs, the insulators of which did not carry off the heat with sufficient rapidity. Under these circumstances the fitting in question would continue to accumulate heat until it approached the heat of the exploding charge, at which point, or thereabout, any insulator, English or German, steatite or mica, would melt and be worthless.

English steatite plugs of reasonable price are now made, which not only do as well as but will give far better service than any German plug ever produced, but the need of these super-plugs for war purposes is so great that they cannot yet be offered to the private motoring public. Hence this letter.

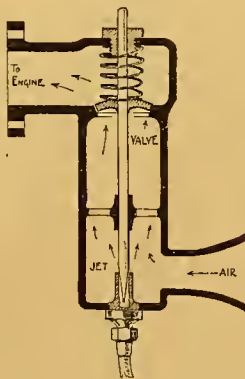
THE SPHINX MANUFACTURING CO.

**Floatless Carburettors.**

Sir,—With reference to the description of a floatless carburettor in your issue of October 19th, of which Mr. Barry claims to be the inventor, I beg to inform you that this type of carburettor has been used for some few years, with considerable success, by the New Pelapone Engine Co., Leeds, on their high-speed stationary engines, using coal gas as fuel.

I may say that this firm, realising long ago that paraffin could be used as a very economical and efficient fuel for high-speed engines, has been using for some years a paraffin carburettor of its own design, which has always given perfect results. I think paraffin as a fuel for motors has come to stay.

Lee, S.E.



H.H.L., M.T., A.S.C.

**"Somewhere on the Desert in Egypt."**

Sir,—A copy of *The Motor Cycle* of September 21st has just arrived, and I note with more particular interest the remarks of the four R.F.C. D.R.'s. I, as an R.E. D.R., would like to criticise their remarks *re* the possible mileage of man and machine. There is one case in particular I should like to draw your attention to, and that is of a Triumph motor cycle minus wheels mounted on a light narrow gauge railway truck, and driving it with a gear ratio of  $8\frac{1}{2}$  to 1 a distance of fifty-four miles per day for approximately six months. The weight of this vehicle is about  $2\frac{1}{2}$  cwt., irrespective of driver, mails, or passenger. This engine up to date has covered at least 9,000 miles, and never been overhauled. To quote the R.F.C. D.R.'s own words, considering the quality of the "juice," the climatic conditions (sometimes  $120^{\circ}$  in the shade), and, worst of all, the foreign matter, such as sand particles, etc., getting into the engine, and also taking into consideration the gear ratio of this vehicle in comparison with the average single-cylinder military motor cycle, I think this engine is not far off the record.

I have been a despatch rider since 1914.

Egypt. (CPL.) G. AYLETT, R.E.

**Petrol Distribution.**

Sir,—I suppose motor cycling in the old country is nearly dead, as you have only been allowed two gallons a month.



This is all right for the babies, but the big twins cannot get far. Motoring here is in full swing, and the labourers can afford Fords (no pun); a four-seater costs £70. A powerful twin with sidecar can be got for £57. The twins are very popular here. Petrol is now twenty-three cents (11½d.) a gallon; it was twelve cents last year!

The petrol distribution is very efficient here. I enclose a photograph of an automatic measuring pump supplied from a tank underground. These tanks are in all small and large towns wherever there is a garage. Air pumps are also fitted in garages for blowing up the tyres, worked by motor engine. Complaints have, however, been made that they give short measure, but the Government are making investigations. The main roads here are very fine, all asphalted, with dirt side tracks for wheeled horse vehicles, but the side roads—unmentionable. I have not seen or heard of any police traps in the country, but they are strict in New York City, and "speeders" have paid pretty heavily lately. There is no tax on motor cycles, only the registration fee, and cars pay five dollars a year driving licence. I have not seen many motor cycles here. The fact that cars are so cheap is probably the reason. The native loves comfort, and is not, in my opinion, such a sport as a Briton.

JOHN W. CUFLEY.  
New Jersey, U.S.A.



Mr J. W. Cufley,  
late R.N.A.S.

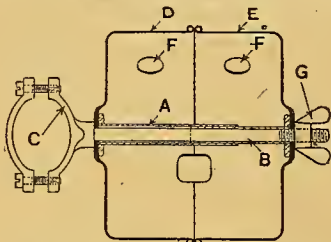


## PATENTS.

Abridged by ERIC W. WALFORD.

### A Spare Tube Carrier.

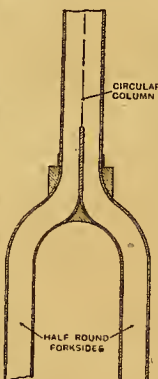
The device illustrated carries two tubes, which are coiled up round a sleeve A, which is slipped upon a stem B attached by a clip at C to any suitable part of the machine. The coiled-up tubes are encased by a box which is divided into two parts



D and E, and through the holes F the valves project. The outer or right-hand box is held in place by the wing nut G, and after this is screwed up the two coiled-up tubes are inflated from outside, so that they pack tightly against the interior of the box and cannot chafe.—F. Lane and P. L. Cearns, No. 13,633, 1915.

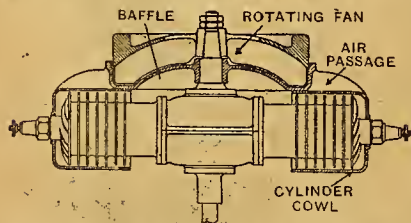
### Fork Construction.

Steering forks are usually constructed of four separate parts brazed together, i.e., the steering column, fork crown, and two fork sides. The invention illustrated provides a simplified construction, the fork consisting of two parts only. These comprise a pair of tubes of half-round section, the lower end of each of which forms one fork side, whilst at the position which would normally be occupied by the fork crown the forks converge, and finally meet, and are secured together to form a circular steering column.—Soc. Anon des Automobiles et Cycles Peugeot, No. 9,641, 1915.



### A Cooling System.

This invention is shown as applied to an engine having opposed cylinders, and it comprises a rotating fan, which is apparently constructed in one with the flywheel. This fan directs a blast inwards, which is diverted towards the cylinder heads by means of the baffles shown. The cylinders are enclosed in

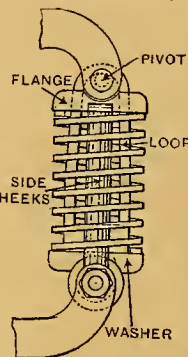


cylinders, and the air travels through passages into the cowls at a point near the cylinder heads, and then down the

cylinders, finally escaping just below the lowest radiating fin.—C. A. Hult and O. W. Hult, No. 14,271, 1915.

### A Shock Absorber.

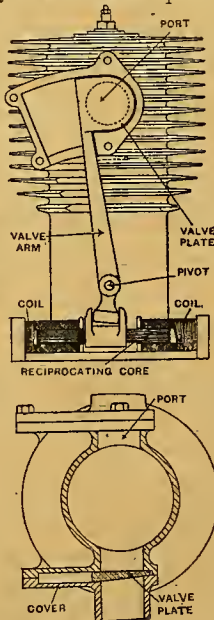
Where two parts are required to be connected together resiliently, say, for example, the springs and shackles of a sidecar, the mechanism illustrated may be used. This comprises a washer having an upwardly extending loop, which is suspended by a pivot pin from one of the parts to be connected. The other part pivotally carries a pair of side plates, which extend upwards to near the top of the loop, and are then turned over to form flanges, between which and the lower washer is arranged a spring. It will be seen that relative movement of the two parts can only be effected against the pressure of the spring.—J. P. Maclean, No. 100,860.



### Valve Mechanism.

The illustrations here given are a side elevation and a sectional plan of an engine, in which the ordinary type of valve mechanism is discarded in favour of oscillating plates; which open and close ports in the cylinder at the required times. The ports

are shown as being arranged on opposite sides of the cylinder, and the valve plates are carried upon arms which are pivoted out of centre in order that a large and quick movement may be imparted to the valve plates for a small movement of the lower ends of the arms, giving the effect of quick opening and closing of the ports. Movement of the lower end of the pivoted arms may be effected by cam mechanism, but in the construction shown solenoids or electric coils are used. These are alternately energised by a current controlled by timing mechanism, which is not illustrated in the drawings of the patent specification. Between the coils is a wire core, and as each coil in turn is energised the core is attracted and moves over to that coil. Attached to the core is a block, with projections which engage the lower end of the valve arm, so that, as the core moves, this arm is oscillated, thus opening and closing the port. The valve plates are enclosed by detachable covers, which carry the spigots for the carburettor and exhaust pipe.—J. T. Scarborough, No. 14,241, 1915.



## SPARKLETS.

### Flash Lamp Batteries.

We are in receipt of an interesting little booklet by E. Gordon, and published by Messrs. Gordon's Electrical Depot, Royston, Herts, price 6d. This bears the title "Flash Lamp Batteries, their Construction, and how to Re-charge."

### Chemico Body Shield Addition.

Our military readers will no doubt be interested to hear that the Chemico body shield, which we described in our issue of May 11th, has since been improved by the addition of an attachment for protecting the abdomen; this attachment costs 10s. 6d. extra. We are told that there are more than 3,000 of these Chemico body shields in actual use at the Front. Practical demonstrations have shown these shields to be of very great value in warding off shrapnel or revolver bullets and bayonet thrusts.

### Future Radco Models.

Owing to pressure of important munition work, E. C. Radnall and Co., makers of the Radco, do not anticipate making any alterations to their existing two-stroke models. They have in view a new design for after the war. The Radco two-stroke model has been remarkably successful, and it is a boast of its makers that on no occasion has any purchaser been kept waiting more than ten to fourteen days for delivery in pre-war times, when they were in a position to execute their orders.

### Extension of Premises.

A few days ago we were shown over the new extension of Messrs. J. B. Brooks and Co., Ltd. No one would imagine from an exterior view that such a substantial new building had been erected behind the walls of the huge factory in Great Charles Street, Birmingham. Such is the case, however, and now the executive staff finds itself in smart new quarters, and behind these are new departments of the manufacturing premises built on the gallery system. Crafts requiring only light work occupy the galleries, and the basements are given over to heavier operations.

### Catalogues Reviewed.

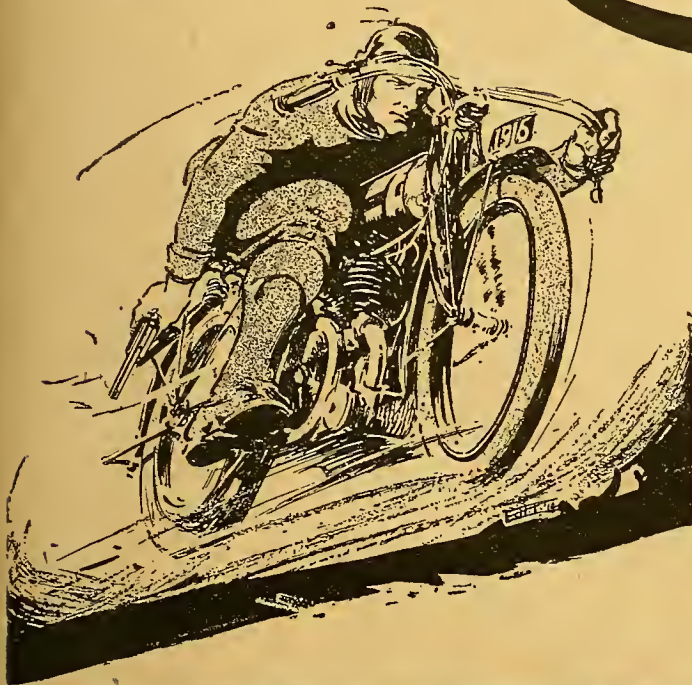
Messrs. C. A. Vandervell and Co., who are pioneers of electric lighting for motor vehicles, have lately published a leaflet entitled, "C.A.V. Electric Lighting for Motor Cycles and Sidecars." At the present time they are devoting attention to battery sets primarily intended for use on sidecar machines. The batteries are sold in neat polished wooden boxes supplied with nickel handles and external terminals. The lamps supplied are of the finest quality and are most efficient. These include two patterns of head lamps and special brackets, sidecar lamps of the round and also the torpedo pattern; a sidecar dash lamp, and a switchboard controlling the head lamp, side lamp, and tail lamp. They also sell a special round tail lamp of neat design and an electric horn.



**First in the Field**  
and **FOREMOST**  
ever Since.

# C.A.V. Magnetos

BRITISH THROUGHOUT



Since the outbreak of war this magneto has played an active part on all fronts—by far the greater number of machines in use by our Despatch riders are C.A.V. equipped.

Members of



Write for Art Folder "F"  
and Spare Parts List.

**C.A. Vandervell & Co., Ltd.,**  
Electrical Engineers, ACTON, LONDON, W.



HAVE YOU OBTAINED A COPY OF OUR LATEST BOOKLETS ?

"HINTS & TIPS" (which deals mainly with four-strokes).

"ALL ABOUT TWO-STROKES" (which no two-stroke rider can afford to be without).

WE SHALL BE HAPPY TO SEND YOU EITHER OR BOTH POST FREE ON APPLICATION.

**BROWN & BARLOW, Ltd.,** Westwood Road, WITTON, BIRMINGHAM

Fit

## Wood-Milne

### Motor Cycle Tyres

and experience real "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

Wood-Milne, Ltd.



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Wire—"Comfort, Preston."

Phone—Preston 418.

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Phone—City 4797.

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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000; c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but it not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.B.C.

A.B.C., 1914, 3½ h.p., 3-speed, lamps, horn, speedometer, etc., just overhauled by makers, very good condition; £54.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [5551]

### Abingdon.

ABINGDON King Dick, 3½ h.p., 2 speeds, sidecar, good order; bargain, £28/10.—Armstrong, 17, Goldhawk Rd., Shepherd's Bush, London. [5169]

### A.J.S.

1916 2½ h.p. A.J.S., in stock; £55.—Cross, Agent, Rotherham. [X1749]

A.J.S., with sidecar, 6 h.p., perfect condition; £75.—Capt. Bellairs, Wareham. [5164]

A.J.S. 5-h.p. 1914 Combination, exceptionally equipped everything, and practically as new; £55. [5222]

A.J.S., 1913, 2½ h.p., 2 speeds, in real good order; £24.—6, Warren St., London. [5222]

A.J.S. 1914½ 6 h.p. Combination, perfect; £65; part exchange solo mount.—Pigot-Disney, East Molesey. [5175]

1916 A.J.S., 4 or 6 h.p., with or without sidecar, must be perfect condition.—Osborne, Milford, Donegal. [4955]

4 h.p. A.J.S., 1916, only used for a few weeks, 2nd condition as new; £65.—The Purley Motor Garage, Ltd., Purley. [4500]

**BEFORE THE SHORTAGE OF MACHINES BECOMES GENERAL, place your order with**



**CALL NOW OR WRITE FOR TO-DAY'S BIG LIST, WHICH INCLUDES THESE—**

Our great selection, including largest variety of best models of leading makes, is still at your command, at unequalled low clearing prices for cash or easiest easy terms, with promptest delivery, and every bargain fully guaranteed.

No.	h.p.		
10757.	3½	1913 3-sp. TRIUMPH and Sc.	£40 0
10760.	3½	1913 3-sp. ROVER and Sidecar	£55 0
10763.	2½	1916 2-sp. NEW HUDSON	£33 0
10768.	3½	1910 single-speed TRIUMPH	£20 0
10772.	4	1915 3-sp. DOUGLAS and Sc.	£65 0
10775.	0.5	1914 3-sp. STANDARD Car	£185 0
10776.	3½	1911 single-speed LINCOLN-ELK and Sidecar	£20 0
10777.	3½	1912 F.E. B.S.A.	£27 10
10779.	2½	single-speed WOLF	£15 0
10781.	2½	1914 2-sp. DOUGLAS	£35 0
10733.	7-9	1915 3-sp. EXCELSIOR	£60 0
10739.	2½	1915 2-sp. NEW IMPERIAL-J.A.P.	£27 10
10740.	2½	1916 2-sp. NEW IMPERIAL-J.A.P.	£30 0
10744.	2½	1915 2-sp. ALLON	£27 10
10746.	2½	1914 single-speed SUN VILLIERS	£17 10
10748.	2½	single-speed HOBART	£20 0
10750.	4½	1915 3-sp. B.S.A. and Sidecar	£65 0
10751.	8	1915 MORGAN Runabout, De Luxe Model	£94 10
10752.	5-6	1913 2-sp. A.C. Sociable	£37 10
10754.	3½	1916 I.O.M. RUDGE Multi.	£50 0
10705.	12-16	VAUXHALL Car	£125 0
10713.	4-5	1911 ZENITH-GRADUA	£37 10
10717.	4½	PRECISION	£22 10
10724.	3½	1913 3-sp. TRIUMPH and Sc.	£42 10
10727.	4½	1915 3-sp. B.S.A. and Sidecar	£60 0
10728.	10-12	1912 DELAGE Car	£175 0
10682.	3½	1914 3-sp. BRADBURY	£47 10
10687.	1½	single-speed J.E.S.	£10 0
10688.	2½	1911 2-sp. DOUGLAS	£22 10
10699.	3	1913 3-sp. HOBART & Sidecar	£35 0
10700.	5-6	1913 2-sp. F.N. and Sidecar	£32 10
10701.	2½	1911 single-speed	£22 10
10698.	3½	1912 single-speed INDIAN	£20 0
10643.	3½	RUDGE Multi.	£40 0
10649.	3½	1913 single-speed B.S.A.	£25 0
10661.	6	1913 ENFIELD and Sidecar	£45 0
10663.	7-9	1914 2-sp. INDIAN	£35 0
10673.	4½	1914 3-sp. B.S.A. and Sidecar	£45 0
10693.	2½	1913 2-sp. DOUGLAS	£30 0
10610.	2½	1914 3-sp. NEW HUDSON, Sc.	£45 0
10614.	3½	1911 single-speed HUMBER	£25 0
10628.	1½	1914 single-speed DAYTON	£12 10
10629.	3½	1914 3-sp. ROVER and Sidecar	£50 0
10633.	4	1914 3-sp. SINGER and Sidecar	£45 0
10587.	3½	1914 3-sp. QUADRANT & Sc	£42 0
10588.	3½	1913 RUDGE Multi and Sidecar	£45 0
10590.	8	1912 2-sp. MATCHLESS & Sc.	£35 0
10596.	3½	1913 RUDGE Multi	£35 0
10597.	2½	1915 2-sp. 2-str. CALTHORPE	£25 0
10573.	2½	1915 2-sp. CALTHORPE	£31 10
10584.	3½	1912 PREMIER and Sidecar	£20 0
10538.	3½	1915 twin INDIAN	£47 10
10540.	4½	1914 3-sp. JAMES and Sidecar	£50 0
10542.	3½	1913 3-sp. HUMBER	£25 0
10333.	3½	1908 2-sp. TRIUMPH	£22 10
10565.	3½	twin N.U.T.	£35 0
10519.	3½	1914 2-sp. PREMIER	£35 0
10533.	4½	1912 3-sp. QUADRANT	£27 10
10477.	2½	1912 2-sp. SINGER	£20 0
10485.	4	single-speed BRADBURY	£23 10

**WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON.**  
Phone: 8777 Holborn. Wires: "Opticor. London."

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S., 1914, 2½ h.p., 2-speed, kick start, hand clutch, all chain drive, complete with accessories; £38/10.—Lamb's, below.

A.J.S., 1915, 2½ h.p., 3-speed, original tyres, first-class order; £44/10; deferred terms, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [4950]

A.J.S., 1912 6 h.p. Twin Combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4915]

4 h.p. A.J.S., 1916 model, sidecar, speedometer, lamps, mechanical horn, done 700 miles, like new; £90, or nearest.—Whitney, Park St., Newtown, N. Wales. [X1440]

LATE 1914 6 h.p. A.J.S., in almost new condition, complete with cane sidecar, lamps, etc.; any trial or examination; £62, a bargain.—Else, Daisy Bank, Matlock. [X1502]

1916 4 h.p. A.J.S. Combination, practically new, Lucas accessories, wind screen and apron, run about 800 miles; 30 gns., or offers.—Box 451, c/o The Motor Cycle. [4590]

1916 2½ h.p. A.J.S., 3-speed, latest model, ridden 700 miles only, condition genuinely as new, specification as list; £53.—Robinson's Garage, Green St., Cambridge. [5144]

1916 6 h.p. A.J.S. Combination, latest model, detachable wheels, with spare wheel, in new condition, not run 1,000 miles; cost £118, will accept £90, or near offer.—Poole, 205, High St., Cheltenham. [X1786]

A.J.S. Combination, 1914, total mileage under 7,500, equipment includes speedometer, lamps (electric and acetylene), two 650×65 and two 700×80 tyres, guaranteed in perfect condition throughout; £67/10.—74, Trinity Rd., Handsworth, Birmingham. [X1781]

### Alldays.

1914 Alldays 2-stroke, good tyres, new belt; £18.—367, Barking Rd., Plaistow. [5057]

ALLDAYS-ALLON, 1916, as new, lamps, horn; £29.—15, Grosvenor Rd., Twickenham. [5061]

1916 Allon, 2½ h.p., 2-speed, unused, shop-sold only; £36.—Jones, Garage, Droitwich. [X0870]

A.LLON, 2-speed, only used for few weeks; £37/10.—The Purley Motor Garage, Ltd., Purley. [4501]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [5096]

A.LLON, 2-stroke, late 1916, all on, indistinguishable from new; 30 gns.; not Sunday.—47, Bonnerhill Rd., Kingston. [4958]

ALLDAYS Allon (1916, Aug.), done 500 miles; £30.—J. Huntbach, 50, Ventnor St., Gerald Rd., Pendleton, Manchester. [4980]

A.LLON, 1915, 2-speed, 2½ h.p., and Cowey speedometer, electrically equipped; £36/10; deferred payments if desired.—Lamb's, below.

A.LLON, 1915, 2-speed, with hand clutch, all accessories, fine order; £36/10.—Lamb's, below.

A.LLON, 1915, single speed, all accessories, still has original tyres; two at £27/10 each.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [4949]

I CAN Give immediate delivery of 1917 Allons, 2-speed model; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5194]



## MOTOR CYCLES FOR SALE.

## Alldays.

1915% 2½ h.p. Allon Combination, new sidecar, single-speed, paraffin tank, special brakes, lamps, hooker, generator, spares, tools; £30; called up—33, Mandeville Rd., Enfield Wash. [5163]

ALLONS, 12 models in stock, just arrived from works; deferred payments if desired, exchanges.—Lamb's, 151, High St., Walthamstow, and at 50, High Rd., Wood Green. Tel.: Walthamstow 169, and Hornsey 1956. [5007]

PRICE 238.—Allon, 1916 model, delivered end of July, 2½ h.p., countershaft drive 2-speed gear, free engine, hand operating clutch, tools, acetylene generator, 2 lamps, Stewart horn, speedometer, extra petrol tank connected to carburettor, carrier seat upholstered fitted to spring frame, machine only slightly used, condition equal to new; selling to buy larger h.p.—Box 471, c/o The Motor Cycle. [X1692]

## Ariel.

FOR Sale, 1913 3½ h.p. Ariel, adjustable pulley.—Apply, Ellis, Salop Rd., Oswestry. [X1596]

ARIEL, 3½ h.p., latest 3-speed model, in stock, with or without sidecar.—Crow Bros., Guildford. [496]

RIDER TROWARD.—1913 Ariel, 3-speed, clutch, just re-enameled, overhauled; 27 gns.—78, High St., Hampstead. [5120]

ARIEL, 3½ h.p., semi T.T., with variable pulley gear, fast, most excellent condition; £24, bargain.—Laytons' Garage, Biester, Oxo. [X1846]

COLMORE Depot, 31, Colmore Row, Birmingham have in stock for immediate delivery all model of Ariel motor cycles, with or without sidecars. [079]

ARIEL, 3½ h.p., variable 2-speed, with sidecar, lamps, horn; special bargain, £15.—Newham, 223, Hammersmith Rd., W. Phone: Hammersmith 80. [5042]

I CAN Give immediate delivery of 1917 5-6 h.p. Ariels, 3½ h.p. Ariels, solo or combinations; also 1916 5-6 h.p. combination, as new, guaranteed, £80; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5192]

## Arno.

ARNO, excellent order; any trial: £15.—Warren's, 386, Euston Rd., London. Museum 3081. [4905]

## Auto-Wheels.

UTO-WHEELS (two), 1914, complete, splendid condition: £7 each.—42, Upper Thames St., E.C. [4995]

UTO-WHEEL, 1916, in almost new condition, run about 80 miles; real bargain, £9.—Groves, 27, Tyson Rd., Forest Hill, S.E. [5026]

UTO-WHEEL, 1914, nearly new, £8/10.—B.S.A. ditto, model de Luxe, £10.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X1795]

THREE Auto-wheels, complete with cycles, shock absorbers, perfect order throughout; £10 each.—Wood, 108, Breck Rd., Liverpool. [X1821]

UTO-WHEEL, 1915, all latest improvements, like new: £11, bargain; unsratched.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [4965]

UTO-WHEEL de Luxe, 1916, practically new £10/10; with lady's bicycle £18, or offer; thoroughly recommended.—Brown, Argo House, Whitechurch Haunts. [X1594]

UTO-WHEEL B.S.A. De Luxe, 1916 model, ridden approximately 40 miles; 11 gns.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Walthamstow 169, and Hornsey 1956. [4947]

## Bat.

BAT-J.A.P., 1914, 6 h.p., countershaft gear, chain drive, Bramble sidecar; £48.—Collier's, Deal St., Halifax. [4798]

BAT-J.A.P., and sidecar, 1914, 4 speeds; first-class order; £60.—Warren's, 386, Euston Rd., London. Museum 3081. [4901]

BATS.—P. J. Evans, Birmingham agent.—Immediate delivery 4-5 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X1779]

1912 6 h.p. Bat, spring frame, Whittle belt, single gear, F.R.S. lamp, tyres very good, automatic lubrication; £26.—Harvey Hudson, South Woodford. [4989]

6 h.p. Bat, No. 3 model, Gloria coach sidecar, run 6,200 miles, averages 70 p.g., perfect running order and condition, complete with lamps, speedometer, horn, tools, spares, and extras; cost £100, a bargain, £50.—Foster, Eden Park, Lancaster. [X1791]

## Bradbury.

BRADBURY, 1912, 3½ h.p., in real good order; a bargain, £14.—6, Warren St., London. [5218]

1914 Bradbury, 4 h.p., 3-speed, coachbuilt sidecar, 3 lamps, speedometer, pump, horn, etc., new tyres; £42.—Dale, 26, Powis St., Woolwich. [5025]

BRADBURY 4 h.p. Combination, N.S.U. 2-speed, free engine, kick start, latest B. and B. just overhauled, 18 gn. coachbuilt Canoelet sidecar, hood, screen, lamps, mechanical horn, lovely combination; £35.—Fisher, 249, Portland Rd., South Norwood. [5184]

## Brough.

BROUGH 3½ h.p. Horizontal Twin, 1915, 3-speed, handle-bar clutch, perfect condition, tyres unsratched; £46.—Davison, Nuneaton. [X1795]

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## MOTOR CYCLES FOR SALE.

## Brough.

BROUGH, 5-6 h.p., 1915½, and sidecar; photo; been 800 miles; can show receipt for £89; take £56 or part exchange.—Winifred Lyons, 65a, Rosedale Rd., Dulwich. [5029]

## B.S.A.

B.S.A., 1917 models H and K, with sidecars, in stock.—Moss, Wein. [X1784]

COLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

B.S.A., free engine, perfect; £30.—Warren's, 386, Euston Rd., London. Museum 3081. [4904]

1916 T.T. B.S.A., all-black finish, demonstration machine, £43/10.—Plastow, Grimsby. [X1829]

B.S.A., guaranteed 1917 model H, belt-cum-chain, £64; easy payments, exchanges.—Lamb's, below.

B.S.A., guaranteed 1917 model K, belt-cum-chain; £64.—Lamb's, below.

B.S.A., 1916 model K, with Phoenix sidecar, all accessories; £63; deferred payments.—Lamb's, below.

B.S.A., 1914 model K, 4½ h.p., 3-speed, kick start, and B.S.A. Canoelet sidecar, £44/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. Phone: Walthamstow 169, and Hornsey 1956. [4944]

B.S.A., 1915, 3-speed, speedometer, etc., Swan coachbuilt sidecar; £60.—Topp's Garage, Mertham. [4952]

1913 B.S.A., 3½ h.p., 2-speed, kick start; bargain, £28.—Lieut. Jackson, Military Hospital, Parkhurst. [4983]

1914 B.S.A., 3½ h.p., chain-cum-belt, 3-speed, splendid order; 36 gns.—Williams, 19, Portland St., Cheltenham. [X1727]

1915½ B.S.A., 4½ h.p., 3-speed countershaft gear, with expensive sidecar, fully equipped; £60.—20, Whiteley St., Reading. [5117]

B.S.A., 1916, 3-speed countershaft, model K, lamps, horn, etc., with coachbuilt sidecar, good condition; £66.—Below.

B.S.A.—Latest new models can be delivered from stock, chain drive, model H, 3-speed countershaft gear, £66; chain-cum-belt model K, £64; Montgomery sidecars in stock to fit, from 10 gns. Your present machine can be taken as part payment.—Elce and Co., 15-16, Bishopsgate Av., Canonville St., E.C. B.S.A. Agents. [0491]

LATE 1913 B.S.A., 3½ h.p., 2-speed, and Montgomery sidecar, in nice condition, and fully equipped; £38.—20, Whiteley St., Reading. [5116]

1913 B.S.A., 2-speed, chain drive, with coachbuilt sidecar, in splendid condition; £33.—Coore, 18, Avondale Rd., Wolverhampton. [X1442]

B.S.A., 1913, 2-speed, 1916, Phoenix sidecar complete, in good condition; £36; owner on active service.—W. 33, Olney St., Walthow Rd. [4993]

B.S.A., 1917 models, in stock for immediate delivery, combinations from 80 gns., solo machines £64.—P. J. Evans, John Bright St., Birmingham. [X1776]

I CAN Give immediate delivery of 1917 B.S.A. model H or model K, solo; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5193]

B.S.A., 1915, 3½ h.p., 2-speed, free engine, all accessories, first-class condition; £45, or exchange.—S. D'Eath, 15, The Parade, Mitcham, Surrey. [4569]

1917 B.S.A. in stock. Catalogues free. Spare parts per return. lin. belts, as fitted by makers, 8/6, post paid.—Albert L. Pitts, Redditch. Tel.: 91. [X035]

B.S.A., 4½ h.p., 1917, 3-speed countershaft, K models, just delivered from works; £64; liberal exchange terms.—Eagles and Co., High St., Acton, W. [X1804]

1916 B.S.A., 4½ h.p., all chain drive, with best B.S.A. sidecar, Lucas horn and lamps, Danlops and spare tyre, splendid condition; £69, no offers.—R. 143, Warham St., Camberwell New Rd., S.E. [4934]

B.S.A., 1916, 4½ h.p., with 3 speeds, countershaft, and coachbuilt sidecar, lamps, and accessories, only 900 miles; a real bargain, £56 cash.—E. Hurlock, 18, Kenbury St., Coldharbour Lane, S.W. [4992]

B.S.A., July, 1916, model K, excellent condition, run 580 miles, 2 lamps and generators, Stewart horn and speedometer, Binks carburettor, spares, etc., if required; what offers?—14, Edgell Hill, Woolwich. [4954]

B.S.A., 1915, 4½ h.p., model K, 3-speed, with coach built sidecar and complete equipment, thoroughly overhauled, and guaranteed perfectly sound; worth fully £60, accept £55.—Laytons' Garage, Biester, Oxo. [X1851]

## Calthorpe

CALTHORPE, 1914, 3½ h.p., 3 speeds, fully equipped, new coachbuilt sidecar; £36.

CALTHORPE, 1914, 2 h.p., 2 speeds; £14.—6, Warren St., London. [5215]

1915 Calthorpe-Jap, 2-speed gear, new tyres; £23/10.—Chilton, High St., Watford. [5062]

1915 Calthorpe, 2-stroke, 2-speed, in good condition; offers.—Box L2,589, c/o The Motor Cycle. [4943]

1915 Calthorpe-Jap, 2½ h.p., Enfield 2-speed and P.E., with accessories and spares, had very careful use; £26, lowest.—J. Walker, Sydenham Works, Golden Hillcock Rd., Birmingham. [X1826]



## MOTOR CYCLES FOR SALE.

## Calthorpe.

**CALTHORPE-J.A.P.**, 2½ h.p., Enfield 2-speed gear, lamp, horn, tools, not done 500 miles; £30.—118, Disraeli Rd., Putney, S.W. [5070]

**A REAL SUB.**—Late 1914 2½ h.p. 2-speed Calthorpe, guaranteed perfect; must sell instantly; first £18 secures.—Millards, Drapers, Chesterfield. [X1838]

**1915 Calthorpe**, 2-speed, 2-stroke, specially powerful engine, T.T. bars, good tyres; a bargain, £26/10.—Byfield Automobile Co., West Byfleet. [4912]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpe for immediate delivery; also at our Manchester Depot. [0799]

**CALTHORPE-J.A.P.**, 1916, 2½ h.p., 2-speed, fast, economical, reliable, enamel and plating almost unscratched, lamps, spare generator, horn, and tools; £30.—Hale, 123, Dalsalloch, Auchinleck, Ayrshire. [X1700]

**TWO 1915 Calthorpe-Jap Machines**, 2½ h.p., Enfield clutch—operating 2-speed, both completely equipped; prices £24 and £27/10; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5043]

**CALTHORPE**, latest 1916 models, 2½ h.p., 2-speed, J.A.P. engine, 36 gns.; 2½ h.p. lady's model, 2-stroke, 2-speed, 34 gns.; 4 h.p. combination, twin J.A.P. engine, 2-speed, light coach sidecar, 67 gns. Catalogue and full particulars sent on request.—Eloe and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480]

## Campion.

**6-8 h.p. Campion**, J.A.P. engine, sidecar with hood and screen, Lucas acetylene lighting outfit, speedometer, mirror, in perfect order; a bargain, £70.—Appley, Hamshaw, Leicester. [X1712]

**1916 Campion**, 6 h.p. twin J.A.P. engine, combination, Drums, 4-speed, clutch, etc., Dixie mag., hood, speedometer, tools, apron, new in October, must sell, cost £102/7, accept £90; a perfect trunton.—Woollett, 19, Queen's Rd., Peckham. [5157]

## Chater-Lea.

**CHATER-LEA** 2-stroke, 2-speeds, as new; £24.—373, Katherine Rd., Forest Gate. [5028]

**CHATER-LEA**, 5-6 h.p. J.A.P. twin, and sidecar, in real good order and condition; £17.—6, Warren St., London. [5216]

## Chater-Lea-Fafnir.

**CHATER-FAFNIR**, 3½ h.p., N.S.U. gear, mag., m.o.v., good tyres, engine and gear just overhauled; £14.—31, Shaersted St., Kennington. [5102]

**CHATER-FAFNIR**, 3 h.p., o.h.v., mag., B. and B. T.T. bars, new tyres, belt; discharged man, forbidden to ride; £16/10.—Massey, 15, Piquet Rd., Anerley, S.E. [4914]

## Chater-Jap.

**CHATER-J.A.P.**, with sidecar, 5-6 h.p. twin, 2 speeds; £16/16.—1, Ebner St., Wandsworth. [5078]

## Clyno.

**CLYNO**, 1913-14, 6 h.p., 3-speed countershaft chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [4798]

**1912 Clyno** Combination, new 1913, Clyno coachbuilt sidecar, 3 lamps; £42.—Freeman-Taylor, Tooting, Devon. [X1854]

**CLYNO**, 6 h.p., kick starter, 2-speed, 1916 sidecar, new tyres, all accessories; 30 gns.—Hayes, 108, Euston Rd., N.W. [4566]

**1917 Clyno** Combination, War Office model, spare wheel, luggage grid, in stock; don't miss it.—Potter, Agent, Leicester Grove, Leeds. [X1799]

## Connaught.

**CONNAUGHT**, latest improved models; immediate delivery.—V. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [4598]

**P. J. EVANS**, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X1778]

## Coventry Eagle.

**COVENTRY Eagle**, 1916, 6 h.p., 3-speed, countershaft, coach sidecar; £69/10; little used.—Motor Exchange, Horton St., Halifax. [4801]

## Dayton.

**DAYTON** 2-stroke, nearly new; £12/10, great bargain.—30, Canterbury Rd., Kilburn. [5165]

## De Dion.

**2½ h.p. De Dion**, Dixie mag., fast, low; sacrifice £7/5.—Robinson, Sandy, Bedfordshire. [5038]

## Diamond.

**DIAMOND**, 1916, 2½ h.p., 2-stroke, lamps, tools, as new; £32.—P. Ingram, Caswell, near Swans. [X1593]

## Dot.

**DOT-J.A.P.**, 8 h.p., overhead valves, and 2-seater sidecar; £60; exchanges.—Mitchell, 35, Roundhay Rd., Leeds. [X1808]

## Douglas.

**DOUGLAS** 1915 Combination, £65, 4 h.p.

**DOUGLAS** 1914 Combination, £55, 3½ h.p.

**DOUGLAS**, 1915, 2½ h.p., as new; £46.—6, Warren St., London. [5223]

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**SWIFT**, 9 h.p., 1913, excellent order ..... £52

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**FORD**, 1916, 20 h.p., 5-seater, shop-soiled ..... £125

**MORGAN** Grand Prix No. 1, water-cooled, all access. ..... £92

**GARDEN**, 1915, 6 h.p. M.A.G. engine, 2-speed, all lamps, wind screen ..... £70

**FORD**, 1913, 20 h.p., 5-seater, excellent order, but body poor ..... £55

**MINERVA**, 24 h.p., 5-seater, hood and screen. A bargain ..... £75

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**REX**, 1914, 6 h.p., 2-speed, modele de luxe ..... £38

**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidecar ..... £32

**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed ..... £42

**ZENITH**, 1914, 6 h.p., countershaft clutch model ..... £60

**RUDGE** 1913 5-6 h.p. Multi, with Rudge Sidecar ..... £46

**ENFIELD**, 1912, 6 h.p., 2-speed, twin, Enfield Sidecar ..... £29

**RUDGE** 1913 3½ h.p. Multi, coach-built Sidecar ..... £33

**B.S.A.**, 1916, 4½ h.p., 3-speed, all-chain drive, Godiva sporting Sidecar, only done 500 miles ..... £69

**ZENITH**, 8 h.p., 1913, clutch, and Sidecar ..... £47

**SCOTT**, 1914, 3½ h.p., 2-sp., and Scott sidecar chassis ..... £45

**ZENITH**, 1915, 3½ h.p., twin, clutch, and C.B. Sidecar ..... £49

**ENFIELD** 1914 6 h.p. 2-speed Combination ..... £60

**MATCHLESS**, 1914, 8 h.p., 3-speed, J.A.P. engine ..... £60

**PORTLAND-J.A.P.**, 1914, 8 h.p., B.S.A. 3-speed, and Sidecar ..... £42

## SOLO MODELS.

**DOUGLAS**, 1911, 2½ h.p., 2-speed, spring forks ..... £20

**RUDGE** 1913 3½ h.p. Multi, T.T. bars ..... £33

**IVY**, 1915, 2-stroke, single speed ..... £18

**NEW HUDSON**, 1913, 3½ h.p., 3-speed, J.A.P. engine ..... £39

**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £28

**RUDGE**, 3½ h.p., Philipson pulley, 1915 improvements ..... £37

**BROWN**, 3½ h.p. model, Bosch magneto ..... £12

**INDIAN**, 1915, 5 h.p., 3-speed, twin ..... £52

**ROVER**, 1912, 3½ h.p., T.T. clutch model ..... £20

**DOUGLAS**, 1912, 4 h.p., single-speed ..... £18

**ALLWAYS ALLOH**, 1915, 2-speed, 2-stroke ..... £32

**NEW HUDSON**, 1915, 2-stroke, as new ..... £22

**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equipment ..... £47

**ENFIELD**, 1912, 2½ h.p., twin, Grado gear ..... £14

**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, twin ..... £56

**LEVIS**, 1914, 2½ h.p., 2-stroke, countershaft ..... £18

**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, as new ..... £53

**F.N.**, 2½ h.p., 2-speed, lightweight ..... £15

**IVY**, 1915, 2½ h.p., 2-speed, as new ..... £19

**NORTON**, 1915, 4 h.p., T.T., all accessories, Philipson ..... £47

**DOUGLAS**, 1912, disc wheels, all accessories ..... £24

**DOUGLAS**, 1914, "W." 2-speed, kick start, all access. ..... £30

**ALLWAYS ALLOH**, 1916, 2½ h.p., 2-speed, 2-stroke ..... £43

**INDIAN**, 1915, 3½ h.p., 3-speed, twin ..... £26

**ALLON**, 1916, 2½ h.p., 2-stroke, as new ..... £26

**DOUGLAS**, 1914, 2½ h.p., 2-speed, kick start ..... £46

**ENFIELD**, 1916, 2½ h.p., 2-stroke, 2-speed ..... £33

**TRIUMPH**, 1913, 3½ h.p., 3-speed, all accessories ..... £38

**DOUGLAS**, 1915, 2½ h.p., 3-speed, all accessories ..... £52

**INDIAN**, 1914, 7-9 h.p., clutch model, as new ..... £41

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## ALL THE UNDERMENTIONED ACTUALLY IN STOCK.

**HARLEY-DAVIDSON**, Model 16F ..... £80 15

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**ROYAL ENFIELD**, 2½ h.p., 2-speed, 2-stroke ..... £44 2

**B.S.A.**, 4½ h.p., 3-speed, all-chain, H. 1917 model ..... £66 0

**B.S.A.**, 4½ h.p., 3-speed, belt, K. 1917 model ..... £64 0

**ROVER**, 1917, 3½ h.p., 3-speed, Combination ..... £89 9

**ROVER**, 1917, 3½ h.p., 3-speed, solo ..... £69 10

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## MOTOR CYCLES FOR SALE.

## Douglas.

**1912 Douglas**, 2-speed; £25; good order.—Lamberts', Thetford. [5074]

**DOUGLAS, T.T.**, 1913¾; £27, lowest.—54, Aschurch Rd., Croydon. [5067]

**DOUGLAS**, single speed, good condition; £12.—23, Balby Rd., Doncaster. [4891]

**1916 Douglas**, 2½ h.p., 3-speed, all accessories; £52.—Ross, 86, High Rd., Lee. [5033]

**1913 2½ h.p. Douglas**, splendid condition; £25.—E. Dillingham, Amptill, Beds. [X1763]

**1913 Douglas**, 2½ h.p., enamelled all grey; a bargain, £27.—Ross, 86, High Rd., Lee. [5034]

**1915 (late) T.T. Douglas**, little used, all spares; £42.—Box L2,587, c/o The Motor Cycle. [4919]

**DOUGLAS**, 2½ h.p., 2 speeds, excellent condition; £30.—Mason, Priddieton, Leominster. [X1586]

**1913 Douglas**, 2-speed, kick starter, splendid condition; £29.—H. Wright, Arlesey, Beds. [4879]

**DOUGLAS**, 1914, 2½ h.p., speedometer, accessories, fine condition; £35.—34, Ashvale Rd., Tooting. [4909]

**1913 Douglas**, 2-speed model, excellent condition; £35.—The Purley Motor Garage, Ltd., Purley. [4502]

**COLMORE** Depot, Birmingham, Leicester, and Liverpool, for Douglas motor cycles, also spare parts. [0800]

**1911 2½ h.p. Douglas**, guaranteed perfect, new tyres; £13.—76, Herongate Rd., Wanstead Park Av., E. [X1698]

**DOUGLAS**, 1916, 2-speed, T.T. model, lamps, horn, and spares; £48.—C. S. St. George's Rd., Wimbeldon. [X1756]

**2½ h.p. Douglas**, 1914, 2-speed, T.T. model; £35; guaranteed.—Wanchope's, 9, Shoe Lane, London. [5108]

**£10**, first cheque.—1911 Douglas, 2-speed model, less spares, wants attention.—Elson, Beaufort, Bromshire. [4935]

**DOUGLAS**, 1912, 2½ h.p., 2-speed, lamp, etc., good order; £20.—Wells, 63, Castle St., Farnham, Surrey. [5004]

**DOUGLAS**, 3-speed, 2½ h.p., condition perfect accessories, spares; £47.—Dryland, Kingston, Herefordshire. [4559]

**2½ h.p. Douglas**, Dec., 1914, T.T., 2-speed, new tyres; £40.—Waterson, 70, Hailsham Av., Streatham Hill, S.W. [4994]

**DOUGLAS**, 2½ h.p., W.O. model, all accessories, excellent condition; £41, no offers.—Portman Garage, Baker St., W. [4953]

**DOUGLAS**—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil. Tel.: 50. [5855]

**DOUGLAS**, 2½ h.p., War Office model, 1916, splendid condition; bargain, £40.—Nixon, Uplands, Brampton, Cumberland. [X1757]

**DOUGLAS**, 1914, 2-speed, clutch, kick starter, good condition throughout; £38.—Jenkinson, 13, Viarage Rd., Teddington. [4877]

**1913 T.T. 2½ h.p. 2-speed Douglas**, tyres and belt as new, thoroughly overhauled throughout; £32 gns.—Railway Garage, Staines. [5202]

**DOUGLAS**, 1914, 2½ h.p., 2-speed, kick starter, clutch, speedometer, lamps; £35.—H. Williams, 122, Canterbury St., Gillingham, Kent. [X1780]

**DOUGLAS**, late 1915, kick-start, clutch, all accessories, splendid condition; must sell, £44.—E., 23, Market Place, Kingston, S.W. [5173]

**DOUGLAS**, 2½ h.p., £15/10; 1913 2-speed, wants little attention, £26/10; 1914, single-speed, £28.—Motor Exchange, Horton St., Halifax. [4800]

**DOUGLAS Specialists**—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

**DOUGLAS**, 1913, 2½ h.p., 2 speeds, perfect condition, spares; £32/10, no offers; can be seen Ealing.—Write, A. J. Pugh, Leadenhall Buildings, E.C. [4940]

**1914 2½ h.p. T.T. Douglas**, nearly new Dunlops, semi-T.T. bars, lamp, horn, tools, excellent condition; £36/10.—Robinson's Garage, Green St., Cambridge. [5147]

**1916 War Office Douglas**, all black, 2-speed, ridden once only, condition indistinguishable from new; £52/10.—Robinson's Garage, Green St., Cambridge. [5142]

**DOUGLAS**, 1914, 2½ h.p., good order, £27/10; Douglas, accumulator or ignition, £12.—Armstrong, 17, Goldhawk Rd., Shepherd's Bush, London. [5168]

**DOUGLAS**, 1915, clutch, 3-speed, £45; 1914, kick starter, £38; 1914 T.T., £35; 1912, £20. 1911, £17/10.—Warren's, 386, Euston Rd., London. Museum 5081. [4899]

**LATE 1913 2½ h.p. 2-speed Douglas**, new gears, lamps, horn, T.T. bars, very fast, running condition, as new, and not used for long time; £30.—Alfred Proctor, Chepstow. [5152]

**DOUGLAS**, late 1915 toning model, 2 speeds, F.E., Binks carburettor, new Dunlop belt, new 2½ h.p. speedometer, lamps, horn, etc., very fast machine in perfect condition; what offers? seen by appointment.—Box 470, c/o The Motor Cycle. [X1645]



## MOTOR CYCLES FOR SALE.

## Douglas.

**COLMORE** Depot, Birmingham, Manchester, Leicester, and Liverpool, have in stock complete range of all models Douglas for immediate delivery, also full range of spares. [0800]

**DOUGLAS**, 1915-16, T.T. W.D. model, picked engine, last, perfect, all accessories and spares, nearly new; £50.—Douglas, c/o Marathon Cafe, 4, Church St., Kingston, S.W. [5174]

**DOUGLAS**, 1914, 2½ h.p., 2-speed, T.T., lately overhauled, speedometer, cut-out, extra air inlet, complete with lamps, horn, tools, and spares; £35.—Box L2,593, c/o *The Motor Cycle*. [5205]

**DOUGLAS**, 1916 Model V. latest type, 3-speed gear, and footboards, only ridden few miles, guaranteed absolutely perfect, and indistinguishable from new, only wants seeing; £55.—Moss, Wem. [X1743]

**LATE** 1913 2½ h.p. T.T. Douglas, special racing engine, thoroughly overhauled, 1916 new Dunlops, 2-speed model with adjustable pulley as well; £30 lowest, worth £38.—Bon Marche, Chesterfield. [X1843]

**LATE** 1913 Douglas, 2½ h.p., 2 speeds, clutch, kick start, footboards, T.T. bars, usual accessories, tyres, and machine excellent condition; owner in army; £34.—17, Shirley Rd., Bedford Park, Chiswick. [4975]

**1914** Douglas, 2½ h.p., 2-speed, clutch, kick starter, new Dunlop tyres, and 2 new belts, mechanical horn, enamel and plating perfect; sound and genuine bargain, £32/10.—To be seen, Len, 243, Fore St., Edmonston. [X1687]

**DOUGLAS**, 1913, 2-speed clutch model, all accessories, really fine order, £36/10; another, 2-speed without clutch, £32/10.—Lamb's, 151, High St., Walthamstow, and at 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [4946]

**1915** 4 h.p. Douglas, kick start, 3-speed clutch model with Douglas sidcar, Lucas dynamo lighting set, Stewart speedometer, mechanical horn, handle-bar mirror, complete set of tools, guaranteed in splendid condition. £80; Binks carburettor, latest model, 40/—Lippincott Old Lodge, Ashford, Middlesex. [4970]

## Enfield.

**COLMORE** Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

**ENFIELD**, 1916, 3 h.p., only done 300 miles; £48.—46, Whitefield Rd., Stockton Heath. [X1704]

**ENFIELD**, 1914, 3 h.p., splendid condition; £36.—Apply, Hoghton, Albany Lodge, Esher. [4893]

**ENFIELD**, 6 h.p., guaranteed 1917 combination, latest fittings; £94/10; deferred payments, exchanges.—Lamb's, below.

**ENFIELD** 1917 8 h.p. Combination, £96/12, actually in stock, with newest fittings.—Lamb's, 151, High St., Walthamstow, also at 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [4945]

**ENFIELD** 1914 6 h.p. Combination, 3 lamps, other accessories, £55; also another, £52/10; deferred terms if desired.—Lamb's, below.

**ENFIELD** 1915 6 h.p. Combination, all accessories, tip-top order; £66/10; deferred terms, exchanges.—Lamb's, below.

**ENFIELD** 1916 6 h.p. Combination, 3 lamps, speedometer; £79/10.—Lamb's, below.

**ENFIELD**—Seven 1917 3 h.p. touring T.T. models, 2-speed, kick start, actually in stock, 55 gns. each.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [4951]

**ROYAL** Enfield Lightweight Twin, mng., ready drive away; £12/15.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5079]

**LATE** 1915 6 h.p. Enfield Combination, 2 new tyres, large head light, horn, etc., everything in fine condition; 59 gns.—Alfred Proctor, Chesham. [5155]

**1914** 3 h.p. Enfield (October), in splendid condition throughout, nicely fitted up, speedometer, etc.; £36.—Williams, 19, Portland St., Cheltenham. [X1728]

**I CAN** Give immediate delivery of 1917 Enfield, 8 h.p., 6 h.p., 3 h.p., 2½ h.p.; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5195]

**3 h.p.** Royal Enfield, fully equipped, 2-speed gear, and F.E., speedometer, etc., nice, smart condition; 40 gns.; guaranteed.—Wauchope's, 9, Shoe Lane, London. [5115]

**ENFIELD** Combination, 90 gns.; 3 h.p. twin, £57/10; 2-speed, 2-stroke, £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0838]

**ENFIELD** Combination, 1915, hood, screen, P. and H. lamp, speedometer, perfect, engine just overhauled; £60, lowest; consider exchange Triumph or Douglas and cash.—Box L2,595, c/o *The Motor Cycle*. [X0895]

**1916** 6 h.p. Enfield Combination, hood, screen, Lucas head, rear, and side lamps, horn, mirror, over-size tyres, special mudguards, spare 2-gallon tank, and special toolbox, only done 2,700 miles; sacrifice £80, cost £115; like new.—Alexander, 19, Westminster Terrace, Glasgow. [4549]

**BIRMINGHAM** Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all 1917 models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X1769]

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## MOTOR CYCLES FOR SALE.

## Edmund.

**EDMUND** Spring Frame Motor Cycles in stock.—Gourlay, The Great Douglas Agent, Fallowfield. [X1754]

## Excelsior.

**EXCELSIOR** (American), 1916, 7 h.p., 3-speed, and coach sidcar, brand new; £77/10 spot cash.—Motor Exchange, Horton St., Halifax. [4802]

**BRAND** New 1916 Model American Excelsior Motor Cycle, 7 h.p., 3-speed, with all latest improvements, including hand and foot control to clutch, mechanical lubrication, etc., fitted with Montgomery coachbuilt sidcar, enamelled to match, complete combination £80 cash.—To be obtained only from The Premier Motor Co., Aston Rd., Birmingham. [5141]

## F.N.

**F.N.**, 1914, 4-cyl., 7 h.p., 3-speed, running order; £65.—Miller, Brighouse. [X1711]

**F.N.**, reliable, running order, 2½ h.p.; £6/10.—Wells, East View, Dudley, Northumberland. [X1705]

**RIDER** TROWARD, 78, High St., Hampstead.—F.N., 1913, 2½ h.p., 2-speed, clutch; 15 gns. [5121]

**F.N.**, 1914, 2½ h.p., 2 speeds, clutch, shaft drive; £27; exchange entertained.—Sinclair, East Molesey. [X1858]

## Grandex.

**1916** Grandex-Precision, 2½ h.p., 2-stroke, 2-speed, drip oiling, Lucas lamps, Hutchinsons, Saxons, Pedley belt, perfect; just cost £38/10, gift £27/10.—10, Draycott Mansions, Finchley Lane, Hendon. [5140]

## Harley-Davidson.

**1915** Harley-Davidson Combination, all accessories, very nice order; £66.—Ross, 86, High Rd., Lee. [5031]

**HARLEY-DAVIDSON** Combination, 1916 F. 7-9 h.p., 3-speed; £85.—Barrow, Infirmary, Dudley Rd., Birmingham. [X1767]

**HARLEY-DAVIDSON**, 7-9 h.p., new August, 3-speed, unsoiled; bargain, £60, or Imperial-Jap and cash.—Gentry, Mill St., St. Osyth, Essex. [X1827]

**1915** 11 h.p. Harley-Davidson and sidcar, in excellent condition; £68; owner gone to the front.—Axworthy, Oakfield, Wilton Rd., Salisbury. [5040]

**LATE** 1915 Harley-Davidson Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

**COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**HARLEY-DAVIDSON**, 1916 model, delivered from stock on the best terms for cash, exchange, or easy payments; sidcars in stock to fit; get in touch with us before deciding.—Below.

**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, accessories; £52.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

**RIDER** TROWARD, 78, High St., Hampstead.—Two Harley-Davidson 11½ combinations, 7-9 h.p., dynamo lighting, Swan 20 gns. sidcars; one new April, 1916, 62 gns.; one late 1915, 59 gns.; cost over £100 each. [5122]

## Hazelwood.

**HAZLEWOOD-J.A.P.**, 1914, 6 h.p., 3-speed, counter-shaft, kick-starter, Bramble underslung sidcar, splendid condition; £48.—At Jewell's, Archway Rd., Highgate. [5019]

## Henderson.

**HENDERSON**, 4-cyl., 2-speed chain drive; £46/10, or exchange.—Motor Exchange, Horton St., Halifax. [4803]

**HENDERSON** Combination, 1915, 4-cyl., 8-10 h.p., Swan coachbuilt sidcar, elaborate equipment, in every way equal to new; £80.—Longman Bros., King St., Acton. [5009]

**1915** Henderson, 4-cyl., 10 h.p., in very good condition, full kit of tools, run about 2,000 miles, Lucas lamp, generator, and horn, special luggage carrier, does not interfere with tyre repairs; £65.—Lieut.-Com. H. M. Fraser, 96, Piccadilly. [4941]

## Humber.

**1914** 3½ h.p. 3-speed Humber, lamp, etc.; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0863]

**HUMBER** (1916), 6 h.p., water-cooled flat twin combination, 3-speed gear, bought Aug. 1916, as new; £90.—Box 473, c/o *The Motor Cycle*. [X1734]

**HUMBER**, 1915, 3½ h.p., 3-speed, nearly new; special price, £57/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**BEST** Lightweight Bargain Offered.—3-speed Humber lightweight, 1913-14, used very little, 2½ h.p., £18 rockbottom secures this bargain.—H. Millard, Chesterfield. [X1841]

**2 h.p.** 1913 Humber, appearance as new, brand new tyres, tubes, carburettor, 35/ lamp set, etc., perfect, £11, or exchange with £20 for 3-speed Triumph, B.S.A., Norton, or Sunbeam.—61, Cowley Rd., Oxford. [5051]

**HUMBER**, 3½ h.p., 1913, 2-speed, free engine, handle starting, footboards, nearly new tyres and belt, perfect running order and appearance; £22, or exchange Douglas or other lightweight.—Merilees, Cedar Av., Chelmsford. [X1830]



## MOTOR CYCLES FOR SALE.

## Indian.

INDIAN, 7-9-h.p., blue, 2 speeds, clutch; £33; very fine machine.—Bunting, Harrow. [5014]

7-9-h.p. Red Indian, clutch, 1913, T.T. model, perfect; £28.—80, Bishopham Rd., Southport. [X1353]

INDIAN 1916 Combination; cost £118; run 300 miles, indistinguishable from new, guaranteed; £85.

INDIAN 1915 3½-h.p. Twin, 3 speeds, almost new; £42.

INDIAN, 1915, 7-9-h.p., 2 speeds; £38.—6, Warren St., London. [5227]

1916 Powerplus Indian, sound order; 1914 7-9-h.p. clutch Indian; cheap.—Lamberts', Thetford. [5071]

INDIAN, 1915, 5-h.p., 3 speeds, kick start, mileage 800, not used 12 months; £46.—34, Ashvale Rd., Tooting. [X910]

INDIAN, 1913, 2-speed, clutch, perfect condition throughout; 29 gas.; deposit system.—Bell, 88, Broadway, Northampton. [5050]

INDIAN, 1914, 7-9-h.p., 2-speed combination, all accessories, perfect condition, new tyres; £45.—22, Hyde Park Gardens Mews, W. [4957]

INDIAN, 1915, 3½-h.p. twin, 3 speeds, excellent condition; price £45.—Connaght Motor Co., 29, Long Acre, London. Regent 6440. [4563]

INDIAN Combination, new 1914, 7½-h.p., 2 speeds, spring frame, condition good; £32/10 for quick sale.—15, Hamilton Rd., Ealing. [5003]

1914 Heedee Special Combination, first-class condition; best offer; just been overhauled.—Seen at King's Garage, Gunter Grove, Chelsea. [4971]

1916 7-h.p. Powerplus Indian Coachbuilt Combination, new condition, 3-speed, very fast; bargain, £80.—G.O., 131, White Hart Lane, Barnes. [5065]

INDIAN, spring frame, 1913, 2-speed, F.E., Millford coachbuilt sidecar, thoroughly overhauled, and new gears fitted; £39.—45, Smallbrook St., Birmingham. [X1590]

INDIAN 7-9-h.p. C.B. Combination, 1915, electric lighting, extraordinarily good outfit; price £55, worth much more.—Laytons' Garage, Bicester, Oxon. [X1848]

INDIANS, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [1775]

INDIAN, T.T., 1914½, clutch model, fully equipped, splendid condition, recently overhauled; £34, or exchange good single.—Stanley, 4, Sunnyside, Cross St., Farnborough. [4876]

SPECIAL War Bargain.—1915½ 5-h.p. Indian, Phoenix sidecar, 2,000; £60; only used by elderly gent (63) fine weather; appointment.—Wilson, Boughton, Monchelsea, Kent. [5090]

INDIAN, 1914½, 7-h.p., electric equipment, with Swan sidecar, hood, screen, apron, and electric side lamp, all new tyres, in excellent order; 63 gas.—W.M., Dry Drayton, Cambs. [X1742]

INDIAN Powerplus, 7-h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, £85.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X1771]

INDIAN Genuine 1915 Coach Combination, 5-h.p. twin, mag., 3 speeds, speedometer, lamps; ovy trial; great bargain, 49 gas.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5077]

1913-14 Indian Combination, 7-9-h.p., Binks carburettor, electrically equipped, clutch model, every luxury; urgent sale, joining up; £48; guaranteed perfect.—Choppin, 79, Aldred Rd., Kennington Park, [4966]

1916 Indian, 5-h.p., 3-speed model, clutch, kick start, fitted with coachbuilt sidecar, lamps, and all accessories, very little used, equal to new; price £60.—R. Bamber and Co., Ltd., Birkdale, Lancs. Tel.: 44. [4956]

BIRMINGHAM Indian Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery, ex-stock, 5-h.p. 3-speed standard and sporting models, with and without sidecar, price £70; sidecars from 11 gns. [X1772]

5-h.p. Indian, late 1915, with Phoenix sporting sidecar, magnificent turnout, splendid condition, Stewart speedometer, lamps, horn, tools, new spare tyre not unrolled; bargain, £65.—7, Halford Rd., Richmond, Surrey. [5055]

P. J. EVANS, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 5-h.p. 3-speed model, £70; 7-h.p. T.T. Powerplus, £75; 7-h.p. 3-speed spring frame, and electric light, £78; special de luxe 7-h.p. Powerplus, with spring frame, £83; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X1773]

## Ivy.

Ivy, late 1915, 2½-h.p., 4-stroke engine, little used, guaranteed perfect, with accessories; only £26.—Moss, Wem. [X1744]

## James.

1915 4½-h.p. James Combination, in excellent condition; £55.—Morley Bros., Wombwell. [X1740]

COLMORE Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

JAMES 1915 Combination, 3-speed, accessories, not done 1,000, absolutely as new, unscratched; £59.—47, Hamilton Rd., Reading. [5087]



## ACTUALLY IN STOCK.

ROYAL RUBY, 1917 model, 2-speed (just arrived)	£40 0
ROYAL RUBY, single-speed	£32 10
B.S.A., 4½ h.p., chain drive, 1917 models (5 in stock)	£66 0
ENFIELD, 2½ h.p., 2-speed	£44 2
ENFIELD, 3 h.p., kick-start and toning models, 1917, T.T. (7 in stock)	£57 15
ENFIELD 8 h.p., 1917 Combination	£56 12
ALLONS, 12 models just arrived, guaranteed 1917's	—
All above guaranteed 1917 models.	
HARLEY-DAVIDSON Model 16F, Sidecar	£102 5
NEW HUDSON, 2½ h.p., 2-speed, 1917, Model C (just arrived)	£38 0
LEVIS, 2½ h.p., Popular	£32 0
LEVIS, 2½ h.p., Model E, 2-speed Enfield gear, rustless rims	£47 10

## SIDECARS.

Always a good assortment in stock.

## SECOND-HANDS.

ENFIELD 6 h.p., 1916 Combination, 3 lamps, speedometer	£79 10
ENFIELD 6 h.p., 1915 Combination, lamp, horn, speedometer	£66 10
ENFIELD 6 h.p., 1914 Combination, 2-sp., and accessories	£55 0
B.S.A., 4½ h.p., 1915, Model K, 3-speed, carefully used	£45 0
B.S.A., 4½ h.p., 1914, 3-speed and B.S.A.-Canoelet Sidecar. Bargain	£44 10
MATCHLESS, late 1914, 7 h.p., Model 8B, excellent condition (left works, March, 1914), with Canoelet Sidecar	£67 10
RADCO, 1914, 2½ h.p., single-speed	15 gns.
WOLF-PEGO, 2-speed, 1916, kick start, hand clutch, ridden about 200 miles, all accessories, lamps unused	£31 10
AUTO-WHEEL, 1916 B.S.A. model, ridden about 40 miles	11 gns.
ALLDAYS MATCHLESS, 2½ h.p., single-sp.	£14 10
ELSWICK, water-cooled, 1914, 3½ h.p., 3-speed, coach Sidecar, and accessories	£29 10
T.D.C., 1916, 2½ h.p., 2-speed, spare tank, original tyres	£24 10
DOUGLAS, 1913, 2½ h.p., 2-speed, access.	£32 10
ALLON, 1915, 2½ h.p., 2-speed, Cowey speedometer, and access, elec. equip.	£36 10
RUDGE, 1912, 3½ h.p., 2-speed, and cane Sidecar, all accessories	£25 10
COVENTRY EAGLE, 2½ h.p., 2-sp., 2-str., superior finish. Special price	£39 10
JAMES, 2½ h.p., 2-speed, new tyres, access.	£31 10
ROVER, approx. 1908, new tyres, Grado gear, Hellesen's dry cell	£9 10
TRIUMPH, 1914, 3-speed, and Swan Sidecar, heap of accessories	£49 10
ALLDAYS ALLON, 1915, single-speed, all accessories, original tyres	£27 10
BAT-J.A.P., 4 h.p., T.T., round tank, grey finish, 3-speed, kick start, hand clutch	—
ALLDAYS ALLON, 1915, 2-speed, clutch model, and accessories	£36 10
A.J.S., 1914, 2½ h.p., 2-speed, kick start, hand clutch, all-chain drive	£38 10
ROVER, 1913, 3½ h.p., T.T., P. & H. lamp, Stewart horn	£32 10
TRIUMPH, 1912-13, 3½ h.p., 3-speed, hand clutch, accessories. Bargain	£32 10

Deferred Payments by mutual arrangement.

## CARS.

SAXON, 1915, 2-seater, 1½ h.p., Stepney, speedometer, 4 lamps	£112 10
FORBES, 1915, 2 wind screens, 4 shock absorbers; cost £170 1½ months ago; used fine weather only	£110 0

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## MOTOR CYCLES FOR SALE.

## James.

1916 James Combination, new June, Lucas lamps, perfect condition; £67, or nearest.—S., 32, Galloway Rd., Wyke, Weymouth. [5160]

JAMES.—P. J. Evans, John Bright St., Birmingham. Immediate delivery all models, including 2-stroke 3½-h.p. twin and 4½-h.p. big single. [X1774]

RIDER TROWARD, 78, High St., Hampstead.—James Canoelet combination, late 1915, unused last 18 months, mileage 2,500, £10 accessories; cost £90, 51 gns. [5123]

JAMES 3½-h.p. Twin, 3-speed gear box, chain drive, hand clutch, kick start, ridden 200 miles; £50; level exchange considered for 4½-h.p. combination.—Necor, Dillwyn St., Swansea. [4979]

BEST Sidecar Combination Bargain Offered.—4½-h.p. James combination, 3-speed countershaft gear, kick starter, chain drive, most sell instantly; first £37/10 secures this wonderful bargain.—Bon Marche, Chesterfield. [X1842]

JAMES Late 1913 Big Single, 3-speed, clutch, kick start, just overhauled, new handguards, Canoelet sidecar, re-upholstered, all in fine condition, lamp, horn, tools and spares; £37.—Priest, Connaght Av., Frinton-on-Sea. [5063]

JAMES 1914 Combination, 1916 engine and sidecar, special sidecar silencer, and James leg guards, lamps, etc.; price £48/10, or exchange with cash for Morgan.—Whitehouse, 3, Eggington Villas, Wollaston, Stourbridge. [X1436]

JAMES Combination, D.D., 1914, chain drive, 2 speeds, kick start, Canoelet sidecar, storm apron, wind screen, lamps, horn, tyres like new, lot in splendid condition; £40 cash; cycle £36.—A. H. Greenwood, Wenvoe, Cardiff. [X1853]

## J.A.P.

8-h.p. J.A.P., Armstrong 3-speed, 3in. Palmer cords; £20.—Collins, 88, Regent St., Cambridge. [5097]

1915 2½-h.p. J.A.P.-Royal Ruby, in excellent condition; £18.—70, St. Ann's Rd., Harrow. [5053]

J.A.P., 8-h.p., Bosch mag., requires slight repairs; no time to complete; £10.—Barrett, 6 R.S., R.P.C., Catterick. [X1859]

4-h.p. T.T. J.A.P. o.h.v. engine, recently overhauled, fast and reliable; £18 cash; too cheap for appraisal; can be seen and tried.—Mathews, c/o Faichen's, South Queensferry, Scotland. [4984]

## J.E.S.

J.E.S. Auxiliary Motor Cycle, new carburettor, mag., and accessories.—Batten Bros., Cullompton. [X1785]

## J.H.

1915 J.H., 3½-h.p. M.A.G. 2-cyl. engine, racing model, good condition, mileage about 550, all accessories; £45, or offer.—Speer, Powyscourt, Balcombe, Sussex. [X1646]

## Kerry.

RIDER TROWARD.—1912 Kerry-Abingdon, 3½-h.p., enamel and engine as new; 21 gns. [5129]

2½-h.p. Kerry, in splendid order; a bargain, £12.—24 Sparks, 31, Broadwater Down, Tunbridge Wells. [X1861]

## Lea-Francis.

LEA-FRANCIS, 1915, 3-speed countershaft model, with 21 gns. Montgomery sidecar, and accessories; £75.—Moss, Wem. [X1745]

## Levis.

LEVIS, 1916, brand new; special price, £28.

LEVIS, 1916, run 100 miles; £26.—6, Warren St., London. [5220]

LEVIS Popular, only shop-soiled; £25, or near offer.—Bunting, Harrow. [5015]

1915 Levis, 2-speed, in good condition; offers.—Box L2,590, c/o The Motor Cycle. [4942]

RIDER TROWARD, 78, High St., Hampstead.—1915 Levis, mileage 1,800; 21 gns., bargain. [5124]

1916 Levis, 2½-h.p., mechanically perfect; £23.—M. Elliott, Coxwell Rd., Faringdon, Berks. [4922]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

LEVIS, 1916, 2½-h.p., mag., 2 speeds, as new; £33/10. —Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5080]

LEVIS Popular Model, good condition; any trial; £19, real bargain.—Smith, 8, Gladstone Place, Sandy Lane, Camp Hill, Birmingham. [X1453]

LEVIS, 2-stroke, nearly new, also extra accessories, long exhaust pipe, etc.; owner joining up; bargain, £23.—Baker, 92, Oxford Rd., Wycombe. [4972]

## Matchless.

1915 Matchless Combination, condition like new; £73.—Ross, 86, High Rd., Lea. [5032]

MATCHLESS, 1913, 6-h.p., 2-speed, and coach sidecar; £42/10.—Motor Exchange, Horton St., Halifax. [4804]

MATCHLESS 8B 1915 Combination, F.E.S. head, P. and H. tail and side, horn, coachbuilt sidecar, new condition, spares.—H. Rodwell, Brewery, Tring, Herts. [4973]



## MOTOR CYCLES FOR SALE.

## Matchless.

1915 8h.p. Matchless Combination, in new condition, tyres good, all accessories and spares, only wants seeing; £85.—Harvey Hudson, South Woodford. [4887]

RIDER TROWARD, 78, High St., Hampstead.—1913 Matchless combination, 8h.p., 2-speed, clutch, kick-start, electric lighting, speedometer; 38 gns. [5125]

MATCHLESS Combination, 1915, 7-9h.p. M.A.G. engine, complete with all accessories, splendid condition; any trial; £82.—L. Amato and Co., 25, Brookmill Rd., Deptford. [5198]

MATCHLESS Combination, 8B model, M.A.G. engine, 2-seater Matchless tandem sidecar, with special hood and adjustable screen; the whole magnificently equipped, including tinplate, condition equal to new, not run 1,000 miles; cost £110, will accept £85; dealers not entertained.—Ernest E. Hall, 8, Fir Grove, Levenshulme, Manchester. [X1811]

## Midget.

MIDGET Bicar Motor Cycle, Precision engine, perfect condition; £12/12.—82, York Rd., Battersea. [5059]

## Minerva.

32 h.p. Minerva, mag., good hill-climber; £14; must sell, joining.—Wilson, King's Weston. [X1735]

24 h.p. Minerva, mag., B. and B., 2 lamps, good running order; £10.—Cope, 4, St. Michael's Rd., Aldershot. [5024]

MINERVA, 3½h.p., Bosch, B. and B., new belt, just overhauled, all accessories, low position; £12.—Hill, 41, Egmont St., New Cross Gate. [5158]

24 h.p. Minerva, mag., Amc., footboards, variable pulley, carrier, Michelin, all in grand order; price £10.—James, 14, Lynwood Terrace, Leyland. [4884]

MINERVA, 3½h.p., m.o.v., Binks 1916 carburettor, new tyres, tubes, piston rings, 90 m.p.g., splendid order; £10.—Rev. Millen, C.F., St. Aubin's, Brockhurst, Gosport. [4897]

MINERVA, 3½h.p., guaranteed perfect, and reliable, new cylinder, heavy Dunlop; any examination; £8/10; take lady's push cycles whole or part exchange.—Particulars, Everett, Newsagent, Dedham, Colchester. [5156]

## Moto-Reve.

MOTO-REVE, 2½h.p., single-cyl., good condition; £12.—367, Barking Rd., Plaistow. [5058]

## New Hudson.

NEW HUDSON, 2½h.p., 3-speed, free engine, fine condition; £23/10.—Motor Exchange, Horton St., Halifax. [4806]

RIDER TROWARD, 78, High St., Hampstead.—1913-14 New Hudson, 3-speed, new coachbuilt sidecar; 51 gns. [5126]

NEW HUDSON, 2½h.p. J.A.P. engine, 3-speed, clutch, in sound condition; £25.—Wilfred Penny, Greenway Rd., Taunton. [4898]

NEW HUDSON, 2½h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [5040]

NEW HUDSON Big Six Combination, splendid condition, Lucas lamps, horn, spares; £55.—4, Holroyd Av., Salford, Nottingham. [X1443]

NEW HUDSON, 1914½, 3½h.p., 3-speed, clutch, and coachbuilt sidecar, excellent condition; £43.—D. Millen, 2nd-Lt., Oliver's Hydro, Buxton. [4878]

NEW HUDSON 6h.p. Combination, new condition, mileage 1,780, electric lighting; sell £55, or exchange light car.—84, Talbot Rd., Tyne Dock. [X1439]

1915 New Hudson, 2½h.p., 2-stroke, Bosch, B. and B., Dunlops, tip-top condition, carefully used, only wants seeing; any trial; £23; buying combination.—Colclough, Eric House, Stone Rd., Longton, Staffs. [4925]

## New Imperial.

NEW IMPERIAL, latest 2½h.p. and 6h.p. models in stock.—Crow Bros., Guildford. [4961]

1917 2½h.p. 2-speed New Imperial, just unpacked; 39 gns.—Alfred Proctor, Chesham. [5154]

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [5085]

1915½ New Imperial-Jap, 2-speed, fully equipped; cost £41, bargain, £26/10.—5, Norwich Rd., Ipswich. [5101]

RIDER TROWARD, 78, High St., Hampstead.—25 gns. New Imperial, new February, 2 speeds, perfect; 25 gns. [5127]

2½h.p. New Imperial-Jap, 1915 model, 2-speed gear, as new; £29; guaranteed.—Wauchope's, 9, Shoe Lane, London. [5107]

NEW IMPERIAL, 8h.p., clutch, 2-speed, thoroughly overhauled; £35.—Warren's, 386, Euston Rd., London, Museum 3081. [4903]

NEW IMPERIAL-Jap, 1916, clutch, kick starter, 2 speeds, little used, perfect condition; £32.—Ashurst, Ryfield, Ongar. [X1815]

1915-16 2½h.p. New Imperial, 2 speeds, lamps, speedometer, horn, etc.; this machine is as new in every respect; great bargain at £30.—Alfred Proctor, Chesham. [5153]

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312.	2½	SUN VILLIERS, 2-speed, 1915, splendid condition .....	£27 10
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## New Imperial.

1914 New Imperial-Jap, 2-speed, lamps, horn, footboards; £22; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5044]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X1770]

## Norton.

NORTON 1917 Big Four Combination, actually in stock.—6, Warren St., London. [5224]

NORTON, brand new, 3-speed countershaft sporting combination, actually in stock.—Moss, Wem. [X1746]

1916 T.T. Norton, front and rear lighting set, complete, Philipson pulley; £52/10.—Plastow, Grimsby. [X1828]

1915 3½h.p. T.T. Norton, fast, beautiful condition, all accessories, spare belt and tube; £35.—Box 476, c/o The Motor Cycle. [X1814]

NORTON 1916, 3-speed countershaft, chain and belt, hand clutch, equipped Lucas lamps and horn, mechanical horn, belt case, spare belt, Cowey, spares, fast and perfect, property of officer now abroad.—Morgan, Harbour Offices, Swansea. [X1447]

## N.S.U.

31 h.p. N.S.U., 1914, 2-speed, fine order, well kept; 32 offers asked.—Rector, Whittington, Carnarvon. [4927]

N.S.U., 3h.p., 2-speed, £14/10; 3½h.p. 2-speed, £17/10; bargain prices.—Motor Exchange, Horton St., Halifax. [4805]

N.S.U. 1913 3h.p. Twin, Bosch, 2 speeds (new tyres), spring frame, beautiful condition; £23/10.—1, Ebner St., Wandsworth. [5081]

N.S.U. Combination, 1914, 2-speed, and free engine, tyres, lamps, and accessories in perfect condition; any trial; £36/10.—Below.

N.S.U. Gear, to fit Triumph, nearly new; £5.—L. Amato and Co., 25, Brookmill Rd., Deptford. [5200]

N.S.U., 1914 model, spring frame and forks, 2 speeds, kick-start, and free engine, fitted with a coachbuilt sidecar, hood and screen, including all accessories; £35; guaranteed.—Wauchope's, 9, Shoe Lane, London. [5114]

## N.U.T.

1915 (Nov.) 3½h.p. twin N.U.T., T.T., just re-painted, engine overhauled and re-bushed entirely, new tyres, lamp, speedometer, tools, etc., very fast; £40.—Lieut. Cooke-Yarborough, R.E., Monmouth. [X1783]

## O.K.

O.K. Precision, 4½h.p., 3-speed, usual equipment, in fine order; £25.—14, Doddbrook Rd., West Norwood. [5085]

1915 2½h.p. O.K., countershaft 2-speed, perfect order, complete, horn, tools, bargain, £24.—Wood, 108, Breck Rd., Liverpool. [X1820]

1915 O.K., 2½h.p., 2-speed, lamps, horn, footboards; £24; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5045]

O.K. 1915, 4h.p. J.A.P., Bosch, 3 speeds, clutch (runs well), wants little adjusting; must sell; what offers?—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5082]

## P. and M.

P. and M. 6h.p. Twin Combination, 2-seater sidecar; £75; exchanges.—Mitchell, 35, Roundhay Rd., Leeds. [X1807]

P. and M., 1913, 3½h.p. coachbuilt combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4916]

P. and M., 3½h.p., 2-speed, F.E., Bosch mag., B. and B., lamps and generator, splendid running order; any trial; nearest to £17.—Fisher, Garage, Stoke D'Abernon, Cobham, Surrey. [5177]

## Peco.

PECO, 1915, 2½h.p., 2-stroke, perfect order; £19.—45, Smallbrook St., Birmingham. [X1589]

## Peugeot.

5-6h.p. Peugeot, Bosch mag., B.B. carburettor, Dunlops, good tyres, very fast; bargain, £15.—1, Boswell St., Radford, Nottingham. [5188]

## Pierce.

PIERCE-ARROW, 4-5h.p., single-cyl., free engine, speedometer, Schebler carburettor, mag., spring forks, tanks incorporated in frame, stand and carrier, grip control, fine condition; £15/10.—Box 454, c/o The Motor Cycle. [X1448]

## Precision.

41 h.p. Precision, 1914 watertight Bosch, B. and B., in good order; £17/10.—580, Romford Rd., Manor Park, E. [5008]

21 h.p. Precision, Bosch mag., B. and B. carburettor, 2 good tyres, splendid condition, engine overhauled; complete, £15.—44, Kingsway, Coventry. [X1863]

## Premier.

PREMIER, 1912, 3½h.p., 2-speed, and sidecar; £29/10.—Motor Exchange, Horton St., Halifax. [4808]



## MOTOR CYCLES FOR SALE.

## Premier.

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 1914, 2½ h.p., single speed, just overhauled; price £18, or near offer.—D. Tyler, Court Royal, Tynbridge Wells. [4917]

RIDER TROWARD, 78, High St., Hampstead.—1914 Premier, 3½ h.p., 2-speed countershaft gear box, excellent climber; 27 gns. [5128]

PREMIER, 1914, 3½ h.p., 3-speed countershaft, kick starter, coachbuilt sidecar, hood, screen, excellent order; £46.—37, Church Rd., Brixton. [4991]

PREMIER, 2½ h.p., recent model, a very fine and economical lightweight, £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X1847]

1913 3½ h.p. Premier, Canoelet coachbuilt sidecar, 3 speeds, clutch, speedometer, horn, lamps, perfect running order; £40.—Box 477, c/o The Motor Cycle. [X1587]

1914 Premier 7.9 h.p. Twin, 3-speed countershaft, kick starter, coachbuilt sidecar, all excellent condition; £55, enlistment.—Crawshaw, 50, Jeremy Lane, Heckmondwike. [X1725]

1914 Premier, 3½ h.p., 3-speed, clutch, engine overhauled, new piston, cylinder, and valves, new spare belt and tyre, perfect condition; £30.—Box L2, 596, c/o The Motor Cycle. [4930]

3½ h.p. Premier Combination, 2-speed countershaft, clutch, speedometer, mechanical horn, coachbuilt sidecar, Gloria, £33/10; splendid condition.—West, 36, Elmfield Rd., Balham. [X1792]

PREMIER Combination, 3½ h.p., late 1914, 3 speeds, clutch, kick starter, coachbuilt sidecar, complete with spares, excellent condition; what offers? must sell.—Box L2, 534, c/o The Motor Cycle. [4562]

PREMIER, 3½ h.p., late 1913, 2-speed countershaft gear, new Dunlop tyres, Canoelet sidecar, screen, speedometer, horn, lamps, and spares, all in fine condition; £35.—Monk, 221, Byron Av., High St., Manor Park. [4959]

## Quadrant.

QUADRANT 4½ h.p. 3-speed Combination, October, 1914, lamps, Klaxon, and accessories; £35, lowest.—C. S. St. George's Rd., Wimbledon. [X1755]

QUADRANT 4½ h.p., spring forks, Bosch, B. and B. adjustable pulley, tyres good, fast; £15.—14, Dodbrooke Rd., W. Norwood. [0856]

QUADRANT 4½ h.p. Combination, improved model one only, almost ready for delivery; good opportunity.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [4599]

QUADRANT, 1912, 4 h.p., 2-speed, and sidecar, £29/10; 1913 7 h.p., 2-speed, chain drive, sidecar, £45/10; exchanges quoted.—Motor Exchange, Horton St., Halifax. [4809]

## Radco.

RADCO, 1915, 2-stroke, splendid running order; £16.—Nichols, Post Office, Uxbridge, Middlesex. [4963]

## Rex.

REX, 1911-12, 3½ h.p., Bosch (dropped frame); bargain, £12/15.—1, Elmer St., Wandsworth. [5083]

4 h.p. Rex, 2-speed, handle starting, perfect condition throughout; £15.—Smith, 199b, King St., Hammersmith. [5085]

REX, 1912, free engine, Mabon clutch, new coachbuilt sidecar; bargain, £20, near offer.—34, Ashvale Rd., Tooting. [4908]

REX Motor Cycle, mag., everything good, needs little attention; first 24 secures.—Nixon, Kirby Stephen, Westmorland. [X1797]

REX 6 h.p. Combination, splendid condition; £34; exchange lower power.—Mosedale, 50, Canterbury Rd., Kilburn. [5166]

REX, 5 h.p. twin, T.T. clutch model, tyres and belt new, machine in splendid condition; £20.—14, Dodbrooke Rd., West Norwood. [5143]

2½ h.p. Rex, going order, Bosch, Amac, also sidecar needing repair; 27, or offer; appointment only.—S. Wicheford, 70, Park Rd., Merton. [4918]

RIDER TROWARD.—1911 5 h.p. Rex, clutch, Bosch, brand new carburettor and tyre, overhauled; 14 gns.—78, High St., Hampstead. [5130]

BARGAIN.—3½ h.p. Rex, re-enamelled, re-plated, new belt, good tyres, very good order throughout, appearance as new; £14/10.—Garmeson, 1a, Richardson Rd., Eccles. [X1729]

REX, 1911, 7 h.p., handle starting, £23/10; 5½ h.p., 2-speed, free engine, and coach sidecar, wants tuning up, £16/10.—Motor Exchange, Horton St., Halifax. [4810]

1912 6 h.p. Rex Combination, 2 speeds, free engine, handle starting, new Dunlop heavy all round; perfect bargain, £26/10, quick sale.—Green, 45, Victoria Rd., Clapham, S.W. [5022]

REX, 3½ h.p., 1910, good condition, just been overhauled, re-bushed, very fast and reliable, Bosch, B. and B., variable; cheap, £12, or nearest offer.—N. Prestidge, Newbold St., Leamington Spa. [X1709]

LATEST 1914 6 h.p. Rex Combination, large coachbuilt sidecar, hood, wind screen, 3-speed, countershaft gear box, chain driven, speedometer, mechanical horn, lamps, spares, little used, only wants seeing; £60.—Leslie, 25, Chertsey St., Tooting. [4911]



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DOUGLAS, 2½ h.p., 1914, T.T., 2-speed	£34 0
NORTON, 3½ h.p., T.T., extra value	£23 0
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SPARKBROOK, 2½ h.p., 1915, 2-str., 2-sp.	£27 10
RUDGE, 3½ h.p., 1912, 2-speed	£27 10
INDIAN, 7 h.p., 1913, & S/car, hood, screen	£40 0
INDIAN, 2½ h.p., 1916, 2-str., 2-sp., kick	£44 0
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REX de Luxe Sidette, 1913-14, 6 h.p., thoroughly overhauled, and in perfect order throughout, enamel and plate as new, lamps, horn, and speedometer, tyres practically new, mileage 3,000; price £30; private owner; see any time.—Davis, 11, Topsfield Parade, Crouch End. [X1759]

## Rover.

1917 Rovers, 3 speeds, in stock.—Lamberts', Thetford. [5075]

ROVER, new 1917 latest combinations, solo, and T.T. models in stock.—Moss, Wem. [X1747]

ROVER 4 h.p., 1914 Combination, almost new, fully equipped, £45; another, £40.—6, Warren St., London. [5225]

ROVER Combination, free engine; bargain at £35.—Warren's, 386, Euston Rd., London. Museum 5081. [4902]

1917 Rover Combination, latest model with all latest improvements; £39/9; willingly entertain Douglas in exchange.—Robinson's Garage, Green St., Cambridge. [5146]

ROVER, T.T., 1915 model, Philipson, pulley; price 40 gns.; smart, fast, and guaranteed mechanically sound, fully equipped.—Wanchope's, 9, Shoe Lane, London. [5104]

GENUINE 1914 Rover, 3-speed, clutch, with coachbuilt sidecar, lamps, horn, footboards; £39 for quick sale; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5046]

P. J. EVANS, sole Birmingham Rover agent.—Immediate delivery 1917 T.T., semi-T.T. models, with or without Philipson, also latest countershaft models.—87-91, John Bright St., Birmingham. [X1777]

ROVER 3-speed Countershaft Combination, late 1915, has only been used a few hundred miles, complete with lamps, horn, spare belt, Brooks box, and spares, in perfect condition; price £65.—Mrs. Tripp, 100, Redcliffe Gardens, Kensington, 1985 Western. [X1796]

## Royal Ruby.

RIDER TROWARD, 78, High St., Hampstead.—Royal Ruby, 1915, 2-speed, 2-stroke; 23 gns. [5134]

1916 Royal Ruby, 2-stroke, not done 200 miles; no time to ride; £25.—Mansfield, 230, Cann Hall Rd., Leytonstone. [4986]

ROYAL RUBY 1917 model, just come in, single speed, £32/10; 2-speed, £40; deferred payments and exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1566. [4948]

## Rudge.

1915 Rudge Multi, sound order; £39.—Lamberts', Thetford. [5076]

1915 Rudge, 3 speeds, complete; £35.—Cross, Jeweller, Rotherham. [X1751]

RUDGE Multi, 1913, in real good order; £25, a bargain.—6, Warren St., London. [5219]

3½ h.p. Rudge Multi; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0864]

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

RUDGE Multi, 1913, 3½ h.p., free engine, excellent condition; £30.—Lt. Ware, Hampton Dene, Hereford. [X1659]

1914 T.T. Clutch Rudge, fast, reliable, excellent order, lamp, accessories; £28.—Buist, Alexandra Hotel, Dovercourt. [X1699]

RUDGE, 1912, 3½ h.p., 2-speed, and sidecar, £29/10; 1913 3½ h.p. Multi and sidecar, £34/10.—Motor Exchange, Horton St., Halifax. [4807]

1913 Rudge, 3½ h.p., clutch model, reliable machine, lamps, horn; £23; exchanges.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5047]

RUDGE Multi, 1914-15, 3½ h.p., black finish, just overhauled by makers, new tyres; sacrifice, 35 gns.—Spear, 44, Wingate Rd., Shepherd's Bush. [5172]

RIDER TROWARD, 78, High St., Hampstead.—Rudge Multi, 1913, 3½ h.p., perfect order, 26 gns.; 1914 5 h.p. underslung coach sidecar, 36 gns. [5131]

RUDGE Multi, semi T.T., very fast, broad track, lamps, horn, speedometer, 1916 improvements, sidecar; £35; would exchange I.O.M. model.—Motorist, 22, Leicester St., Southampton. [X1682]

RUDGE, 3½ h.p., new 1914, clutch, speedometer, lamps, spares; £27/10 overhauled September, plating and enamel practically unscratched; £30.—65, Clonmore St., Southfields, Wimbledon. [5095]

RUDGE Multi, 3½ h.p., late 1912 model, Multi gear, new engine; just fitted, excellent condition, complete with all accessories; £35; owner on active service.—Rudge, c/o Ponds, Market Place, Blandford. [X1724]

## Scott.

COLMORE Depots, Birmingham, and Manchester, for Scott motor cycles. [0806]

3½ h.p. Scott, 2 speeds, w.c., little used; £20; guaranteed.—80, Bispaham Rd., Southampton. [X1354]

SCOTT, 1914, splendid condition; £35; any examination or trial.—Chaston, Blackwood, Mon. [X1437]



## MOTOR CYCLES FOR SALE.

## Scott.

SCOTT, 1914, 3½ h.p., 2-speed, and sidecar, good condition; £38.—A.V., 131, Edmund Rd., Hastings. [X1723]

SCOTT, 1916, with Millford sidecar, perfect condition; £60; would separate.—Potter, 33, Bigwood Av., Hove. [X1539]

SCOTT, 1916, done 2,000 miles, big F.R.S. lamp, Cowey speedometer, Lucas horn, as new; £58; no offers.—Lynwood, 16, Liscard Crescent, Wallasey. [X1441]

SCOTT, late 1915, 3½ h.p., 2-speed, 2-stroke, with lamps, 2 horns, etc., fine condition; £50.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [X0492]

MODERN Scott Combination, overhauled, enamelled May, new tyres, chains, and spares, all on, perfect; any trial; sacrifice £35.—Richardson, Holloway, Run-cora. [X1715]

GENUINE Scott Bargain.—Late 1913 3½ h.p. Scott, No. 1,980, fitted with latest 1916 improvements, including Bioks 3-jet carburettor with hot-air intake, drip feed, separate each cylinder, 2-speeds, kick starter, engine, gears, etc., guaranteed, complete with Bramble 1915 coachbuilt torpedo sidecar; £36 secured.—H. Millard, Chesterfield. [X1844]

## Singer.

SINGER, 1913, 3½ h.p., free engine, £21; with coach-built sidecar, £26.—6, Warren St., London. [X521]

SINGER, 1913, 3½ h.p., 3-speed, and coach sidecar; £33/10.—Motor Exchange, Horton St., Halifax. [X4811]

3½ h.p. Singer, clutch, Bosch mag., with (or without) 2 wicker sidecar, good running order; owner going abroad; £25, or offer.—Apply, Pomona, Pershore. [X1438]

## Sun.

6 h.p. Sun-Villiers, and V.T.S.; £15 to £29.—Lamberts', Thetford. [X5073]

COLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [X0807]

1915 Sun-Villiers, 2-stroke, 2½ h.p., all accessories, P. and H. lamp, Dunlop and Moseley tyres, splendid condition, little ridden; seen any time; £25.—Howard, 99, Stoke Rd., Gosport, Hants. [X1684]

## Sunbeam.

1915 (November) 3½ h.p. Sunbeam, perfect order and condition, electric lighting, all accessories; £60.—Charles Coates, Newport Pagnell. [X1822]

1915 3½ h.p. 3-speed Sunbeam Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [X0862]

SUNBEAM, 1916, 3½ h.p., War Office model, nearly new, Lucas lamps and horn, tools, etc.; £67/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [X0552]

SUNBEAM, 3½ h.p., 1915, 3-speed model, and kick-start, fitted with coachbuilt sidecar, fully equipped with tools and accessories; £67/10.—Wan-chopes, 9, Shoe Lane, London. [X5109]

1914 6 h.p. 3-speed Sunbeam, No. 5 Gloria sidecar, with screen, Lucas lamp sets and horn, Cowey speedometer, first-class condition, only done 5,000 miles; £80.—J. L. Goodwin, Chapel St., Cheshire, Staffs. [X5064]

1916 8 h.p. Sunbeam Combination, detachable wheels, Russian Government model, superb condition, hardly used, Lucas lamps, horn, accessories; 100 gas; appointment any time.—Lieutenant Newmann, 146, Colony Cottages, Holbrooks Lane, Coventry. [X1800]

1916 3½ h.p. Sunbeam, with No. 1 Sunbeam coach sidecar and storm apron, 2 Lucas lamp sets, mechanical horn, complete set tools and pump, used few times only for demonstration at a Sunbeam depot, a perfect outfit in genuinely new condition in every respect.—Robinson's Garage, Green St., Cambridge. [X5145]

## T.D.C.

1916 De Luxe T.D.C., 2-stroke, 2½ h.p., lamps, horn, spare belt, cover, and tube; £12.—Jones, Garage, Droitwich. [X0871]

DE LUXE T.D.C. in stock; immediate delivery; £22.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [X4597]

1914 3½ h.p. Free Engine T.D.C., splendid condition, £16; also 1916 2½ h.p. 2-stroke, T.D.C. De Luxe, lamps, tools, etc., as new, £16/10.—H. Wright, Arlesey, Beds. [X4880]

T.D.C., 1914, 3½ h.p., 3-speed Sturmer hub gear, clutch, adjustable pulley, latest B. and B., fitted for substitute fuel, waterproof Bosch, Clinter sidecar; £26.—56, Cathles Rd., Bulham Hill, S.W. [X5059]

## Torpedo.

TORPEDO-PRECISION, 2-speed, mag., lightweight; £16/10, bargain.—Motor Exchange, Horton St., Halifax. [X4812]

4½ h.p. Torpedo-Precision, with cane sidecar, 1915 engine, roller bearings, Bosch waterproof mag., Amac carburettor, Mark VI 3-speed gear, handle starting, all spares and accessories, in splendid condition, ready to ride away.—Staff Sgt. Page, 68, Oakley Sq., N.W. [X1752]

## Triumph.

1914 Triumph Combination, in first-class condition; £50.—Morley Bros., Wombwell. [X1741]

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Clincher de Luxe, extra heavy .....	25/-	36/6
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Wood-Milne, grip ribbed .....	22/6	32/9

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Clincher A Won, rubber studded .....	22/6	30/9
Clincher A Won, ribbed .....	10/-	26/6
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Wood-Milne, ex. heavy grip rib .....	25/-	39/-

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28 × 2½ × 2½ for Indian Machines.		
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## MOTOR CYCLES FOR SALE.

## Triumph.

TRIUMPH, 1912, clutch model, perfect order; £25/10.—Below.

TRIUMPH, 1912, 2-speed, and free engine; any trial; £30/10.—L. Amato and Co., 25, Brookmill Rd., Deptford. [X1999]

1910 Triumph, new tyres, new cylinder and piston; £17.—E. Dillingham, Amptill, Beds. [X1764]

1912 Triumph, Brampton variable gear, perfect order; £28.—Salter, Dry Saddford, Abingdon. [X4955]

TRIUMPH, 1913, 3½ h.p., 3 speeds, fully equipped, in nice order; £28.—6, Warren St., London. [X5214]

TRIUMPH Junior, 2-speed, 2-stroke, 1916, very little used; £36.—Wright, 38, High St., Dereham. [X1449]

1913 3-speed Triumph, and 1914 Swan, just overhauled; £43.—Barlerin, 37, Cavendish Rd., Clapham. [X5100]

GENUINE 1911 3½ h.p. Triumph, perfect condition, most reliable; 19 gas.—245, Hammersmith Rd., London, W. [X5037]

1915 Junior Triumph, splendid condition, with footboards, and accessories; £35.—Selby, Wyke Regis, Weymouth. [X1710]

1908 Tr'umph, £17; 1909 ditto, 2-speed, £22; 1912 clutch ditto, £25; all in good running order.—Lamberts', Thetford. [X5072]

TRIUMPH, 1914, 4 h.p., 3-speed, good condition; £37, or near offer.—Mayhew, The Harrow, Lettsona St., Camberwell, S.E. [X1690]

1910 Triumph, with N.S.U. gear, tyres good, and machine in good order generally; £19.—Harvey Hudson, South Woodford. [X4888]

1912 3½ h.p. Triumph, excellent condition, recently overhauled, with accessories; £22.—Pankhurst, 1, St. George's St., Maidstone. [X1766]

TRIUMPH, T.T., 1912, F.E., and Philipson pulley, new Dunlop tyres and belt, perfect; £28.—45, Smallbrook St., Birmingham. [X1591]

1914 Triumph, 3-speed, re-bushed, re-enamelled, new belt and back tyre, accessories; £38, exchange.—Saug Cottage, Little Marlow. [X5005]

TRIUMPH, 3 speeds, free engine, new Dunlops, Cowey, Lucas, and coachbuilt sidecar; £32.—12, Alexandra Rd., Richmond, S.W. [X4932]

1914 T.T. Roadster Triumph, 3-speed, in excellent condition, all accessories and tyres very good; £38.—Harvey Hudson, South Woodford. [X4886]

TRIUMPH 1914 Combination, 3-speed, every accessory, £45; another, cheap to clear, £21.—Warren's, 386, Euston Rd., London Museum 3081. [X4900]

TRIUMPH, T.T., 1912-1913, sporting model, dropped bars, 1916 forks, fast, and condition perfect, little used; £31.—Bromley, Columbia Rd., Grimsby. [X1660]

TRIUMPH, 1914, 4 h.p., 3-speed, lamps, and speedometer, had very little use, and condition very good; price £38.—Cook, The Warren, Wanstead. [X4923]

TRIUMPH, 1914, 4 h.p., completely overhauled recently, lamps, horn, spare inner tube, perfect running order; £36.—Dr. Gervis, Seaford, Sussex. [X5066]

TRIUMPH, 1907, £16/10; 1909, £19/19; 1909 2-speed, £22/10; 1910, £21/10; 1911, 3-speed Sturmer, £25.—Motor Exchange, Horton St., Halifax. [X4813]

TRIUMPH, 1914½, 4 h.p., 3-speed, nearly new Montgomery coachbuilt sidecar, perfect throughout; bargain, £48.—W. Ayers, Garage, Kensington Palace. [X4936]

1913 Free Engine Triumph, Philipson, Millford spring wheel sidecar, thoroughly overhauled at makers last month; reason called up; £35.—L. V. Green, Atherstone. [X1721]

1913-14 Triumph, 4 h.p., 3 speeds, clutch, semi-T.T. model, lamps, speedometer, absolutely like new throughout; £32/10.—3, The Mews, Victoria Rd., Clapham, S.W. [X5023]

TRIUMPH, 3½ h.p., and coachbuilt sidecar, running order; first remittance, £17/10 secured; exchange higher power combination.—Peudlebury, 10, Woodhouse Hill, Bierley. [X4881]

1916 Junior Triumph, all Lucas accessories, superb condition, hardly used; £40; appointment any time.—Lieutenant Newmann, 146, Colony Cottages, Holbrooks Lane, Coventry. [X1801]

1913½ Triumph, 3-speed, cigar sidecar, new tyres, lamps, horn, just overhauled, been stored 12 months, guaranteed perfect; £38.—Bird, 12, Ambicote Rd., Grove Park, Kent. [X5027]

TRIUMPH, 3½ h.p., 1912-3, 3-speed, just overhauled, Gloria S.O., Bramble coach body, child's seat, wind screen, 3 lamps, speedometer, accessories; £35.—Bones, 48, Weston Rd., Gloucester. [X1588]

TRIUMPH, 1914, T.T., 4 h.p., N.S.U. 2-speed, good running order, tyres good, Lucas lamp, accessories; £35; also Millford sidecar, luggage platform, £5; the two £38.—Roe, Bore St., Lichfield. [X1706]

1912 3½ h.p. Triumph, free engine, nearly new tyres, Bosch mag., engine guaranteed perfect, outward condition excellent, lamp set and horn; £27.—Robinson's Garage, Green St., Cambridge. [X5145]

TRIUMPH, 1913, 3-speed, 3½ h.p., coach sidecar, all accessories, spares, etc., in good condition, including tyres; £37/10.—Apply, Abbotts Garage, Victoria Rd., Surbiton, Surrey. 'Phone: Kingston 185. [X4924]



## MOTOR CYCLES FOR SALE.

## Triumph.

1909 3½ h.p. Triumph, fixed engine, general condition very good, engine perfect. Bosch mag., Brooks saddle, head and rear lamps, horn, carrier; genuine bargain, £17/10 cash.—A. H. Clark, 33, Hanover Rd., Plumstead, S.E. [4929]

TRIUMPH, 1913, 3½ h.p., Sturmer 3-speed, clutch, with Britannic coachbuilt sidecar, new tyres, new belt, lamps, and horn, in perfect condition; any trial; £36.—J. W. Foster, 51, Clavering Place, Annfield Plain, Co. Durham. [X1691]

31 h.p. 1911 T.T. Triumph, fitted auxiliary tank complete, just been completely overhauled, re-enamelled, and engine re-bushed, tyres and belt excellent, A.K. knee-grips, horn, etc., extension pipe to silencer, fast, quiet, and good appearance; £20.—Box 452, c/o The Motor Cycle. [X1450]

RIDER TROWARD, 78, High St., Hampstead. Phone: 5392.—Three Triumphs; one 1913 3-speed, overhauled and re-enamelled, new tyres, 32 gns.; one 1914 (November), 4 h.p., T.T., clutch model, very fast, 32 gns.; one 1915 Triumph-T.D.C., 4 h.p., mileage 1,800, as new, 24 gns. [5135]

## Trump.

TRUMP-J.A.P. 5-6 h.p., Canoelet Sidecar Combination, 3 speeds, free, handle start, Bosch, B. and B., new condition, new tyres, every imaginable accessory; bargain, £35.—14, Dodbrooke Rd., West Norwood. [1542]

## Tyier.

TYLER, 2-stroke, 2-speed; £25.—Warren's, 386, Euston Rd., London. Museum 3081. [4907]

## Villiers.

VILLIERS, 1916, 2½ h.p., 2-stroke, only done 200 miles, like new; cost £33 a few weeks ago, accept £26.—45, Smallbrook St., Birmingham. [X1592]

## Vindec.

VINDEC 2-speed Twin; £18.—Warren's, 386, Euston Rd., London. Museum 3081. [4906]

VINDEC Special, 5 h.p. twin, 2 speeds, in real good order; £16.—6, Warren St., London. [5217]

31 h.p. Vindec Special, a.o.v., Bosch, B. and B., brass tanks, nearly new Pedley belt and Dunlop heavy tyre, all in going order, also parts of Mabon clutch for same; £10, or nearest offer.—Box 472, c/o The Motor Cycle. [X1718]

## Williamson.

WILLIAMSON 1914 8 h.p., 2-seater Sidecar Combination, water-cooled, kick starter, 3 speeds, hood, screen, and spare, single-seater body; £69/10; liberal exchange.—Motor Exchange, Horton St., Halifax. [4814]

## Wolf.

WOLF, 1915½, 2½ h.p., unscratched, 300 miles; 16 gns.—245, Hammersmith Rd., London, W. [5035]

LATE 1915 Wolf, 2-stroke, 2-speed gear, clutch, kick starter, very fast; any trial; £25, quick sale.—M. 44, Howard Rd., South Norwood. [7426]

## Zenith.

1912 Zenith-Gradua, 4 h.p.; £20, or offers.—E. Stembridge, Brochwood, Welwyn, Herts. [X1825]

ZENITH, 1912, 3½ h.p., Gradua gear, J.A.P. engine; £19/19 cash, bargain.—Motor Exchange, Horton St., Halifax. [4815]

6 h.p. Zenith-Gradua, twin-cyl. J.A.P. engine, completely overhauled; price £27/10; guaranteed.—Wanchope's, 9, Shoe Lane, London. [5103]

1913 Zenith, 4 h.p., with smart coachbuilt sidecar, lamps, horn; £33; exchanges.—Newham, 225, Hammersmith Rd., W. Phone: 80. [5048]

ZENITH, 1914, 4-5 h.p. twin, Mills-Fulford Empress sidecar, excellent condition, 5,000 miles, accessories; £50.—51, High St., Wealdstone. [5068]

1914 Zenith-Gradua, 4 h.p., first-class condition, new tyres and belt, coachbuilt sidecar, fully equipped, spares; £32.—93, High St., Hampton Wick. [5006]

NEW 1916 4-5 h.p. Twin Zenith, kick starter, clutch, Gradua gear, and Amac carburettor, never been on road; £75.—Byfleet Automobile Co., West Byfleet. [4913]

1914 5 h.p. Twin Countershaft Zenith, 1916 pistons and rods, Lucas lamp, with Montgomery sporting sidecar, Zenith connections; £49.—Bostock, County Bank, Northwich. [X1736]

ZENITH-GRADUA, 4 h.p., 1913, engine thoroughly overhauled, new piston rings, etc., fitted, over 25 spent on it, belt and tyres new recently; owner in army; lowest price £25.—Box 453, c/o The Motor Cycle. [X1455]

6 h.p. Zenith, 1912, perfect condition, new Avon covers and tubes, done 100 miles, 3 spare tubes, John Bull belt, Binks carburettor, Gloria 14 ga. sidecar, sprung wheel, luggage grid, and petrol carrier; a genuine bargain, £40, or near offer.—Bristow, 11, Richmond St., Brighton. [5069]

ZENITH Combination, 1916, 4-5 h.p., countershaft model, only run a few hundred miles, appearance and condition perfect, best accessories, Swan coachbuilt sidecar; sacrifice, £65, compare this with the show prices.—Longman Bros., King St., Acton, W. Phone: 1578 Chiswick. [5010]

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## MOTOR CYCLES FOR SALE.

## Zenith.

RIDER TROWARD, 78, High St., Hampstead. Phone: 5392.—Four Zeniths; one 8 h.p., 1914 model, Binks, very fast, unused last 18 months, 55 gns.; one 1913 6 h.p., T.T., Binks, Palmer cord tyres, 25 gns.; one 1912 3½ h.p., 19 gns.; one 1914 Zenith-Green, 25 gns. [5132]

## Ladies' Motor Cycles.

ROYAL Ruby, 2-stroke, 2½ h.p., new, only ridden once; cost £45, accept £32, no offers.—Capt. Phillimore, Willesley Hall, Ashby-de-la-Zouch. [4882]

LADY'S Douglas, 2½ h.p., perfect condition, £27; 2-speed and clutch, kick starter, not used 12 months, lamps and horn; private owner; can be seen.—Heather, 83, London Rd., Bromley, Kent. [X1720]

DOUGLAS Lady's Model, 2½ h.p., 2-speed, kick starter, Amac carburettor, 2 lamps, two of the above for sale; they have been kept in perfect order, as owner has used them for his medical practice, which he is now giving up; price £30 each.—Dr. Hyne, St. Mawes, Cornwall. [X1717]

## Miscellaneous

COLLIER'S Motorcycles for cash bargains or exchanges.—Address, Deal St., Halifax.

COLLIER'S.—1914 2½ h.p. Douglas, £26/10, fixed gear; Williamson 1914 water-cooled combination, £58/10.

COLLIER'S.—1913 2½ h.p. 2-speed Douglas, £31/10; 1914 2 h.p. 2-speed Torpedo-Precision, £16/10.

COLLIER'S.—1914 4½ h.p. James combination, £44/10; 3½ h.p. 2-speed Rover, clutch model, £26.

COLLIER'S.—1913 7-9 h.p. Quadrant and coach sidecar, £45/10; 1913 3½ h.p. 3-speed Singer and coach sidecar, £32/10.

COLLIER'S.—N.S.U. 3½ h.p., 2-speed, £17/10; 3½ h.p. 2-speed Rudge and coach sidecar, £29/10.

COLLIER'S.—1916 7 h.p. American Excelsior, 3-speed, chain drive, brand new; £64/10, spot cash.

COLLIER'S.—Clyno, 6 h.p., 3-speed countershaft, interchangeable wheels, £39/10; Bat, 6 h.p., 1914, 3-speed countershaft, £41.

COLLIER'S.—1909 3-speed Triumph and sidecar, £26/10; 1911 3-speed Triumph and sidecar, £27/10.

COLLIER'S.—1912 3½ h.p. 2-speed Alldays, £25/10; 1912 3½ h.p. 2-speed Premier, £22/10; sidecar, £3/10 extra.

COLLIER'S.—3½ h.p. Indian, countershaft gear, £29/10; 1917 2-speed New Imperial, 39 gns.

COLLIER'S.—1912 3½ h.p. Zenith-Gradua, £24/10; 5½ h.p. 2-speed free engine Rex and coach sidecar, £19/10.

COLLIER'S.—New Rex coach sidecar, £14/10; new Rex sidecar chassis, £7/15; latest models.

COLLIER'S.—1913 3½ h.p. Rudge Multi and sidecar, £32/10; N.S.U. 3 h.p. 2-speed, £14/10.

COLLIER'S.—1911 7 h.p. Twin Rex, handle starting, £21/10; 1913 A.C. Sociable, accessories and spares, £45.

COLLIER'S.—1914 4-cyl. Henderson, £46/10; 1912 4 h.p. 2-speed Quadrant and sidecar, £29/10.

COLLIER'S.—2½ h.p. 3-speed New Hudson Lightweight, £23/10; 1915 2½ h.p. 2-speed countershaft 2-stroke, £23/10.

COLLIER'S.—Tourist Triumph, new tyres, £16/10; Zenith, 1912, 3½ h.p., Gradua gear, special bargain, £19/19.

COLLIER'S quote the keenest exchanges. Send for full list.—Address, Deal St., Halifax. [5183]

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IF You Want to buy, sell, or exchange Bradbury, New Hudsons, Calhounes, Levis, Indians, James, Premiers, Rovers, etc., write Buntings, Motor Depot, Harrow. Phone: Harrow 193. [5093]



# THE MOTORCYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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## Future Design of Motor Cycles.

**M**ANUFACTURERS are to a large extent placed in a quandary in the consideration of after-war programmes, and we are frequently asked our opinion of the future type of motor cycle. So many excellent and promising designs already exist, it would be a bold man indeed who would lay down at this moment what he considers to be the ultimate design, as problems of this sort are governed so much by outside influences. We shall be voicing no new opinion in these columns when we state that the multi-cylinder engine is, to our mind, the engine of the future, and will eventually predominate, and our impressions at this juncture are that the passenger machine of the future, be it sidecar or sociable, will have a four-cylinder engine, while in the solo class there will be a strong leaning towards the flat twin.

We would not, however, like it to be supposed that, in laying down these views, we regard the single-cylinder as doomed, as a popular writer has suggested in these columns. At the time we published that article we gave it as our opinion that a single-cylinder machine, uncomfortable though it might be compared to a modern twin, would, from a utilitarian standpoint, always claim its adherents. However great a factor in a buyer's choice the question of comfort may be, the reliability point of view must always prove outstanding.

Again, the single-cylinder engine which, as a leading engineer has put it, is the most mechanically and thermally efficient type of engine, must be more economical in running costs—an important consideration in any after-war plans. Another influence directly affecting this question of the future type of engine is the fact that a single-cylinder engine is a much more simple manufacturing proposition, and this being so must prove immensely attractive to a manufacturer desirous of simplifying the works process and producing his motor cycles in

quantities. With proper organisation, large outputs, of course, mean that the selling price may be low; so that, judged from every standpoint, the much maligned single-cylinder engine has its attractions. We have pointed out in these columns on divers occasions that many a forecast of expert trade men has been dashed to the ground, as many such have failed to realise the basic fact that no one type of machine can ever satisfy the majority. It is good from many points of view that motor cyclists' requirements and ideals differ as they do, otherwise we should have stagnation of design, and motor cycling on a specialised mount would be robbed of half its interest.

## Refusal to Grant Driving Licence.

**A**CASE was brought to our notice the other day of a motor cyclist who, being unfortunate enough to be afflicted by deafness, was refused a driving licence by a certain County Council on the ground that he was physically incapable of holding a licence. Now it has been proved over and over again that a deaf motorist is not a danger on our roads—in fact, many expert motorists of to-day are deaf. The licence was refused to the reader in question, despite the fact that he made several demands. He finally wrote to us, and we recommended him to become a member of the Auto Cycle Union and get its legal department to take up the case, which he promptly did and placed the matter before the secretary. The secretary subsequently wrote a strong letter to the clerk of the said County Council, pointing out that, unless the licence were granted forthwith, the A.C.U. would be compelled to issue a *mandamus* from the High Court compelling one to be made out in the applicant's favour. The result was that the licence was promptly granted. It is on record that in the year 1903 a licence was granted to a man who was blind, so that no physical defect, under the present regulations, debars a man from holding a licence to drive a motor vehicle.



# DESPATCH · RIDING · IN · EGYPT

"I HAVE been in khaki since August 4th, 1914, and during that time I have ridden Indian, Rudge, Premier, Douglas, V.S., B.S.A., and Triumph motor cycles, but all my riding since March, 1915, has been done on a 1915 War Office model Triumph, of the behaviour of which I cannot speak too highly." So begins Cpl. A. C. Webb in a most interesting letter written from Egypt, where he is at present serving as a D.R. attached to a signal company with a regiment of Hussars. He continues: "From August, 1914, to April, 1915, I was busy riding hard in all sorts of weather conditions in England, chiefly in the South, Midlands, and the Eastern Counties. These points I will not dwell on, as the conditions are familiar to us all. Early in March, 1915, I was issued a new Triumph, and a few weeks later I was naving my ribs shaken together on the pavé around the docks district at Alexandria. I shall never forget that first ride on pavé. From April to September, 1915, I had many varied experiences.

## Main Roads and Dirt Tracks.

"Riding conditions vary considerably out here. We have first-class roads—the like of which I have never ridden over in England—but they finish very abruptly: that is, in the big towns in Egypt, of which there are about four, the local authorities take their roads just to the edge of the town, and there they



Cpl. A. C. Webb on his Triumph near the Sphinx, with the Pyramid of Cheops in the background.

finish. Sometimes one can run on to a 'dirt track,' otherwise called the 'main road,' in the cultivated areas, and sometimes one runs on to the desert. This depends, of course, on the direction which one is taking. There are no roads across the desert, excepting those which have just been completed for military purposes. One just tries to pick out a camel track if such a track is distinguishable. The roads in the cultivated areas are made on the banks of the canals and irrigation channels which intersect the country, and are chiefly made up of 'Nile mud.' Woe betide any unsuspecting D.R. who strikes a freshly watered patch of road at speed. He invariably finishes up in the canal, or, if he is lucky, on the edge of the bank. The variety of work we get is considerable, and we find that the mix up in languages is very funny at times; in

fact, it is most exasperating. One thinks in English, asks a question in Arabic, and receives an answer in Italian, which is not at all satisfactory to the unfortunate D.R. who is trying hard to get rid of his message.

## Two Long Journeys.

"My two longest rides have been from C—— to A—— and back (140 miles each way), and from C—— to P.T.—— and back (96 miles each way). This latter ride was the most strenuous and difficult of the two, as my route lay in a direct line east of C—— across the desert. Oh, the monotony of it all. Nothing but sand, sand, sand. What a contrast to the wooded lanes of Warwickshire! In places the desert is quite hard and fit for riding on, whilst in other places the sand is very deep, and the crank case is well in it. In such places one has to walk alongside, with the engine running in bottom gear, until one comes again to a hard patch. Overheating has never shown itself, even though the mercury has recorded a shade temperature of 119° at times. In the hot season here, particularly during these last two summers, a shade temperature of 112° has been very common.

"I am one of the much maligned Yeomanry motor cyclists. I still ride a motor cycle, and have done so without any break since August, 1914. We are all attached and under the control of the Signal Service, and so far the authorities in control have expressed themselves as completely satisfied."



Despatch riders posing in a manner which, as will have been gathered from recent illustrations, is becoming very popular in the army.



Midst the tropical vegetation near the site of the ancient city of Memphis.





### Peculiar!

A Scottish rider describes an experience which some reader may possibly be able to parallel, though I cannot. He was driving a chain-driven single-cylinder over beautiful roads, which were just dry, and returning on his tracks down a gentle hill of 1 in 20 a quarter of an hour or so after the impressions had been made on the road, noticed that the sun showed up a slight periodic deepening in the track at regular intervals; he considers these marks indicate the moments at which his engine fired. It looks rather as if this correspondent were trying to pull my leg in respect of one of my well-known fads; but, for the nonce, I will only say that I have driven much harsher machines than the one in question, and, though I personally have felt their explosions quite deeply, I never noticed that the road was equally sensitive! [We have also noticed indications of wheel slip on a similar machine when the road has been muddy and the pace slow.—Ed.]

### The Wear of Flat Twins.

A Douglas rider is excessively annoyed with the correspondent who gave "a short life and a merry one" as his impression of flat twins. He is accustomed to buy a new 2¾ h.p. Douglas every season, and averages 7,000 miles per annum, half of which is covered with a sidecar. His annual cash depreciation is nominal, the machines are as fast at the end of the year as when they started work, and they need no replacements. Of course! As I have often said, inferior torque and inferior balance do any engine far more harm in the way of wear than high engine revolutions. Too many people leap to broad generalisations on the strength of a single experience; and the single experience is often based either on a third-rate machine or a third-rate owner. There are flat twins of inferior quality, just as there are singles of inferior quality, and accurate comparisons are only possible either to an engineer, who can deduce the probabilities on technical grounds, or to a practical rider of wide experience.

### Foolproof Oiling.

There was a time when I was very enthusiastic about drip-feed oiling, though I don't know that I ever committed myself violently in print on that subject. They were happy days, now gone for ever, when I did nineteen-twentieths of my road work on one machine, and knew it inside out. Under such conditions a careful rider soon learns how to set his drip; the first thousand miles supply a few tell-tales in the way of a hot and smelly engine now and again, a sooted plug or so, and the undue rapidity of carbonisation if the supply is excessive. Well inside this distance, the observant driver should know the proper drip setting for all ordinary conditions. But nevertheless I feel a grave misgiving as to the suitability of the drip for the general public. At present, as for several years

past, I seldom have less than three machines in my stable, of which, perhaps, one is my private property, and the other two may be on test for the trade, or being tuned up for a chum; and these two may give place to others once a month, or even oftener. Under such conditions it is impossible to know where one is with the drip; just as one is mastering the setting of a new engine, another machine comes along, and one has to start all over again. The consequence is that one usually over-oils a little to be on the safe side. I wonder whether many careless owners ever master their drip feeds. I notice that the American makers do not credit their clients with the necessary intelligence, but prefer a mechanical supply; that several of the more go-ahead British makers are of the same opinion; and that such engines as the 3 h.p. Enfield, the 4 h.p. Douglas, and the W.D. certainly relieve the driver of much responsibility. During the war inventors have been active in this direction, and events seem to be shaping themselves for a much wider adoption of mechanical lubrication after the war.

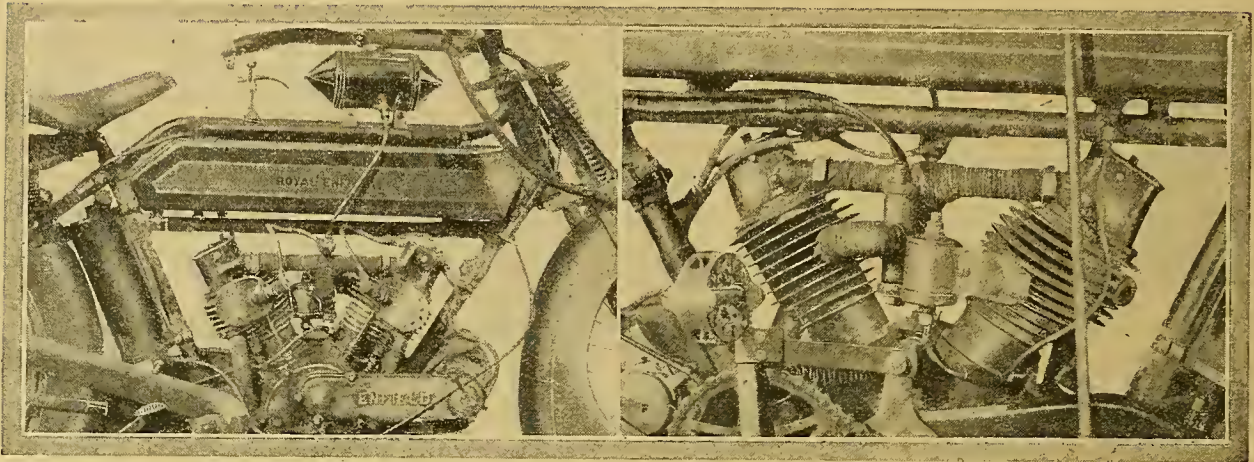
### Overhead Valve Gear.

It is probably true that the M.A.G. engine is the only motor cycle engine possessing a durable overhead valve gear, and this protected gear is not the ideal in point of accessibility. I used to agree with "CP 450" on this point; if we compare the overhead valve gear of the Rudge with the side-by-side valve gear of the Triumph, we get no material increase in efficiency for our money; wear—with its concomitants of noise and impaired valve timing—is certainly more rapid; and the underneath valve is not improved in accessibility. On the other hand, each type of engine, the Rudge, the M.A.G., and the Triumph, has its own indefinable *cachet*—some mysterious combination of running qualities—which appeals to different temperaments; and, as a consequence, we find Rudge, M.A.G., and Triumph enthusiasts, each conversant with the other engines, each aware of the technical and practical *pros* and *cons* of each design, and each resolutely refusing to swop makers. But I think one may go a step further than personal taste when one is speaking of an overhead *exhaust* valve. You cannot dry up such an engine. Its valve gear may wear before the side-by-side type wears; its underneath valve may be less accessible; but its cylinder is relieved of the usual hot place down one side; expansion is even as the engine warms up in a colossal scrap or hill-climb; and, provided you have a well-cooled sparking plug, you may run that engine all out for miles together, particularly if its piston and cylinder metals have properly selected coefficients of expansion. In other words, the cost of replacing a rocker bush every six months is only a shilling or thereabouts; and one can conceive conditions under which that modest outlay is thoroughly justifiable.



## Road Experiences with a 3 h.p. Enfield.

A Commentary embodying some Valuable Riding Hints by a Practical Owner.



Valve side, showing auxiliary petrol tank connection to starting jet in induction pipe, the latter being lagged.

Note the hot air intake and petrol pipe bearing against back cylinder. This view also shows the stop for kick starter.

FOR some-weeks past I have ridden, almost daily, a latest model 3 h.p. twin Enfield, and as this machine belongs to a class which may be regarded as very desirable from the point of view of the solo rider, a few notes regarding its running will probably be of interest.

In these days of all-round perfection, it is often very difficult to decide whether a small twin, on the lines of the Enfield, or a  $3\frac{1}{2}$  h.p. "single," is the better adapted to one's requirements. On the one side we have vibrationless running, speed on the level, and extreme economy; on the other side we have a wonderfully docile engine, power on hills, and a machine which requires an absolute minimum of attention. The tendency of design with small twin cylinders to-day is to produce an engine that will "rev" indefinitely, and one of the great secrets in handling such an engine lies in "keeping up the revs"—particularly when using a heavy fuel. The charm of a perfectly even torque, smooth and rapid acceleration, a silent exhaust, and vibrationless running must be experienced to be appreciated.

### Speed and Economy.

The Enfield possesses three excellent features. The first is its remarkable economy, the second its smooth running at all speeds, the third the extraordinary speeds the engine is capable of attaining and *maintaining*.

As regards economy, I have not tried to achieve anything unusual in fuel consumption. Riding in a mountainous district the consumption averages out at 88 m.p.g., but I have not the least doubt that, at a slight sacrifice of power, one could obtain 110-120 m.p.g. as a regular thing. I have ridden Enfields that do 140 m.p.g., but they were not remarkable for vitality. Economy in tyres and transmission interests me much more than m.p.g., for the former rests with the designer, while the latter rests chiefly with the rider—or tuner. The rear tyre on my machine is very little worn after 3,000 miles. It should do 5,000 on the back and 2,000 on the front without risk—barring

cuts. The front tyre would almost sell as new, and the chains are perfect.

The Enfield transmission system is really excellent. I have locked up the slipping ring device, yet there is not the faintest suggestion of snag till the engine absolutely konks out. Even when the machine jogs along on one cylinder for a few yards—as it often does with a heavy fuel—no suggestion of solidity in the drive is conveyed to the rider.

This accounts, of course, for the unusual tyre wear, while it has not a little to do with the vibrationless running. The machine "zips" along at 37 m.p.h. without a tremor, and is good for an occasional burst of 50 m.p.h. with no danger of overheating. Riding between London and Leeds, it is 3 m.p.h. faster than my last  $3\frac{1}{2}$  h.p. single, and that single was no sluggard.

All things considered, the Enfield is quite a cheerful little beast. One can drive out all day without touching one's pocket or a spanner. It purrs up our interminable mountain slopes at 22 m.p.h. on low gear, taking top without a murmur immediately the gradient slackens, and withal it is absurdly cheap to run! But it requires more attention than, say, anything so monotonously reliable as a Triumph or P. and M.

### Heavy Fuels—An Unsolved Problem.

The running of the machine was perfect in every way till, from stern business necessity, heavy fuels became the daily order. Then the band began to play. For a week or so the engine runs as well on the heaviest of mixtures as it does on petrol, but at the end of the week irregular and faulty running sets in. The engine never lacks power; it merely cuts out on one cylinder or fires irregularly. The most careful search has been made for air leaks, the ignition system thoroughly overhauled, and carburetter minutely examined. The fault is never cured; it merely cures itself.

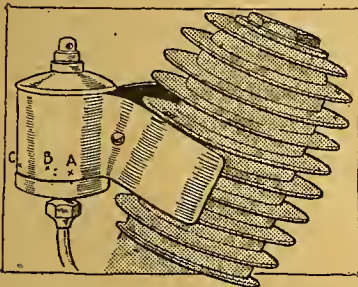
Certain fittings were, of course, necessary ere the machine could be run with safety and satisfaction on heavy mixtures. With the Enfield it is particularly



**Road Experiences with a 3 h.p. Enfield.—**

necessary to guard against bad carburation, for the oil is circulated through the engine by means of pumps, the surplus being returned to the oil tank. Neglect of obvious rules would lead to the oil becoming thinned, with resultant worn bearings, and probably a seized piston. The obvious rules are: Fit an efficient hot air intake; if the induction pipe is of any length, lag it to prevent the escape of heat; if possible, warm the fuel before it reaches the float chamber, and keep it warm while it rests in the float chamber.

The hot air intake was made out of the bend of an old double twist horn. Nothing better could have been arrived at, the bend being wider at one end than at the other, so that the hot air is drawn from an ample surface. The end of the pipe which fits up against the cylinder is deeply grooved, so that it draws air actually from between the fins. The bend is lagged with insulation tape, it being made of such thin stuff that it is not capable of retaining heat. This arrange-



Copper clip for warming float chamber.

ment, I find, is quite sufficient to warm the whole carburetter, and it may be added that the function of a hot air intake is not merely to supply warm air, but to warm up the whole of the carburetter body. Unless it does this it cannot be regarded as efficient, as the carburetter is a massive piece of metal, which will absorb the warmth of the vaporised fuel if the metal be at atmospheric temperature or below.

**Warming the Float Chamber.**

The fuel pipe from the tank was next shaped so that it bore hard against the back cylinder for the greater part of its length, and by this means the fuel is brought well above atmospheric temperature ere it reaches the float chamber. It remains there, however, quite long enough to cool down, and the next problem was to warm the float chamber by some means. To effect this a copper clip was made to fasten round the float chamber as shown in the sketch, its ends bearing hard against the back cylinder. Normally, the clip is too hot to hold at A, and quite perceptibly above the temperature of one's hand at B. When the machine is stationary, or after much low gear work, it is quite hot at C, and thus it cannot be doubted that it imparts an appreciable degree of warmth to the float chamber.

With these fitments the machine was subjected to a practical road test on a fuel a good deal heavier than it was ever intended to use, but there were distinct symptoms of imperfect carburation. It was then pretty clear that bad carburation was not the fault; condensation was the culprit, and accordingly the induction pipe was heavily lagged with asbestos twine, wrapped over with insulation tape. This made all the difference in the world, and, except for the occasional fits already alluded to, the heavy fuel problem is mastered. That the heavy fuel *does* have some effect upon the lubricat-

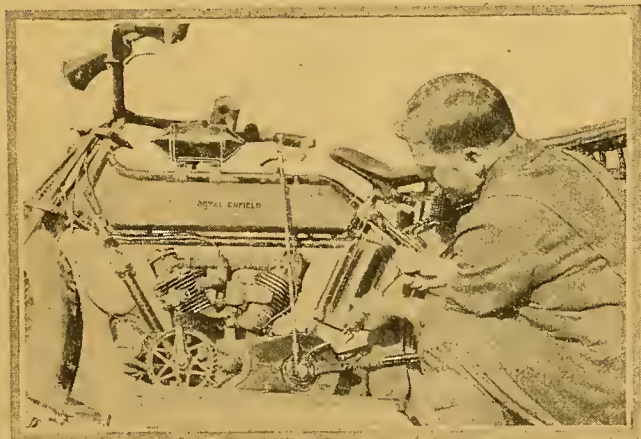
ing oil is proved by the rapid discolouration of the oil when a heavy fuel is used. After circulating a few times it becomes a deep brown—almost black—whereas, with petrol as the fuel, the oil in the tank retains its greenish tinge till the tank is drained. But there are no indications that wear in the engine is taking place.

**Enfield Lubrication System.**

Many riders of Enfield machines have hesitated to adopt heavy fuels on account of the lubricating system. If bad carburation occurred the fuel would escape past the piston rings and gain the oil in the crank case, and, since the oil is constantly circulating, it would absorb more and more of the fuel, thus becoming dangerously thinned. Perfect carburation is, of course, the only safeguard against this, and if the fitments described be adopted, I do not think there is the least danger in using heavy fuels on the machine under review. So far as starting goes, an injection of petrol is all that is required, but to avoid the nuisance of carrying an injector, which is apt to run dry, I have fitted my machine with a small petrol tank, which is connected up to a pilot jet fitted into the induction pipe. By turning on the tap under the small tank it is thus possible to flood the induction pipe with petrol, and a very easy start is made.

Returning to the lubricating system, this is much preferable to the ordinary drip feed, as it is economical and requires no attention while on the road. But just as in the case of the drip feed the absent-minded rider forgets to push down the plunger and thus starves his engine, so, in the case of the Enfield system, he forgets to turn off the oil on reaching his garage, and next morning the contents of his oil tank have percolated through into the engine. The engine then remains filthy externally till next cleaned, though, when started up, the pump returns the oil to the tank in a few seconds. Still the system would be much improved if it were not necessary to turn off the oil when garaging the machine.

The gravity feed to the wall of the front cylinder is a necessity, and I find that if I omit to turn this on, the top piston ring of the front cylinder gums up in 500 miles. I have removed the bottom ring from the front piston, and this has also helped to cure the sticking of the top ring.



Forcing grease into the Enfield gear by the use of a grease gun. This is a more permanent way of oiling than the usual method.



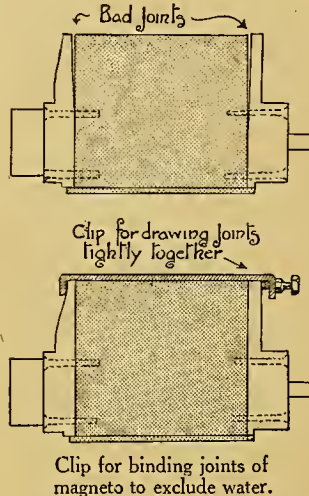
## Road Experiences with a 3 h.p. Enfield.—

## Ignition System.

The Thomson-Bennett magneto is a well designed and remarkably accessible little instrument which any novice can take to pieces and replace without difficulty; but the one on my machine possesses one fault. It is not waterproof.

With the usual thoroughness of workmanship manifested throughout the design of the instrument, thin packings are inset round the edges of the aluminium end plates, which draw up against the magnets at either end, but there is evidently just enough spring in the aluminium plates to cause the joints to gape open at the top. This I have cured by fitting a simple clip, which serves to draw the joints well home. There should, of course, be no necessity for such gadgets, but before the addition of the clip I was troubled by water getting in and rusting the armature and magnets.

It has often occurred to me how much more handy it would be if hexagon-headed setscrews were used throughout in magneto construction instead of the counter-sunk screws, which require the use of a screw-



driver, the latter being quite an inadequate instrument when a screw has become rusted in. If this were done the key provided for contact breaker adjustment would be the only tool required to take the magneto apart.

## Two-speed Gear.

At first I was not particularly in love with the gear, though I found it a vast improvement on the simple dog-clutch mechanism of my last semi-lightweight. It has, however, improved immensely with running, and now leaves nothing to be desired—unless possibly a combination (hand and foot) control. I can start off with perfect smoothness on a 1 in 5 gradient, and such feats were impossible when the gear was new.

I have ceased using oil for this gear and now use vaseline or gear grease, which is forced in by the use of a grease pump having a screw-down plunger. I find this way of lubricating far more permanent than the usual method.

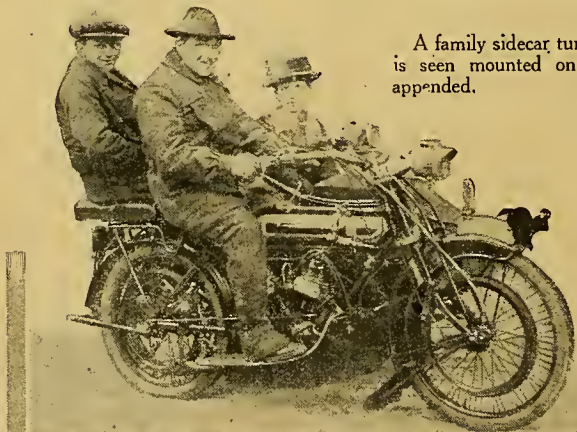
## Kick-starter.

The kick-starter is rather apt to stick, automatically releasing itself at the exact moment when one's left shin is in its direct line of travel. I have improved it very considerably by fitting a stop. This prevents the crank from attaining a position from which the necessary push forward can be given only after manoeuvring the crank over dead centre.

All things considered, the 3 h.p. Enfield is a very desirable solo mount. It is cheaper to run and less tiring to ride than most 3½ h.p. singles I have possessed, and for speed it is distinctly superior to the average "big single." That it periodically objects to heavy fuels is no criticism of the machine itself, as any aristocratic mount would object to some of the obnoxious mixtures to-day sold as motor fuel.

H.M.B.

## A Well-designed Sidecar.



A family sidecar turnout, assembled by the owner, who is seen mounted on the machine. Some details are appended.



THE well-equipped motor cycle and sidecar we illustrate was built by C. Edwards, Gorton, Manchester. The sidecar especially is designed on exceptionally pleasing lines. At the back of it is a box arrangement, which opens and forms a dickey seat, and the lid being upholstered forms a padding for the back. When not used for a passenger, it forms a luggage carrier of good dimensions. The small running board, continuing from a sensible mudguard,

swings over when repairs are being done to the wheel, and it also adds to the appearance of the turn-out. A point of interest in connection with the motor cycle is the mudshield of ample size, which keeps the engine perfectly clean. The seat on the luggage carrier is sprung, and is also home-made.

Mr. Edwards informs us that his outfit has been running eighteen months, during which period it has given him entire satisfaction.



# WILL THE SINGLE-CYLINDER SURVIVE?

## The Trade Delivery Aspect of a Burning Topic.

SO far one very important point seems to have been overlooked in the controversy on the above subject—that is the future possibilities of the three-speed single-cylinder machine for business and commercial use. It is only during the last year or so that tradesmen have taken to the motor cycle at all for delivery purposes, but it is now becoming more and more generally realised that the side-car affords the cheapest, quickest, and most convenient method of carrying out light delivery work, and that a vast future awaits the really serviceable commercial machine cannot be doubted. For this kind of work absolute simplicity, reliability, and strength are the prime essentials.

### Judicious Management.

It seems to me that those who have so far entered in upon the discussion are expert riders, who are inclined to judge the matter from their own point of view. In the hands of "Ixion" and "Road Rider" a small, highly efficient twin doubtless gives unqualified satisfaction, since they know just what plug to use, the best setting for the carburetter, etc., under various

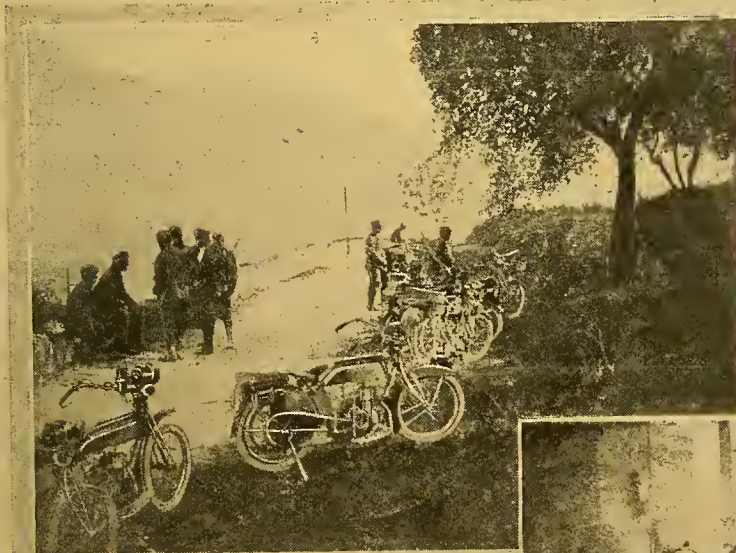
The high efficiency twin of to-day is doubtless reliable, but its reliability is more dependent on the knowledge of the rider and the attention he gives it than is that of the single. And the machine which will best fill the bill as a commercial proposition is the one which will cover its allotted mileage with an absolute minimum of attention.

### Commercial Requirements.

Personally I do not think there is a great future for the single as a pleasure mount, but for trade and business purposes it will undoubtedly hold its own. The chain-driven single of  $3\frac{1}{2}$ -4 h.p. is undoubtedly the most suitable machine at present on the road for the serious business rider and for local delivery. The neglect and exposure to which many commercial machines are subjected really pass all belief; not only do they cover an immense mileage, but they are out in all weathers, and often left standing in the rain for hours. Doubtless the big twin will put up with a good deal of this sort of thing, but the single is cheaper to buy and to run, amply powerful, and probably requires less attention than the twin.

During the last six months practically all my riding has been done on small twins of the high-efficiency order or on still smaller two-strokes, and if to-day I mount one of my old favourite "singles," I am absolutely appalled by the manner in which the engine seems to dominate the whole situation. Yet if I were called upon to go the round of the A.C.U. Six Days, with bad weather probable and bad roads certain, I should risk permanently shattering my nervous system and choose the "single," though for reasonably good roads the small twin is unquestionably the more comfortable and the less tiring to ride.

MIDLANDER.



SCENES NEAR THE ITALIAN FRONT.

(1) The arrival of a section of Italian army motor cyclists at a rallying point by the side of the Lake de Garde en route for the Front.

(2) One of our Italian Ally's primitive garages for motor cycles situated in the Alpine region.

Motor cycles are used on the Italian Front wherever the roads are practicable, and they have to withstand much severe handling. Incidentally, British machines show up prominently in our photographs.

conditions, and if the machine does not run just as it should they are able to put a finger on the fault and remedy it. With a less experienced rider, the fault might continue for days, and the whole tune of the engine would duly become upset.







A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

### Difficult Starting.

**?** I have recently purchased a 1914 Douglas, which does not start well. It will start when a handkerchief is placed over the air inlet, and when it is running on the stand it will not take any air. Please tell me what is the matter, and how to cure the trouble.—H.K.

Probably the air slide is badly worn in the carburettor and requires to be renewed. Also, see that there are no air leaks at the carburettor or induction pipe unions, and if the jet is quite clear try the effect of fitting a smaller air choke. The Douglas usually starts very easily.

### Lubrication.

**?** I have a  $2\frac{1}{2}$  h.p. Chater-Lea with a Villiers engine. I wish to fit a drip feed instead of the petrol system now in use on it. Will you please tell me if this can possibly do any harm? Also state whether the oil pipe from the pump should be led into the induction pipe or straight into a hole bored in the crank case, in which case, I suppose, there would have to be a non-return valve.—E.R.

A drip feed can be fitted with quite satisfactory results. The oil pipe can be fitted either to the induction pipe, so allowing the oil to be drawn in with the mixture, or it may be taken direct to the crank case. If this is done, it will of course be necessary to fit a non-return valve. The former system is probably the most satisfactory method all round, as you practically combine the petrol and drip feed systems without the messiness of the former.

### Soldering on a Bowden Nipple.

**?** Would you be good enough to give me directions for soldering nipples on Bowden wire? I propose using spirits of salt killed with zinc as flux.—E.McC.

The best method of soldering on the Bowden nipple would be the following: Before cutting the wire smear on any soldering flux you think of using, and then rub your iron lightly round the spot where you wish to cut it, having previously well tinned the iron. This has the effect of tinning the wire, or covering it with a thin layer of solder, and it will not fray when cut. The joint is now ready tinned for fixing on the nipple. All you have to do is to slip the nipple in position so that about one-sixteenth of an inch projects beyond the head. Apply the iron to the nipple and the heat will cause the solder to run. Finish off by hammering the short projecting piece of wire flat, and securing it with a blob of solder.

### Bad Steering on Grease.

**?** I should be extremely obliged if you could give me any advice with regard to the following difficulty: I have a 1912  $3\frac{1}{2}$  h.p. single, and find it unsteady to drive at anything like a decent speed. It was not new when I bought it, and had been fitted with quite a late pattern spring fork, about 1914 or 1915. If the road is smooth the unsteadiness is hardly noticeable, but should the road be at all uneven or muddy, there is a most unpleasant tendency to "sway" about. I ride with good hard tyres, and the wheels are in good condition. There seems to be a small amount of give in the forks; do you think this would cause the unsteadiness?—E.C.

It is quite possible that the unsteadiness on grease may be due to the frame being out of line on account of a fall at some time or other. You should very carefully go over the machine and make certain that the wheels are absolutely in track, and that the frame is not twisted in any way, or the steering angle set back at all. The only place that wear might affect the steering is in the bearing on which the forks pivot, and this wear would have to be fairly considerable to have much effect on the steering. A common cause for bad steering on grease

is too tight a steering head. When the front wheel is jacked up the steering head should swing quite easily of its own weight.

### Aids to Cooling.

**?** I find that my 1914 Triumph heats up a good deal with a heavy person in the sidecar. I noticed in one issue of *The Motor Cycle* a suggestion for putting short pieces of copper tubing between the radiating flanges on the cylinders. Could you tell me:

- (1.) How many pieces of tubing would be needed and of what length they would have to be?
- (2.) Whether this method would be as effective as the aluminium auxiliary radiators?—V. de P.

(1.) Instead of putting copper tubing round the cylinder in this manner it would be better to use a ready-made device consisting of coiled wire, in the form of springs, which can be obtained from most accessory firms.

(2.) We should say that if anything the aluminium radiators might be a little more effective.

There is still another alternative, and that is to reduce the compression by fitting a plate between the cylinder and crank case about one-sixteenth of an inch in thickness.



LADY MOTOR CYCLIST ON FARM WORK.

In the early days of the war Miss Joan Sill offered her services for farm and garden work, and is at present employed on a large estate near Evesham. As the acreage is extensive she appreciates the handiness of her  $2\frac{1}{2}$  h.p. Enfield. The photograph depicts Miss Sill giving instructions to a labourer.



**Variable v. Fixed Ignition.**

**?** (1.) My engine, 2½ h.p. single, four-stroke, knocks badly on top gear at speeds below about 15 m.p.h. The ignition is fixed, and was set much advanced. I tried retarding, somewhat, without effecting improvement. I notice that the piston rises about ¼ in. or ⅜ in. into the combustion chamber when at its highest point. Should this be so? If not, it seems as if the extra high compression thus caused might occasion the knocking. (2.) The engine runs well at speeds of from 20 to 25 m.p.h.; above this there is much engine vibration till 35 m.p.h. is reached, when the running becomes quite smooth. Are these phases due to the way the engine is balanced? (3.) What are the disadvantages in using a multiple-point plug in a single-cylinder engine?—A.G.

(1.) Your ignition is still probably too far advanced; try retarding it more. The knocking might also be caused through too weak a mixture. When the knocking occurs, close the air slightly. We presume the bearings of the engine are in good order; if not, this would account for the knock. Yes, it is quite in order that the piston should rise a certain distance into the combustion chamber. We do not think you will find that the compression is excessive. (2.) Yes, the vibration periods are due to the manner in which the engine is balanced. You might make sure that the engine is securely bolted in the frame. Worn bearings would also cause vibration to be excessive. (3.) The disadvantages are none. The advantages, however, of the multi-point plug are practically nil, as the spark always takes the easiest path.

**Charging from Dynamo Outfit.**

**?** Will you kindly oblige by answering the following queries: I have a magneto-dynamo Indian. This will run all lights, both cycle and sidecar. I have a six volt 64 a.h. accumulator. (1.) Can I charge this from the dynamo? (2.) Should I connect the two accumulators, or remove the original and connect the other (which would be in the sidecar) in the same manner as the one now fixed? (3.) If I charge a hand lamp accumulator, could I do this off the big battery, or should it be done through the dynamo? (4.) Would the length of wiring to sidecar interfere with the give-and-take system of charging, etc.? (5.) If I turn the main light out before the rear might this destroy the small bulb fitted to the rear lamp?—S.H.R.

(1 and 2.) Yes; you could certainly charge this from the dynamo. We think you would find it more satisfactory to change the accumulators over when charging. It would be possible to charge the two together by connecting in parallel, so making one large battery of the two; but you would find the charging this way very slow unless the number of amperes passing were pretty high. (3.) Yes; you can charge the smaller accumulator from the larger one, provided the number of volts and ampere capacity of the charging accumulator are greater than

those of the smaller one. It would be necessary to insert a lamp in circuit as resistance. (4.) It is not advisable to have a longer length of wire in circuit than is absolutely necessary. (5.) No; you should be able to switch off the head lamp before the tail light without damage to the tail lamp.

**Irregular Running.**

**?** My 1913 air-cooled Morgan-Jap (B. and B.) is not going as it should. It will run sometimes for four or five miles very well, and then without any alterations will slow down to almost a standstill, then will set off again and go just as well as before. Sometimes when slowing down it will back-fire rapidly but not every time. When standing, the engine runs perfectly, and I have tried braking the flywheel to make it behave as it does when going on the road, but cannot. Will you please tell me what to do with it?—PSYCHE.

We should say that the trouble is probably due to some obstruction in the carburetter, quite possibly water. Water in the carburetter or petrol pipe would cause the symptoms you describe in your letter. We should, therefore, recommend you to overhaul the petrol system carefully. Also make sure that the valves are working freely in their guides and that the valve springs are strong enough.

**Timing a Two-stroke.**

**?** (1.) My machine is a two-stroke. When the engine is forced up a hill or when going over fourteen miles an hour, the piston suddenly commences to rattle, the engine gives no power, and the cylinder becomes fairly hot. A change of plug makes no difference, and the trouble appears to be getting worse. The engine has lately been cleaned.

(2.) The ignition is set as follows: Piston dead on top, ignition lever fully advanced, the points are about to break. Should not this be the position when the lever is fully retarded?

(3.) There is no name on the magneto, and so far as I can see I can only advance the spark by altering the chain one tooth. How can I advance the magneto without taking off the chain? There is only a large nut on the sprocket wheel of the magneto—is this for altering the timing?—C.G.E.

(1.) You might try fitting a slightly smaller jet.

(2.) The usual magneto setting for a two-stroke is so to arrange the magneto that the points have just broken with the piston on the top of the stroke and the spark fully retarded.

(3.) If you remove the nut and lever off the sprocket you will find that this is a taper fit on the shaft. This will allow you to replace it in any position, and on screwing up the nut the taper will secure it. Set the magneto according to the instructions given, and again verify the timing after you have replaced the sprocket so as to make sure the wheel has not shifted while you were screwing up the nut.

**Electric Lighting.**

**?** I have fitted electric side and tail lamps to my sidecar. (1.) Could I work them from a four-volt dry battery of good quality? I do very little night driving. (2.) What kind of electric bulbs should I use (volts and amps.), and where are these obtainable?—S.C.

(1.) Yes; the lamps in question could be worked off a four-volt battery; but an accumulator would be better. (2.) Any four-volt metal filament bulb would be suitable, provided it fits the sockets of the lamps. The larger the candle-power of the lamps the more current is consumed. The bulbs can be obtained from any accessory dealer.

**RECOMMENDED ROUTES.****MANCHESTER TO LONDON.—W.B.H.**

Manchester, Cheadle, Wilmslow, Congleton, Leek, Uttoxeter, Abbot's Bromley, Lichfield, Weeford, along Watling Street through Atherstone to Daventry, Towcester, Stony Stratford, Fenny Stratford, Dunstable, St. Albans, Barnet, London.

**PERTH TO BARROW-IN-FURNESS.—J.C.**

Perth, Auchterarder, Dunblane, Stirling, Denny, Newmains, Carlisle, Lanark, Symington, Abington Inn, Beattock, Lockerbie, Ecclefechan, Carlisle, Penrith, Shap, Kendal, Tarnside, Newby Bridge, Haverthwaite, Ulverston, Dalston, Barrow-in-Furness. The distance is approximately 220 miles.

**ST. ALBANS TO CHICHESTER.—C.G.E.**

St. Albans, Watford, Rickmansworth, Denham, Uxbridge, Staines, Chertsey, Woking, Guildford, Godalming, Haslemere, Fernhurst, Midhurst, Singleton, Chichester.

**TRING TO COMBE MARTIN.—G.R.**

Tring, Aylesbury, Thame, Oxford, Abingdon, Faringdon, Swindon, Avebury, Trowbridge, Frome, Shepton Mallet, Glastonbury, Bridgwater, Williton, Minehead, Lynton, Combe Martin.

If you wish to avoid the hills at Lynmouth, Lynton, and Porlock, the following route will be found to be easier: Bridgwater, Taunton, Milverton, Bampton, South Molton, Combe Martin.

**BURY ST. EDMUND'S TO HECKMONDWIKE.—J.S.S.**

Bury St. Edmund's, Thetford, Mundford, King's Lynn, Sutton Bridge, Fosdyke, Sutterton, Swineshead, Sleaford, Leadenham, Newark, Ollerton, Worksop, Rotherham, Wentworth, Barnsley, Wakefield, Dewsbury, Heckmondwike. Approximately 175 miles.

**STOKE-ON-TRENT TO DONCASTER.—A.B.W.**

(1) Stoke, Uttoxeter, Derby, Annesley, Mansfield, Worksop, Tickhill, Doncaster; or (2) Stoke, Ashbourne, Wirksworth, Matlock, Chesterfield, Worksop, Doncaster.

**KIDDERMINSTER TO SELSEY.—H.L.R.M.**

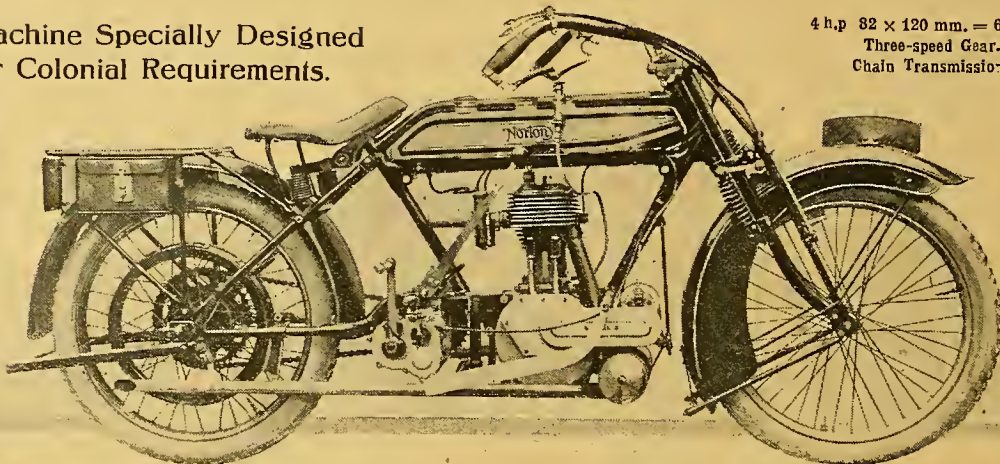
Kidderminster, Worcester, Tewkesbury, Cheltenham, Cirencester, Cricklade, Swindon, Aldbourne, Hungerford, Newbury, Whitechurch, Winchester, Bishop's Waltham, Wickham, Fareham, Cosham, Havant, Emsworth, Chichester, Selsey.



# A "BIG FOUR" NORTON FOR OVERSEAS.

A Machine Specially Designed  
for Colonial Requirements.

4 h.p. 82 x 120 mm. = 633 c.c.  
Three-speed Gear.  
Chain Transmission.



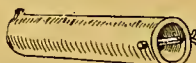
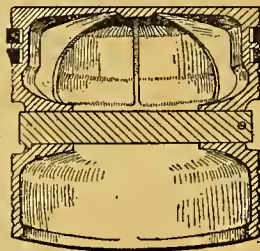
The new 4 h.p. (633 c.c.) Colonial Model Norton, showing engine ground clearance of 6½ in. The straight exhaust pipe is a feature of Norton motor cycles.

TO the home reader motor cycling in the Colonies conjures up visions of wild wastes of sand and rock; devoid of any kind of road, perilous crossings of rivers in flood, or deep dried-up water courses, and adventures with wild animals, these ideas being derived chiefly from accounts of exciting cross-country journeys as recounted in our columns from time to time. In reality the Colonial motorist avoids such "stunts" whenever possible, and endeavours to find and use the best roads in his district. This probably means something worse than the worst of our English roads, and for this reason we frequently hear complaints from Overseas readers of the unsuitability of English standard models. The chief defects are want of ground clearance and insufficient or unsuitable mudguarding.

## Ground Clearance.

British manufacturers are rather backward in remedying these defects, and it is with considerable interest that we give details of the latest product of Norton Motors, Ltd., Phillips Street, Aston, Birmingham. This machine is quite a special design, and not merely a standard model altered in detail. Its outstanding

feature is exceptional ground clearance; there are 6½ in. to spare below the crank case. This increase, about 2½ in. more than the standard type, is obtained by a careful rearrangement of the frame tubes and the Norton method of carrying the gear box. A horizontal stamp-



Sectional view of piston, showing method of webbing the head. The lower sketch shows the gudgeon pin, its stop and split fastener.

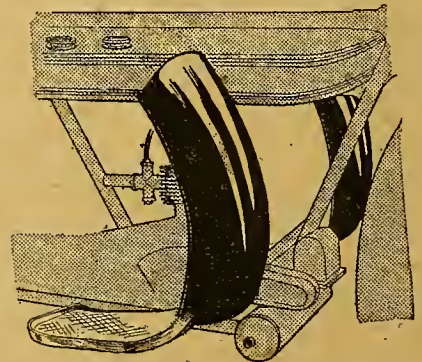
ing is cranked up behind the engine, under which the Sturmey-Archer three-speed countershaft gear is bolted, so that no part of it projects below the bottom of the crank case. A vertical tube fitted below this platform carries the footboards rear support and also the back brake operating levers. In passing, we note that the S.A. three-speed is now made to give a slightly lower ratio on the first speed than previously.

The head and saddle lugs are long and substantial, and the whole frame is undoubtedly strong. Whilst on this point we were interested to see a Norton machine which had suffered badly in a direct end-on collision at high speed; what happened to the unfortunate rider did not transpire, but it is remarkable that no breakage had occurred in any tube or lug, although the frame was distorted beyond hope of repair. For

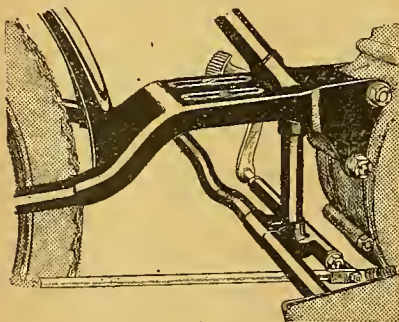
the Colonial model the tank has been increased in size to accommodate two and a quarter gallons of petrol and over three-quarters of a gallon of oil; this necessitates a deviation from the usual Norton shape of tank, noticeable principally at the front, and also on the right-hand side, where a small recess is formed to permit easy removal of the valves.

## The Power Unit.

The engine is the Norton "big four," 82 x 120 mm. bore and stroke, giving 633 c.c., but with certain improvements. Roller bearings to the mainshaft are now fitted. Three extra radiating fins have been added to the valve pockets, and vertical ribs on each side. The piston is improved by the addition of six ribs in the head to prevent distortion, as illustrated on November 9th, and, although not new, the method of securing the gudgeon pin is interesting, it being a parallel fit, held in place by a small stud and socket at one end and a small cotter pin at the other—a method which prevents rotary as well as in and out movement, while there is little likelihood of parts coming adrift.

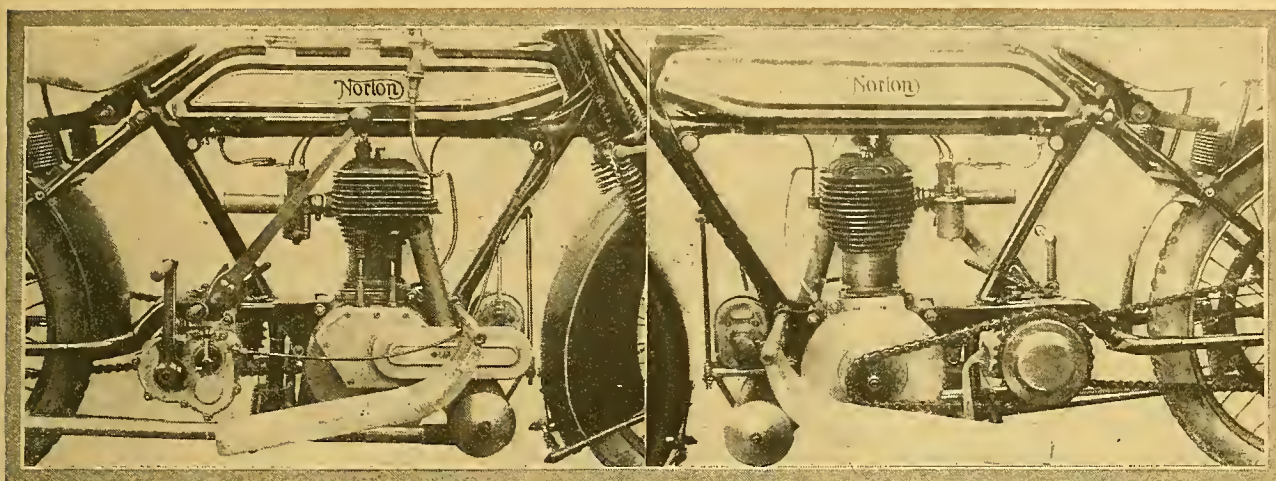


The leg shields fitted to the Colonial Norton are of sensible dimensions and extremely effective.



The bottom bracket formation, showing slots allowing gear box to be slid along, also manner of fixing brake rod and pedal.



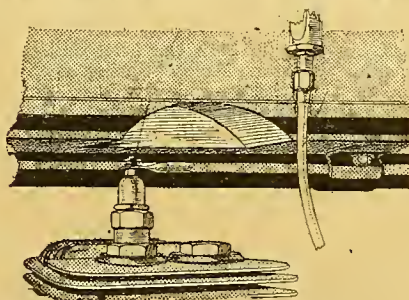


The clean design of both cylinder and crank case is immediately noticeable, the sharp edges and corners of the crank case being rounded off, enabling the surface to be cleaned easily.

The back mudguard is 7in. wide and set 2½in. away from the tyre tread, with no restriction at the forks; it is given additional strength by a central liner, throughout the whole length. The front guard is also wide and set the same distance from the tyre, the bottom edge being kept at crank case level, 6½in. from the ground. Additional leg shields can be fitted if desired; they are neat in appearance, and provide ample protection. Heavy chain drive throughout is to be standard, but chain-cum-belt transmission can be supplied. The chains are protected by a strong, serviceable metal cover, but it is intended to market a completely enclosing type of chain case. The 3in. Dunlop tyres on 2½in. rims give a very substantial appearance to the 26in. wheels. Handle-bar clutch control, B. and B. carburetter with starting jet, and a chain-driven C.A.V. magneto complete a very fine model.

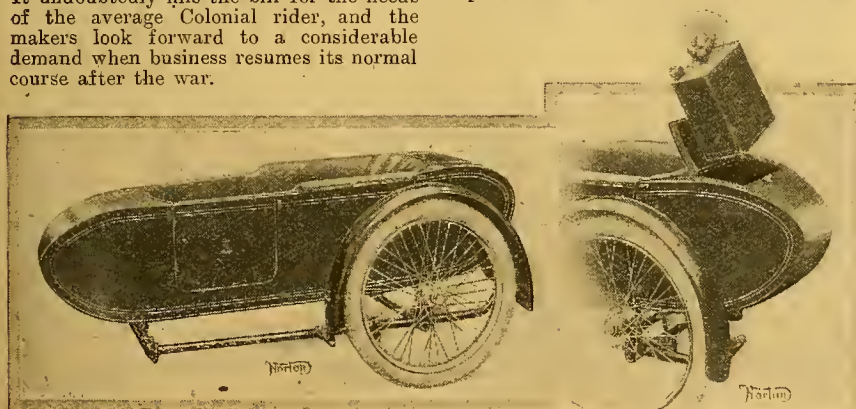
Although of special design for Overseas, we see no particular reason why it should not become popular in this country, as its deviations from standard practice in no way decrease the usual Norton good points of speed and power, coupled with reliability in every way. It undoubtedly fills the bill for the needs of the average Colonial rider, and the makers look forward to a considerable demand when business resumes its normal course after the war.

Norton Motors, Ltd., can supply two types of sidecars to suit any make of machine, the de luxe and the sporting model. Both give ample leg room, and also capacious lockers. The springing is



Recess formed in underside of tank to facilitate valve removal.

well designed, rendering them exceedingly comfortable, whilst both coachwork and fittings are excellent. The lines of the sporting model are attractive, and when combined with the Norton machine, for which it was primarily intended, it makes up as smart an outfit as one could wish.



The Sporting Model Norton sidecar, showing spacious locker in rear.

Transmission side of the Colonial Model Norton with gear case removed. A special feature is the high position of the gear box, which is built well up into the bracket, giving good ground clearance.

## AVERAGE PRICES.

WE give below the average prices of second-hand models offered for sale in *The Motor Cycle*, where it is possible to obtain a sufficient number of each model.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable.
A.J.S.	1915	6 3-sp. sidecar	—	£75
"	1916	6 3-sp. sidecar	£90	—
"	1916	2½ 3-speed	£52	—
Alldays	1915	2-stroke, 2-sp.	£29	—
Ariel	1916	5 3-sp. sidecar	—	£80
B.S.A.	1916	4½ 3-sp. sidecar	£66	—
"	1916	4½ 3-speed	—	£58
"	1915	4½ 3-sp. sidecar	£57	—
"	1913	4½ 2-sp. sidecar	—	£37
Calthorpe	1915	2½ 2-speed	£25	—
"	1916	2½ 2-speed	£30	—
Clyno	1914	6 3-sp. sidecar	—	£54
Connaught	1914	2-sp. 2-stroke	—	£22
Douglas	1916	2½ 2-speed	£48	—
"	1915	2½ 2-speed	£44	—
"	1914	2½ 2-speed	£34	—
"	1913	2½ 2-speed	£29	—
"	1915	4 3-sp. sidecar	£58	—
Enfield	1916	6 2-sp. sidecar	£80	—
"	1915	6 2-sp. sidecar	£63	—
"	1914	6 2-sp. sidecar	—	£53
"	1914	3 2-speed	£37	—
"	1915	3 2-speed	—	£39
H.-Davidson	1915	7-9 3-sp. sidecar	£67	—
Henderson	1915	4-cyl. 2-sp. 5/car.	£70	—
Indian	1916	Powerplus sidecar	—	£85
"	1915	7 3-sp. sidecar	—	£65
"	1914	7 2-speed	£50	—
"	1915	5 3-speed	£59	—
Jaimes	1914	4½ 3-sp. sidecar	£46	—
"	1916	4½ 3-sp. sidecar	£70	—
Levis	1915	2½ 2-stroke	—	£24
"	1916	2½ 2-stroke	£26	—
Matchless	1915	6 3-sp. sidecar	£70	—
"	1914	6 3-sp. sidecar	—	£53
New Hudson	1915	4 3-sp. sidecar	—	£54
New Imperial	1916	2½ 2-speed	£30	—
P. & M.	1914	3½ 2-sp. sidecar	—	£40
Premier	1914	3½ 3-sp. sidecar	£40	—
Rex	1914	6 2-sp. sidecar	£35	—
Rover	1914	3½ 3-sp. sidecar	£42	—
"	1915	3½ 3-sp. sidecar	—	£55
Rudge	1915	3½ Multi sidecar	—	£45
"	1915	3½ Multi	£35	—
Scott	1914	3½ 2-sp. sidecar	£40	—
"	1916	2½ 2-sp. sidecar	£58	—
Sunbeam	1914	3½ 3-sp. sidecar	—	£58
"	1915	3½ 3-sp. sidecar	£70	—
Triumph	1914	4 3-sp. sidecar	£46	—
"	1914	4 3-speed	£40	—
"	1915	2½ 2-sp. 2-stroke	£34	—
"	1913	3½ 3-sp. sidecar	£35	—
"	1913	3½ 3-speed	£31	—
Williamson	1914	8 2-sp. sidecar	£62	—
Zenith	1914	6 Gradua sidecar	—	£44





## TIMES TO LIGHT LAMPS.

## GREENWICH TIME.

Nov. 30th	...	...	4.24 p.m.
Dec. 2nd	...	...	4.23 "
" 4th	...	...	4.22 "
" 6th	...	...	4.21 "

## Lights on Cattle.

Last week, for the first time, we saw the leader of a horse carrying a light in compliance with the recent Order under the Defence of the Realm Act. However, he did not comply correctly with the regulations, for the light he carried was a red one.

## Indian Flat Twin Deliveries.

We understand that deliveries of the new Indian flat twin lightweight will commence in America about the middle of December. Arrangements have been made for the manufacture of 7,500 of these little machines, and already the demand exceeds half this number. In America these are to be sold for the extraordinarily low figure of \$165 = £33.

## Motor Cycles in Request.

Among the various offers in exchange for motor cycles and combinations, to be found in the last two issues of *The Motor Cycle*, are: Thoroughbred horse, sure Derby winner, 20 h.p. motor car, freehold cottage in Devonshire, diamonds, jewellery, motor launch, watches, pleasure trap, typewriter, flute, piccolo, banjo, violin, and a sugar boiler.

## Two-stroke Wails and Praise.

There must be either an extremely wide difference in the driving of two-strokes of the same make, or a great disparity between identical models. One hears nothing but praise from a certain section of two-stroke lovers; on the other hand, these little mounts are condemned far more hotly than the flat twin enthusiast condemns the thudding singles. Why this strong divergence of opinion? Is it solely lack of uniform efficiency in the manufacture, or the driver's fault every time?

## 300 Miles in 48 Hours.

A strenuous test, both for man and machine, was carried out recently by two Harley-Davidson riders attached to the Pittsburg Military Training Company. They left Pittsburg at 7.30 a.m., carrying a despatch from the Mayor of Pittsburg to President Wilson. The journey to New Jersey, where the President was staying, is 400 miles, and the ride was accomplished in just over eleven hours. The return journey was started the following morning, the riders reaching Pittsburg the same evening, thus accomplishing the double journey of 800 miles in two days.

B8

## Dunlop Rubber Co., Ltd.

At an extraordinary general meeting of the Dunlop Rubber Co., Ltd., held on November 22nd, resolutions were confirmed authorising the increase of the capital of the company to £3,000,000 by the creation of 1,000,000 new shares of £1 each, to be called B preference shares.

## Ten Years Ago.

Even in 1906 *The Motor Cycle* was endeavouring to stimulate interest in spring frames. Yet years lapsed before the British manufacturer would heed the cry, and now only comparatively few machines are turned out as standard sprung both front and rear.

In the leader for November 21st, 1906, we said, "Spring frames are still few and far between, and it is a matter of surprise to us that more makers have not turned their attention to springing both the front and the rear of a motor cycle. Spring frames will be standard some day, we feel sure, but for the present we must console ourselves with the excellent spring front forks now almost general."

Many of us to-day have to content ourselves in the same way, but we think, after the war is over, spring frames will be standardised on many machines.

## SPECIAL FEATURES.

THE TANKS—AND NEUTRAL NOTIONS.

AIRCRAFT WORKERS' HILL-CLIMB.

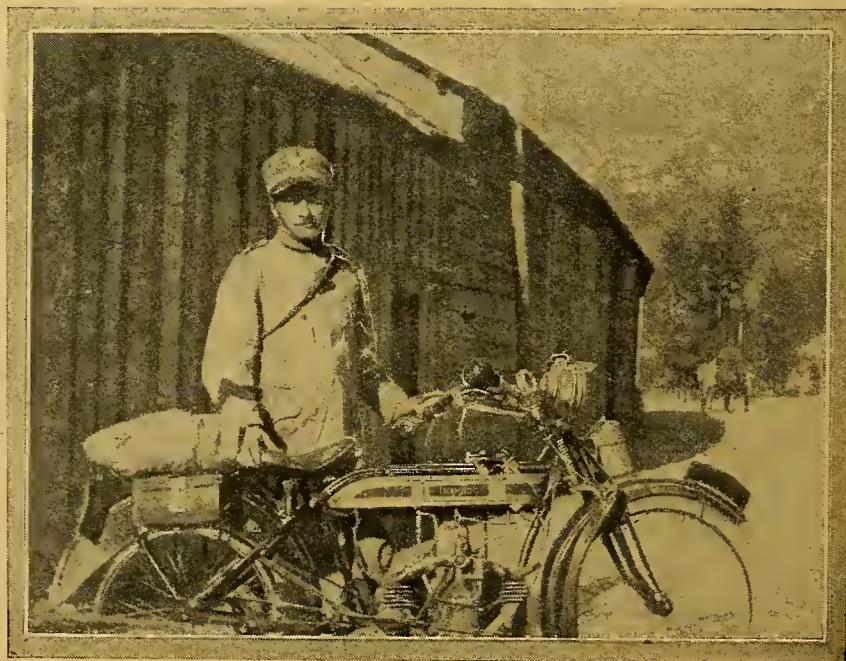
ROAD EXPERIENCES WITH A  
3 h.p. ENFIELD.

## The Aluminium Market.

Shall we eventually see steel or iron crank cases in place of aluminium? It is acknowledged in America that the state of the aluminium market is serious. It is easy to add two and two together in this country, and come to the conclusion that if it is scarce in America it is sure to be scarcer here, in view of the manufactures in the future that will absorb much of that light metal.

## Great Motor Factory for Cork.

The Cork Corporation and the Cork Harbour Commissioners have accepted the offer of the Trafford Engineering Co., Manchester, to purchase for £10,000 Cork Park racecourse and ground abutting the quays for the purpose of erecting a motor factory, with a stipulation that £200,000 should be expended on the buildings, and a guarantee to employ 2,000 persons.



A despatch rider attached to the Italian headquarters. His mount is one of the 100 Douglases which have been supplied to the Italian Government.



**The Royal Dutch M.C.C.**

The Dutch Motor Cycle Club has received the patronage of the Queen of Holland, and will now be known as the Royal Dutch Motor Cycle Club.

**Proposed One Day Trial.**

We understand that the motor cyclists of the Royal Aircraft Factory are contemplating yet another competition for one day in the spring. This is to take the form of a one-day reliability trial.

**Road Guides in Wartime.**

A correspondent in the daily press has been questioning the need for road scouts in wartime. Certainly there are many war jobs more important than "minding a street corner."

**The National War Funds.**

At the week-end the principal war funds stood as follow:

The Prince of Wales's Fund (distributed £3,479,475) ..	£6,008,230	0	0
British Red Cross Fund ..	5,316,998	0	0
The Queen's Work for Women Fund ..	170,915	15	7
Tobacco Fund ..	119,838	0	0

**A Luxurious Outfit.**

We are indebted to Mr. O. L. De Lissa for a most pleasant afternoon's run, on the occasion of the Royal Aircraft Factory's hill-climb last Saturday, in his 6 h.p. Motosacoche fitted with one of the latest M.A.G. engines. The smooth, silent running of the big twin engine was really delightful, while the comfort of the sidecar was luxurious.

**Bogus Tanks.**

Mr. Lloyd George said in Parliament last week that he had seen some American photographs of "tanks," and they bore no relation to the actual armoured cars. We have seen some, too, and have been greatly amused. Some cunning Yankees have quickly built up bogus tanks, and issued photographs, and, of course, neutrals have fallen into the trap!

**Praise for Motor Cyclist D.R.'s.**

General Sir William Robertson, in unveiling last Saturday a stone cross in the quadrangle of Bradford College, as a memorial to old boys who fell in the war, congratulated the college on what he described as its wonderful record in the war, and acknowledged the debt of gratitude which the War Office owed to all officers' training corps. What they would have done without them he did not know. Many of the junior officers' training corps and the universities accompanied our first fine army as despatch riders. Despatch riding in those days was a perilous business, and they did splendid work, ever ready to go where they were asked at no matter what time of the day or night. He remembered during the retreat, when things were, perhaps, at their worst, needing to get some instructions to headquarters. All his despatch riders were out, and there was no one to send. Presently two boys came in, "done up." They offered their services, but he said, "I cannot send you; you are not fit to go." They said, "Yes, we will go." They went, got through, and, he was glad to say, came back.

**The Petrol Outlook.**

The Director of the United States Bureau of Mines says that calculations, based on the present-day consumption of petroleum, have led the United States Geological Survey to conclude that the supply in America will not last longer than from twenty-seven to thirty years.

**The King's Painting.**

A painting by Mr. Alfred Pearse of a Tank in action has been accepted by H.M. the King. The sketch from which it was painted was made by a pupil who volunteered for the Front two years ago. The picture is in monochrome, and bears the pupil's name, as well as that of Mr. Pearse.

**The Motor Cyclists' Ideal.**

The seventh design submitted by readers of *The Light Car* is published in Wednesday's issue of that journal. These designs are sent in by amateur readers, and the one given this week is by a motor cyclist "somewhere in France," who says: "I look upon the majority of light cars as something in reserve for old age. My ideal light car is one which will give the same pleasure to drive as my late T.T. 3½ h.p. motor cycle."

**Export of Motor Cycles.**

The Wulfruna Engineering Co., of Wolverhampton, send us a copy of a communication they have addressed to the Minister of Munitions on the subject of the export trade, in which they point out the great importance of retaining this trade and Overseas markets, as far as possible, in British hands. They are of opinion that the markets can be retained if permits to export are freely given. Our views on this subject are already known to our readers, as we have repeatedly referred to its importance, and we should advise other makers to approach the Minister of Munitions in a similar manner.

**Road Record Breaking in South Australia**

An Australian correspondent tells us that soon after daylight on October 7th the officials of the M.C.C. of South Australia and the representatives of the Indian Garage motored a few miles north of Adelaide, on the main Gawler Road, to witness attempts on records by J. Booth (Victoria) and E. Ferguson (South Australia), mounted on eight-valve Indian racing motor cycles. The half-mile was timed by the club's electric timing machine and the one mile by club officials manipulating stop-watches.

Booth opened the programme for the half-mile, and clocked 19½s. Ferguson then got going, and clocked the half-mile in 19½s. (South Australian record). Booth made a second attempt, and again clocked 19½s. After a few adjustments, a third attempt was still unsuccessful, his engine misfiring badly; time, 20½s.

Booth was not allowed further time for half-mile trials, so he prepared for the one mile attempt, and the spectators saw something they are not likely to forget for some time. Booth got a good start, and with his engine firing regularly and revving splendidly he crossed the mile mark in 35s. = 102.8 miles per hour. This is stated to be a world's road record.

**Engines without Oil.**

An American firm has succeeded in impregnating graphite with metal, thereby combining the self-lubricating properties of the graphite with the tenacity of the metal used. It is interesting to learn this, and the question arises in the mind as to whether we shall eventually have an oilless engine and bearings.

**Petrol 5½d. per Gallon.**

The *Autocar* states that in the autumn of 1915 petrol was retailed in California at 5½d. per gallon, but gradually advanced until, in August, 1916, it reached 10d. per gallon. A highly satisfactory substitute can be obtained (one-third petrol two-thirds distillate) for 6d. per gallon.

**British-made Tungsten.**

At the commencement of the war the Germans practically held a monopoly in the manufacture of tungsten powder, which is derived from wolfram ore; and there was in this country only about three months' supply of tungsten. How the difficulty was met and conquered may be described as one of the romances of industry. Suffice it to say that there is now near Widnes a tungsten factory which is capable of producing three tons a day. Tungsten is interesting to motor cyclists from the fact that it is used in the manufacture of high speed steel. Valves are sometimes made of tungsten steel, and it also finds a place in magneto construction.

**The Admiral Arbuthnot Trophy.**

We recently had an opportunity of viewing Lady Scott's statuette of the late Rear-Admiral Sir Robert Arbuthnot, which she is executing for the Arbuthnot Trophy. It is a beautiful piece of work, and represents the late Admiral standing in his motor cycle suit in a characteristic attitude. The features are wonderfully well portrayed, and, considering that the talented sculptor never had an opportunity of seeing the Admiral, and has had to work entirely from photographs, the result is astonishingly good. The model we saw was in clay, but it will be finished in bronze standing upon a marble base, on which an inscription will be written, and into which the A.C.U. badge will be fixed. It is sincerely to be hoped that the time will not be long before the trophy may be put up for actual competition.

**Work on the Roads.**

It is, of course, unreasonable to expect that much repair work should be done on the roads, unless, as has been suggested in *The Motor Cycle*, German prisoners of war could be organised into gangs to perform it. However, it does seem somewhat ridiculous that what little work is done should be of an entirely useless nature. There has been a man working for weeks upon a stretch of road over which a member of our staff passes daily. This road is, upon the whole, good, considering everything, but it is disfigured in several places by groups of really dangerous pot-holes, and one would have supposed that, if any work could be done on this road, the pot-holes would first receive attention. But no, the man to whom we have referred has been engaged entirely upon trimming the grass edges of the road!

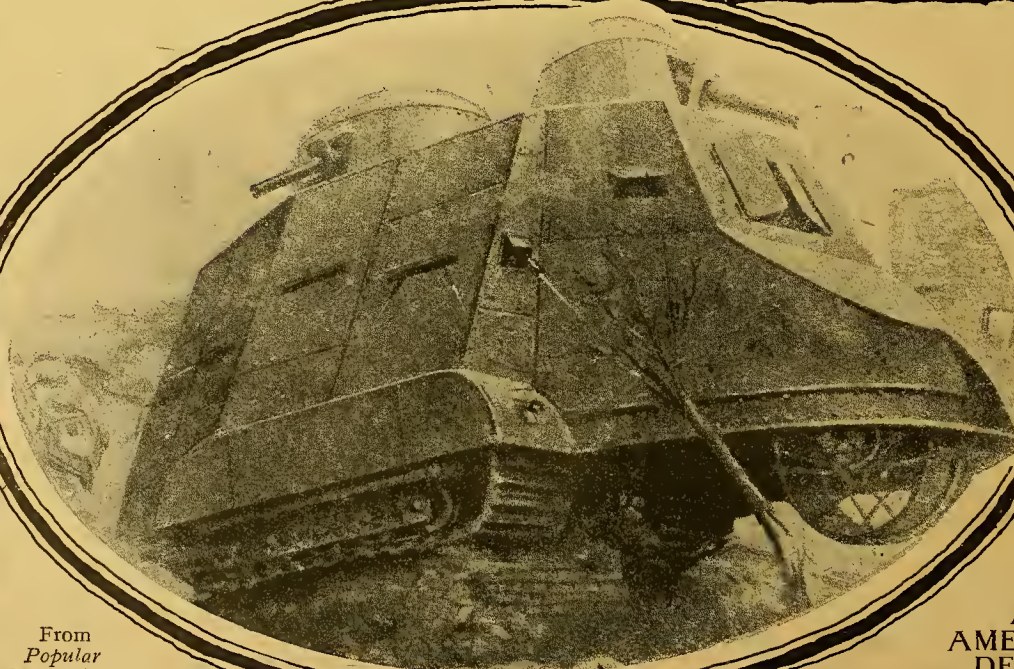


# TANKS---the Real British A

**T**HE armoured car "Tanks," it is generally conceded, formed the best kept secret of the war. The interest of *The Motor Cycle* in them will be fresh in our readers' minds. It was through our Recruiting Section that the men operating these Tanks were recruited, and the Editor of *The Motor Cycle* was, at the beginning of the year, requested by the War Office to journey about the country examining applicants for this Heavy Armoured Car Section, it being necessary that all should possess practical motoring or technical experience. Accordingly examinations of recruits were held regularly in London, Manchester, Nottingham, Bristol, Coventry, etc. The Army Council subsequently sent to Mr. Geoffrey Smith a letter of "thanks and appreciation for the most patriotic and cordial assistance rendered."

## A Journalistic Scoop.

It was not until September 16th last that the first reference to these heavy armoured cars was made in an official despatch. The sensation that the Tanks created and the success that attended their *début* will be fresh in our readers' minds, and since that time the authorities have been busy doling out credit to the originators of the Tanks—but there are still more claimants to the honour! Americans, for instance, assert that the Tanks were conceived in the States, and that the plans were originally submitted by American manufacturers to the British Government. But the same authority which advances this remarkable statement also illustrates the vehicle which it supposes is the real Tank used by the British Government, and puts forward the edifying information that the caterpillars were made in America and subsequently armoured by the British in this country!

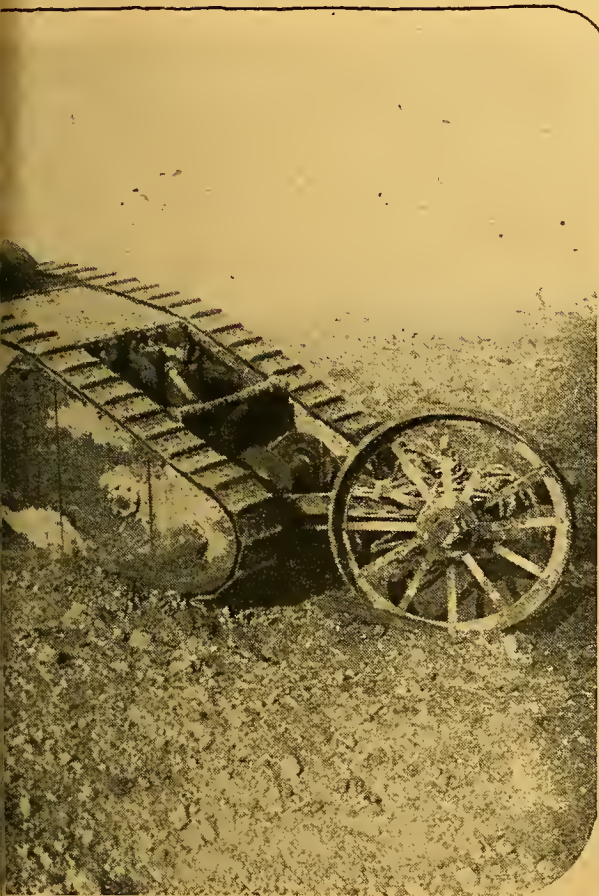


From  
*Popular  
Mechanics.*

AN  
AMERICAN  
DESIGN.



## le and Neutral Impressions.

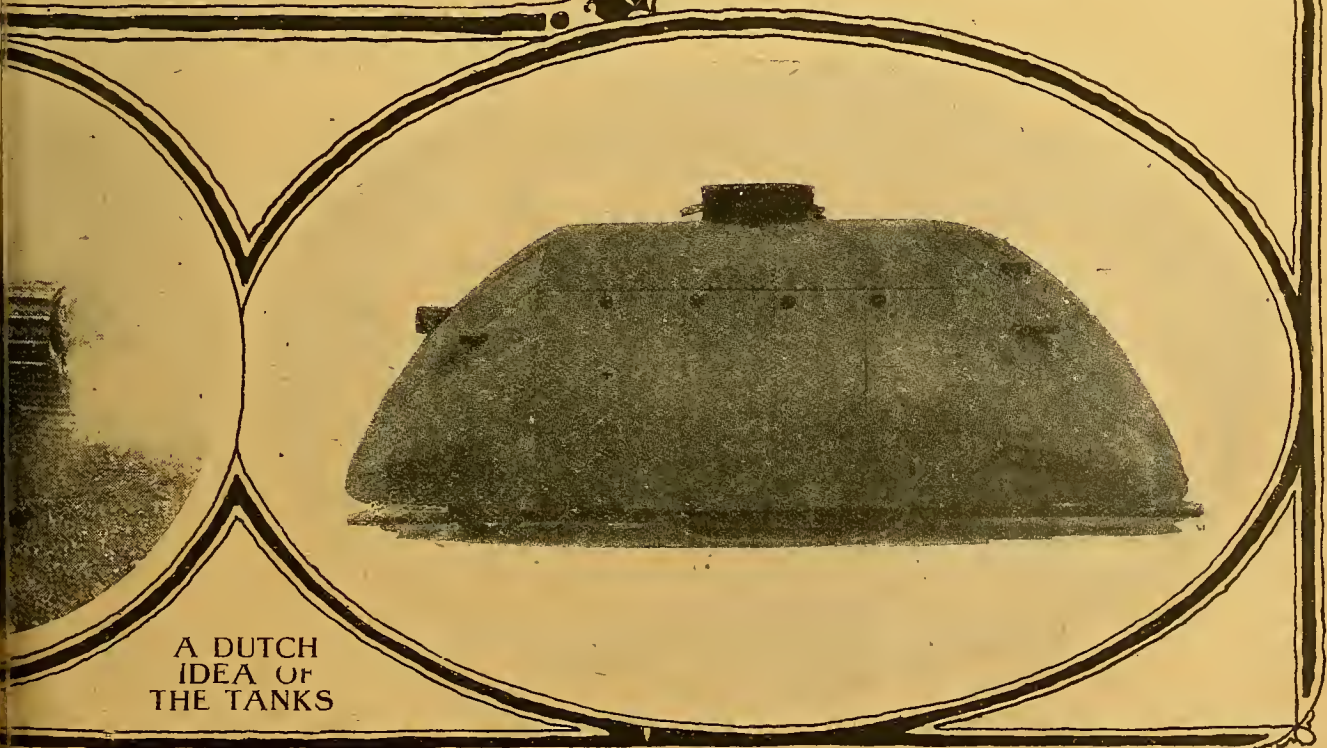


How the photographs came to be published in one of the illustrated papers last week and to appear simultaneously with a statement by Mr. Lloyd George that it was not in the national interest that pictures of the Tanks should be published just yet is general talk. The fact of one paper being favoured was, it appears, due to that journal having approached the Commander-in-Chief in France, thus leaving the Press Bureau out of reckoning. It is altogether absurd that such a thing could have happened.

### American and Dutch Ideas.

On this page we publish two photographs of the actual all-British Tanks propelled by an internal combustion engine which have already made history and promise to command still more attention in the future. Alongside the official pictures we publish the American journal's version of the British Tank as "conceived in America and armoured by the British authorities," and also a Dutch paper's impression of the Tanks.

When the last picture was reproduced in a Dutch motor contemporary, the editor was quite under the impression that he had got hold of the real thing, and announced the publication of the "first photographs" with a flourish of trumpets. There was a footnote to the article to the effect that, while the paper was being printed, the Dutch war correspondent on the English side, being in Amsterdam, saw the picture and affirmed that it was really one of the war monsters which he saw on the Western Front. An informative "secret" is appended! Let us whisper it! The Tanks were made in America to the order of the English Government, and the first six were despatched to England in August!



A DUTCH  
IDEA OF  
THE TANKS



## THE FLAT TWIN AT THE BAR.

By "IXION."

**I**N our issue of November 2nd I dealt with certain criticisms which have been passed on the flat twin, especially in the larger sizes, and which had recently found expression in a technical article. The main misstatement is tersely phrased by the writer in question as follows: "While the 350 c.c. opposed engine is singularly successful, engines of larger capacity have yet to prove their success." Endeavouring to avoid personalities and side issues as far as possible, I based my correction on a few simple facts, notably that Government services are preferring certain 500 c.c., 1,100 c.c., and 2,300 c.c. flat twins to all other types of engine for important war duties; that these engines are displaying efficiencies which have genuinely surprised technical experts; and that they compare most favourably with rival types in point of durability.

My correction, as might be expected, has provoked a reply—a reply composed largely of abuse and

innuendo. Its reference to the facts on which the correction was based takes the form of a sneer at the purchasing methods of the authorities, and a query as to the alleged power output and wearing factors of the engines concerned.

This reply, however, makes the position perfectly clear. Either I am lying about these engines, or the writer in question is ignorant of their existence and quality. We will leave it at that till the war is over, and these engines are available for public tests and discussion. In the meantime any reader who doubts my honesty will probably realise that the helter-skelter visible in trade circles to get big flat twin models ready for the post-war markets indicates one of two things: either our motor cycle engineers are suffering from temporary insanity, or else the alleged impossibility of producing satisfactory flat twins exceeding 350 c.c. is a myth. It appears to me that this is a point which is easily decided.

## PETROL SUBSTITUTES.

BINKS FUEL.

**D**URING the summer substitutes for petrol were largely in demand, and were used with considerable success by motor cyclists in general. Latterly, however, partly owing to the arrival of winter, partly due to the Petrol Committee having been more generous in its allotments, and to some extent to the difficulty and delay in obtaining deliveries of "substitutes," the fuel question has not been so largely before the public eye.

In connection with the last point, it will be recalled that we recently published a number of letters, representative of a larger number received, complaining of the delay in delivery of fuel ordered from Messrs. C. Binks, Ltd., Eccles, Manchester, and, in the case of one correspondent, also suggesting that this firm was profiteering or taking advantage of war conditions to make unreasonable profits.

Messrs. Binks considered that the publication of such letters was a serious reflection upon their business methods, and suggested that we should send a representative to their works to investigate their system. This we have done, and we briefly state the result.

In most of the cases investigated the delay complained of was due to the fact that the customer had not remitted the full amount in payment of the fuel: the reason for this being that the price of the fuel had advanced between the date of Messrs. Binks's advertisement appearing and the receipt of the customer's cheque.

Messrs. Binks satisfied our investigator that this rapid advance was owing to the conditions under which Messrs. Binks themselves were purchasing supplies, and in this connection it should be borne in mind that some time might elapse between the time of the despatch of Messrs. Binks's advertisement "copy" and the date when the advertisement itself was read by the particular reader concerned.

In other cases delay was due to the fact that Messrs. Binks were depending upon other firms for the despatch of the fuel. The delay was unavoidable in the circumstances, but, as Messrs. Binks's advertisement did not indicate the possibility of such delay, we think that those of our readers who had sent the full amount in payment were fully justified in assuming that their orders would be dealt with promptly by the firm, and therefore they had reasonable cause for complaint. This applies not only to delivery of fuel but also to carburettors.

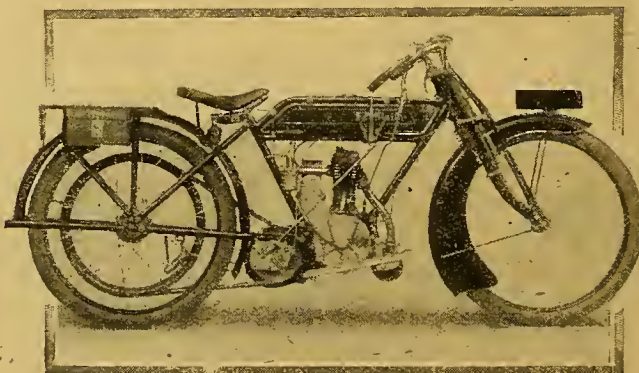
Messrs. Binks frankly admit that there have been mistakes on their part, and that in some cases delays have occurred in dealing with correspondence, but here we think full allowance should be made for the difficulty in carrying on any

business satisfactorily in these times, because of the shortness of labour, and it should also be recognised that, in the case of Messrs. Binks, this difficulty has been enormously increased by the rapid growth of the firm's business. It is only fair to add that the mistakes and delays which have occurred were not in undue proportion to the very large number of orders which have been dealt with.

Messrs. Binks have now arranged to carry a considerable amount of stock on their own premises, and have also made improvements in their organisation.

We are satisfied that they wish to execute all orders promptly, and have reason to believe that in future customers will have no cause for complaint in this respect, though allowance must be made for the present abnormal conditions under which every business is suffering both as regards staff and transport facilities.

We may add that the financial position of the firm is good, as we have satisfied ourselves that its monetary reserve is ample. This is not merely based on the books of the firm, but has been verified by its bankers.

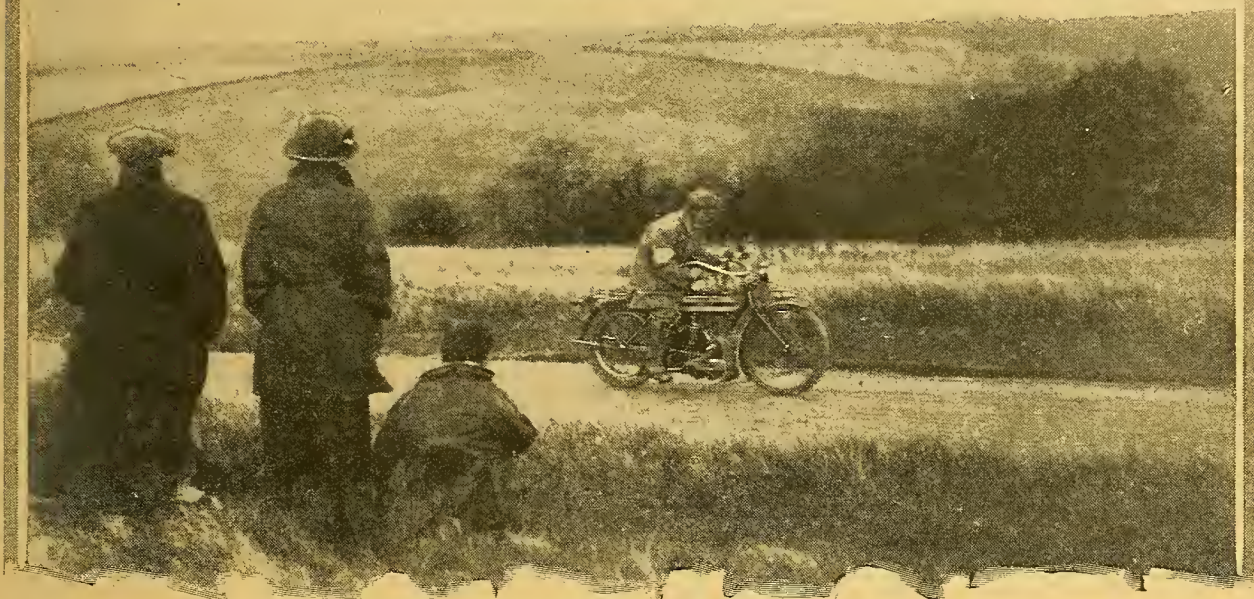


2½ h.p. EXCELSIOR-J.A.P. LIGHTWEIGHT.

Messrs. Bayliss, Thomas & Co. have produced the above four-stroke lightweight. Footboards are fitted in place of footrests, and a sight feed lubricator is provided. The gear is an Albion two-speed, with hand-controlled clutch.



# AIRCRAFT WORKERS HILL-CLIMB



Passing the timekeepers at speed at the top of the hill.

**Y**ET another hill-climb has been organised by the Royal Aircraft Factory.

It was held on the hill leading to Newlands Corner on Saturday afternoon last. It formed an inter-department competition between E department in which experimental engine work is carried out, and G department which deals with repairs and overhauls. In fact, the affair was the outcome of a challenge between the two sections, viz., the repairs and the experimental department staffs, between whom keen rivalry exists. The organisation devolved largely upon the shoulders of the secretary of the meeting, Mr. W. E. Wickham, who though comparatively a novice at this kind of work, has a natural aptitude for it. The manner in which he gave out the formula results of each event within five minutes of its completion was really quite remarkable. The officials were greatly assisted by a portable telephone which, unlike the majority of these instruments when used at hill-climbs, worked faultlessly through out the afternoon. By its use the starting time was transmitted to the timekeeper, who was stationed on the finishing line. Two Surrey policemen rendered valuable help, one kept the road clear at the start while the other officiated at the top of the hill. All the competing motor cycles bore a number on the front, and, in addition, the riders carried their numbers on the right arm. Odd numbers denoted E department, even numbers G department. In deciding the results first place counted three points, second two points, and third one point.

We arrived at the venue punctually, but the event, which was timed to start at 1.15, did not take place until sixty-five minutes later, as many of the competitors were very late in reaching the foot of the hill. The weather was cold and inclined to be showery, while a strong westerly wind blew across the

course; however, the rain, fortunately, held off. Previous to the start, we met W. F. Guiver, a well-known competition rider in pre-war days. He has been about eighteen months at the R.A.F., and has been in France several times. Having attended two previous R.A.F. events, we naturally became acquainted



**ON THE STARTING LINE.** The foremost rider is T. P. Mears (5 h.p. Ivy). Mears won Event III. for machines of unlimited capacity.



## Aircraft Workers' Hill-climb.—

with the more skilful riders and their machines, and on this occasion we noticed that Davey's fast Norton bore the title "Gott straf." What he meant to strafe he did not state. Was it Deutschland or his rivals? The programme evoked some amusement by stating in event No. VII. that Page's  $2\frac{1}{2}$  h.p. O.K. had a cubic capacity of 993 c.c.

## "No. 13."

One competitor, Barnwell, No. 13, complained bitterly at having been allotted that unlucky number, blaming it for the disaster which befell him in having to take part in the competition with ten broken spokes in his back wheel. Later he tried to reverse his bad luck by carrying his numbers upside down, but the only result was more broken spokes; in fact, so untrue did the wheel become that the brake fouled the belt rim. Once started, the climb was run off smartly, the men being sent off in quick succession, and then sent back to the start promptly at the end of each event. The surface of the hill was in first-class order.

## The Results.

EVENT I. was for motor bicycles fitted with engines of unlimited cubic capacity, the result to be decided on formula.

The two fastest machines appeared to be Mears's Ivy and Davey's Norton. Guiver made a mistake which we should not have expected of him, and changed up too early, thus losing valuable time. Mears started with his clutch, and though his start was made with rather a jerk he got off the mark well. Others elected to be pushed off the line. Result:

	c.c.	Fig. of Merit.	Dept.
1. P. Davey (3½ Norton) ....	490	2130	E
2. E. Manning (3½ Norton) ..	490	2240	G
3. T. P. Mears (5 Ivy) .....	670	2250	E

EVENT II. for motor cycles fitted with engines up to 750 c.c. Guiver this time profited by experience, did not change speed, and improved upon his previous time by 9s. Some delay was caused by the timekeeper's watch failing, but another was produced and the competition proceeded. Result:

	c.c.	Fig. of Merit.	Dept.
1. W. F. Guiver (3½ Ariel) ...	499	1795	E
2. A. Whitty (4½ B.S.A.) ....	549	1960	G
3. E. Perrott (2½ Douglas) ...	349	2160	G

EVENT III. for motor cycles fitted with engines of unlimited cubic capacity, decided on time. Result:

	Time.	Dept.
1. T. P. Mears (5 Ivy) .....	35½ sec.	E
2. J. W. Hinds (5-6 Zenith) ....	36½ sec.	E
3. F. W. Hart (7-9 Indian) .....	37 sec.	G

EVENT IV. for motor cycles fitted with engines up to 500 c.c.

Much interest was evoked by the good ascent of R. Page (O.K. Junior 180 c.c.), who warmed up his little engine for prolonged periods before each event in which he competed. Result:

	c.c.	Fig. of Merit.	Dept.
1. P. Davey (3½ Norton) ....	490	2160	E
2. E. Perrott (2½ Douglas) ...	349	2200	G
3. W. F. Guiver (3½ Ariel) ...	499	2320	E

EVENT V. for motor cycles fitted with engines up to 350 c.c. Result:

	c.c.	Fig. of Merit.	Dept.
1. E. Perrott (2½ Douglas) ...	349	1880	G
2. E. W. Cox (2½ Calthorpe-Jap)	293	2640	E
3. S. J. Garratt (2½ Triumph). .	225	3225	E

EVENT VI. for two-stroke single-cylinder motor cycles.

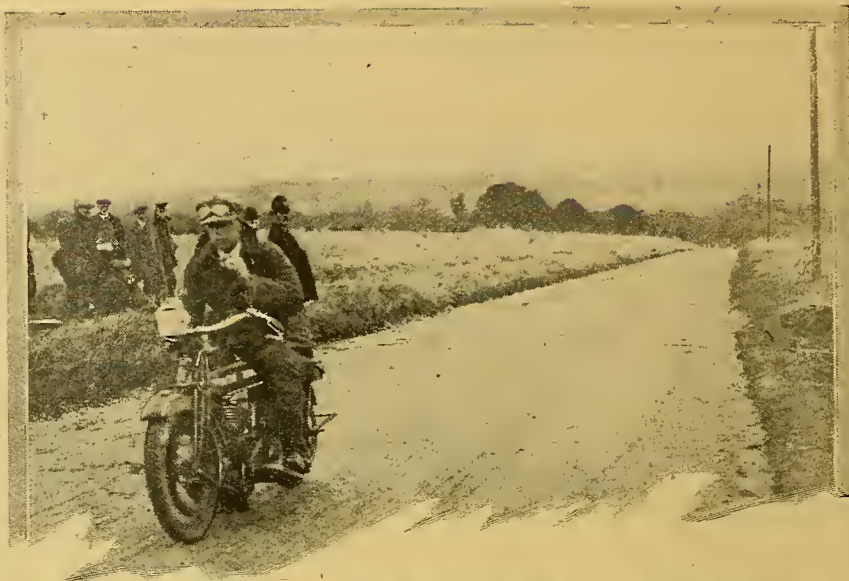
In this event there were only two competitors, who performed as follows:

	c.c.	Fig. of Merit.	Dept.
1. S. J. Garratt (2½ Triumph). .	225	3220	E
2. G. Slatter (2½ Levis) .....	215	9080	G

It was now late, getting rapidly dark, and the weather became very threatening, so it was decided to cancel Event VII., the slow hill-climb, and finish up with Event VIII. for sidecar combinations with engines of unlimited cubic capacity. Result:

	c.c.	Fig. of Merit.	Dept.
1. W. F. Guiver (3½ Ariel) ...	499	2490	E
2. T. P. Mears (5 Ivy) .....	670	3600	E
3. F. W. Hart (7-9 Indian) ..	993	3650	E

The result of the competitions was that E department won the event, gaining twenty-three points to G department's eleven.



A. Whitty (4½ h.p. B.S.A.), second in Event II. for machines up to 750 c.c. Incidentally, the photograph shows the highly suitable nature of Newlands Corner, near Guildford, for a hill-climbing competition.



W. F. Guiver (3½ h.p. Ariel), winner of Event II. for machines up to 750 c.c., as well as the sidecar class.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

### An Instructive Experiment.

Sir,—I was very much interested in the account of the accidental injection of water into the intake pipe of an oil engine in *The Motor Cycle* of November 2nd. I have been experimenting in this direction for the past four months, with good results.

I intended writing to you later, when I had found out, by road tests and a better appliance than I have at present for conveying the water to engine, what quantity of water used gave the best results, but when I saw this paragraph I thought I would write at once.

At present I am using a large generator with the bottom part taken off. A glass tube is fixed to the drip pipe, with a rubber tube leading from it, to a small copper pipe soldered on the top side of extended air pipe of a B. and B. carburetter.

My engine is a J.A.P. 1912, and I am now able to do with sidecar and passenger a little over ninety miles per gallon (one-third paraffin, two-thirds petrol) on long journeys. Passenger's weight is 9st, driver's 12st.

WILLIAM SCOTT.

### Three Questions for Manufacturers.

Sir,—Having noticed in recent issues of your paper several new and otherwise excellent designs spoilt by embodying some or all of these (to my mind) faults, may I ask why do manufacturers fit (1) the change speed lever on the same side as the throttle, when to effect a neat change it is essential to operate both simultaneously?

(2.) Semi-automatic lubrication. Why not an oil sump and pump which distributes oil under pressure to all parts and keeps the oil in the crank case at the correct level, instead of a sight feed lubricator, which can never be seen owing to the glass being covered with oil?

(3.) Belt drive on a sidecar machine. Considering the improvements made in chain transmissions, I consider this form of drive is equally as smooth as a belt, with the additional attraction that chains require little attention and seldom get out of order in comparison with a belt, which slips when it is wet, stretches, pulls out, breaks, and has to be frequently renewed. A sidecar outfit in 1917 with belt drive!!

E.D.M., R.F.A.

### Vaporisation of Heavy Fuels.

Sir,—I have been a keen motor cyclist for some years now, having ridden most makes of machines. I have taken in your paper since it was first published in 1903, and would not miss it for anything.

On reading through your issue for October 19th (just arrived here) I noticed the vaporiser made by Mr. Reid from a boot polish tin. As early as March, 1913, I fitted a somewhat similar device on my Scott in order to get easy starting on benzole. In my case though I used the hot water from the drain tap at the base of the cylinder (right-hand cylinder), the outlet pipe from the tin also being fitted with a tap. The top of the tin was fitted with a rubber and felt pad and was readily detachable, and held in position with a light spiral spring. To start I simply took off the lid, dropped in a few lumps of carbide, turned on the water tap, and in a few seconds it would be quite warm, and would always start at the first dig of the starter. As soon as it was started I opened first the tap from the tin and let out the gas generated and water residue, then turned on the

tap from the cylinder and flushed the residue out of the tin, and then shut both taps. As soon as the water in the radiator had warmed up I again opened the cylinder tap and thus formed a hot water jacket, which I found greatly assisted the running, especially on the pilot jet (Binks carburetter). With this arrangement I regularly obtained 102 to 105 m.p.g. on pure benzole.

Alexandria.

A REGULAR READER.

### The Scott Sociable.

Sir,—May I add my humble opinion anent the Scott Sociable? The three wheels are apparently a great eyesore to some of your readers; but, to my mind, the criticisms on this point are nothing but the voice of a narrow-minded convention, which seems ever to bar modern progress. Conservatism of this kind will never get us anywhere.

Do we buy motors for ornament? No; we buy them for travel. What then matters appearance? Moreover, why should we call that "ugly" which is merely unconventional? Let us rather educate ourselves to appreciate a new departure, and judge it from an unbiassed standpoint when we have sampled its abilities as a motor, and not prematurely from its appearance, which is surely the least important of all a motor's points.

If, in days to come, we find the sociable to be powerful and flexible, reliable, accessible, clean, and weatherproof, what practical man among us will be puerile enough to ask for a fourth and unnecessary wheel—an extra tyre to wear, extra weight, and friction to reduce speed and increase the fuel bill, and extra tax to pay?

Let us remember that the Scott motor cycle did not please our conventional minds in 1908 and 1909, but that we have had to raise our hats to it since then in the Isle of Man. Moreover, I think most of us who have ridden one of these machines are anticipating "some luxury" when the new sociable arrives.

Usual disclaimer, please.

JUSTICE.

Limerick.

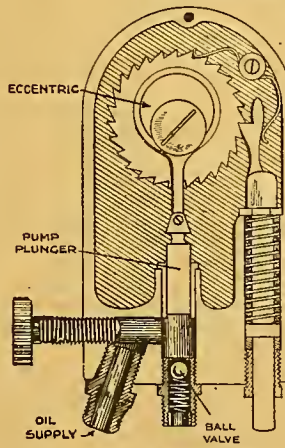
### A Compression-operating Device.

Sir,—We notice with interest on page 418 of your issue of the 9th November an illustrated description of an oiling device which has apparently been patented by Mr. D. MacGregor, of 49, Sampson Road, Sparkbrook.

We append herewith a drawing of a device which we designed and made in conjunction with Mr. W. G. Aston at this address some four years ago.

We think your readers will be impressed by the coincidence that the making of the device we illustrate was entrusted to a mechanic named D. MacGregor, who was at that time in our employ.

THE SPHINX MANUFACTURING CO.



A mechanical pump made four years ago.



### Colonial Built Engine.

Sir,—In your issue of the 19th ult. your correspondent quotes an engine built by Mr. F. D. Johnson, of Perth (Australia), as the first motor cycle engine built in the Commonwealth.

This is entirely incorrect, as I can quote several instances of locally built engines which have been on the market several years, one of which is the Mona, the whole machine being manufactured in the factory of Messrs. Quirk and Co., of Melbourne. The engine is  $3\frac{1}{2}$  h.p., horizontally opposed.

The engine illustrated seems to be almost identical with the American Pope machine.

JAMES P. STEWART.

### Further Trials of Substitutes and Paraffin.

Sir,—I have further experimented with different fuels, and since my letter that appeared in your issue of October 19th I have covered several hundred miles. On October 14th, for example, I ran ninety miles in 3h. 20m. on pure "white spirit," American Oil Co.'s (Pratt's), from Oxford to Cambridge. The last twenty miles to Cambridge at an average of 30 m.p.h. No overheating.

On October 15th I fitted an auxiliary pure petrol tank, connected to main supply, for starting purposes. The advantages gained are obvious.

On October 16th or 17th I fitted a Morgan vaporiser in the usual manner, only that both petrol and substitute pipes connect to inlet of vaporiser, which gives better results.

The fuel pipe, inlet pipe, and carburetter are lagged with asbestos string and insulation tape, further strengthened with fine copper wire to prevent fuel loosening insulation tape. This is necessary to keep in the heat.

I proceed in usual manner, turning on substitute when engine is warm. The vaporiser makes the substitute more or less like petrol, and is quite a necessity. I find that pure white paraffin (the Mex at 1s. 1d. a gallon) works well, but knocks badly on opening throttle, and picks up badly. However, with 25% petrol added, it makes a fuel as good as petrol nearly (because of the Morgan vaporiser). This paraffin at 1s. 1d. and petrol works out cheaper than substitute, viz., 1s. 6d. per gallon. Whereas petrol substitutes are, Petrofin 2s. and Pratt's white spirit 2s. 6d. a gallon, naturally, when one is short of petrol, pure substitute must be used.

I am not yet in a position to say which fuel is the better with the Morgan vaporiser (substitute or paraffin-petrol). I think perhaps the substitute is the better on the whole, as it uses less petrol. I notice, however, that less air is taken with the vaporiser, less pinking and knocking, cooler engine, and more power on hills, etc.

One thing further, with the vaporiser acceleration and picking up are slow on pure paraffin, and knocking occurs. This is less on pure substitute. On paraffin and petrol (75% and 25%) it is almost nil.

Since I wrote last I have been several hundred miles. I have had the engine down and decarbonised it. The carbon was quite soft, and easy to get off. The valves were hardly pitted at all. Rather much side play in bearings, but no vertical play.

If I run the carburetter dry of substitute before stopping (with vaporiser), a huge suction is created, causing leaks at taps and joints. So I turn on the pure petrol about 250 yards from my stopping place, and turn off substitute, to be ready for starting up again on pure petrol.

J. H. LAWSON WALTON, Lt., 13 K.R.R., att. R.F.C.

### The Flat Twin at the Bar.

Sir,—May I be permitted to say a few words on this interesting discussion. I think it is generally admitted that all future designs will be on the lines of increased efficiency, that is, the maximum power out of the minimum engine capacity. Now let us see how the "flat" twin compares with its rivals, the single and the V twin. In order to obtain this high power output it is necessary to run the engine at a very high speed; well, Bailey's Douglas attained 5,400 r.p.m. on the track, and a  $2\frac{1}{2}$  A.B.C. 5,500 on the road (37 m.p.h. on an 11 to 1 gear). The fastest singles I know of are the  $2\frac{3}{4}$  A.J.S., the winner of the last T.T., and the experimental long-stroke Levis, which did close on 5,000 r.p.m. O'Donovan's Norton attained 4,100 r.p.m. on the track. Here, at any rate, the "flat twin" scores over its rivals, as the V twin has probably never done more than

3,500 r.p.m. But it is impossible to run an engine at such high speeds without causing awful wear, unless it is well balanced. The "flat" twin has a good even firing interval, and almost perfect mechanical balance; the thumping single has a fair firing interval but a hopeless balance; the V twin has an uneven firing interval, and a moderate balance. Thus for our efficient design the flat twin fills the bill perfectly; the others nowhere nearly approach it. Still, even high efficiency is not everything; wear and economy are also important. The vibration of a flat twin is negligible. I have seen many such an engine "revved" all out on the stand with hardly a tremor; the single and V twin would nearly shake themselves to bits under such conditions. Obviously, then, the smooth even firing and perfect balance of the flat twin must cause far less wear than the awful jerkiness and vibration apparent on the other machines running at half its speed. After all, it is not "revving" which hurts an engine—it is the "kick, kick, kick," of the single-cylinder thumper, and the vibration of both it and the V twin which does the damage. As to economy, there is no reason to suppose that either of the twins would differ in this respect, but personally I think that a single is always a little more economical than any twin. Still, the "flat" twin would more than even this up by its saving in chains, belts, and tyres, owing to its even drive. Now let us come to practice. The Indian V twin and the Norton single hold the world's speed records. Why is this? Well, the former belongs to a class only occupied by the V twin type, and the latter is merely the result of what a wonderfully clever driver and tuner up of a really fine crack machine can do, and is merely the exception which proves the rule. The peak of the power curve of the most efficient racing engine known (the 10 h.p. Calthorpe racer) is only 3,750 r.p.m., so if a single can do over that speed it can develop the maximum power possible. When it is possible to design an engine with a power curve peak higher than the maximum engine speed obtainable on a single (and a V twin is inferior in that respect), then, indeed, the "flat" twin will be indisputably unapproachable, as it now is in all other respects. This also is the cause of the Norton victory. There is nothing technically wrong with the flat twin; could this ever be even suggested for its rivals? Personally, I think the 71 m.p.h. solo and 53 with sidecar and passenger of a  $2\frac{3}{4}$  h.p. Douglas equally as fine a performance. In the 350 c.c. class the Douglas has already swept the V twin and single practically off the market, as witness the disappearance of the  $2\frac{3}{4}$  V twin Humber, and the  $2\frac{3}{4}$  A.J.S. single, both Junior T.T. winners. Soon the A.B.C. and other  $3\frac{1}{2}$  flat twins will dominate the 500 c.c. and other classes in the same manner. After all is said and done, it was Douglas who introduced an entirely new design of engine, which, in the teeth of the competition of the singles, made by firms with a splendid pedal cycle reputation behind them, forced itself by sheer merit into the position it holds to-day of being the most popular machine on the road. Here, indeed, we have a firm winning through solely on the superiority of the design of its productions. Had the flat twin not been infinitely superior to its rivals this could never have been possible. No, however good the results obtained on a type of machine which, though fundamentally bad in design, has nevertheless been designed and tuned up by an expert, it cannot be denied that of all engines, the one most perfect in design is "the flat twin."

Sutton-Veney.

POPPALONG.

### Petrol Substitutes.

Sir,—My experiences with two petrol substitutes may be of interest to your readers. During the last fortnight I have experimented with "Benzolite" and "Kempol," and find the results almost identical, although one of the compounds is obviously much more largely a paraffin mixture than the other. My experience is that I can run on either pure by using a petrol injection to start, I have to retard my spark for comparatively slight hills owing to knocking developing, and have to change down rather earlier on stiff climbs. The consumption is such that I get about five or six miles less per gallon than on petrol, with which I reckon to get sixty miles per gallon. The machine is a  $3\frac{1}{2}$  h.p. single-cylinder with heavy coach-built sidecar, and I use a B. and B. carburetter, to which I made no alteration. My machine is four years old, and my brother on a five-year-old Douglas is getting similar results.

Newcastle-on-Tyne.

J.N.B.



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## MOTOR CYCLES FOR SALE.

### A.J.S.

**1916 4h.p. A.J.S.**, new, in stock; £76.—Fryer's, Hereford. [5279]

**A.J.S. 1915, 6h.p.**, sidecar, lamps, horn, speedometer; bargain, £85.—Fryer's, Hereford. [5275]

**A.J.S. Combination, 1914, 6h.p. twin**, fully and well equipped; £55; thoroughly overhauled, new tyres. [5275]

**A.J.S. 2 1/2h.p., 1913, 2 speeds**, in real good order; a bargain; £24.—6, Warren St., London. [5579]

**A.J.S. 1914, 2 1/2h.p., 2-speed**, kick start, hand clutch, all chain drive, and accessories; £38/10.—Lamb's, below. [5579]

**A.J.S. 1915, 2 1/2h.p., 3-speed**, original tyres, first-class order; £44/10; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [5331]

**A.J.S. 6h.p.**, cabriolet sidecar, 3 speeds, 1913, splendid condition; £50; owner with colours.—Apply, Cedarville, Withersea. [X2085]

**A.J.S. 1912 6h.p. Twin Combination**; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4915]

**1916 2 1/2h.p. A.J.S. 3-speed**, latest model, ridden 700 miles only; condition genuinely as new, specification as list.—Robinson's Garage, Green St., Cambridge. [5509]

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## MOTOR CYCLES FOR SALE.

### A.J.S.

**1916 A.J.S. 6h.p.** Combination, interchanges wheels, spare tyre and tube, 3 lamps, large gear, speedometer; £100; owner enlisting.—Batt, 3 High St., Chatham. [51]

**A.J.S., 1916, 2 1/2h.p., 3-speed**, lamp, Klaxon horn, speedometer, very little used, excellent condition, ordered overseas; £50.—Hazlemere, Glenc Park Rd., Cheltenham. [X21]

**1915 (Nov.) 2 1/2h.p. A.J.S.**, sporting model, 2-speed clutch, lamps, mechanical horn, spares, in used, perfect; 42 gns.; also see New Imperial.—Hill, The Peak, Basingstoke. (1) [51]

**A.J.S. 1914 6h.p.** Combination, 3-speed, hand clutch, kick, screen, new tyres, 700x80 and 650x Lucas lamps and horn, tools; trial by appointment; dealers; £55.—The Elms, Ford, near Slisbury. [51]

**1916 2 1/2h.p. A.J.S.**, 3-speed, sporting model, used 1 miles, and complete with Lucas head lamp, Lu horn, spare sprockets, spare valves, speedometer w maximum hand, etc.; cost £70; condition as new; cept £60.—Layton's Garage, Bicester, Oxon. [X22]

### Alcyon.

**LIGHTWEIGHT 2 1/2h.p.** Alcyon, good condition; £10/10.—H. Thompson, 15, Lambeth Walk, London, S.E. [51]

**ALCYON, 2 1/2h.p.**, just overhauled, condition as new; accessories; bargain, £12/10.—Partridge, 179, J dale Rd., Nunhead. [51]

### Alldays.

**COLMORE Depot, 31, Colmore Row, Birmingham** can supply immediately all models of Alldays. [51]

**2 1/2h.p. Alldays**, spring forks, good tyres and belt, 4 cumulator; £3/5.—Pearce, Woodmancock, Ch cester. [51]

**RIDER TROWARD, 78, High St., Hampstea**  
**1916 Alldays-Alton, 2-speed**, 29 gns.; ditto, 19 25 gns. [51]

**ALLDAYS Matchless, 2-stroke**, will take £20 quick sale.—Pulling, Half Moon Garage, Lou Rd., Croydon. Phone: 1619. [51]

**ALLOON, 1915, 2-speed, 2 1/2h.p.**, and Cowey sp ometer, electrically equipped; £36/10; defec terms if desired.—Lamb's, below. [51]

**ALLOON, 1915, 2-speed**, with hand clutch, all ac sories, fine order; £36/10.—Lamb's, below. [51]

**ALLOON, 1915, single speed**, all accessories, still A original tyres; two at £27/10 each.—Lamb's, 1 High St., Walthamstow, and 50, High Rd., Wood Gr Phone: Walthamstow 169, and Hornsey 1956. [51]

**ALLDAYS Matchless 2-stroke, 2 1/2h.p.**, in beaut condition; great bargain, £17/10.—Longman B King St., Acton. Phone: 1578 Chiswick. [51]

**ALLOON, 2-speed**, new June, 1916, auxiliary 1/2-ga tank, lamp, horn, and usual tools, in excell condition throughout, actual machine illustrated p 426. The Motor Cycle, November 16th.—Box 500, The Motor Cycle. [X2]

**ALLOONS, 12 models in stock**, just arrived fr works; deferred payments if desired, excha entertained.—Lamb's, 151, High St., Walthamstow, at 50, High Rd., Wood Green. Tels.: Walthams 169, and Hornsey 1956. [51]

### Arriel.

**ARIEL, 3 1/2h.p.**, latest 3-speed model, in stock, v or without sidecar.—Crow Bros., Guildford. [51]



**MOTOR CYCLES FOR SALE.**

**Ariel.**

**RIDER TROWARD.**—1913 3-speed Ariel, re-  
enamelled, overhauled; 24 gns.—78, High St.,  
Hampstead. [5380]

**1913-14 Ariel, 3½ h.p.,** light coach sidecar, as new,  
all on; £45; Yorkshire.—Particulars, Box 508,  
c/o The Motor Cycle. [X2244]

**ARIEL, 3½ h.p.,** semi T.T., with variable pulley gear,  
fast, most excellent condition; £24, bargain.—  
Laytons' Garage, Bicester, Oxon. [X1846]

**ARIEL, 1914, 3-speed** countershaft, Service belt, tyres  
good, F.R.S. lamp, spares, Canelet sidecar, good  
condition; £40.—42, Park St., Camden Town. [5574]

**COLMORE Depot, 31, Colmore Row, Birmingham,**  
have in stock for immediate delivery all models  
of Ariel motor cycles, with or without sidecars. [0797]

**BARGAIN.**—Ariel, £12/15, 3½ h.p., variable 2-speed,  
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Phone: 80. [5442]

**I CAN Give immediate delivery of 1917 5-6 h.p. Ariels.**  
3½ h.p. Ariels, solo or combinations; also 1916 5-6  
h.p. combination, as new, guaranteed, £80; exchanges  
or deferred payments.—Jones, Garage, Broadway, Mus-  
well Hill. [5192]

**ARIEL, 1916, 3½ h.p.,** countershaft 3-speed, hand  
and foot clutch, speedometer, lamps, and spares,  
left works September last, 200 miles only; cost £70; a  
quite new; £55, for quick sale.—Box 506, c/o The  
Motor Cycle. [X2243]

**1915 Ariel 3½ h.p. Countershaft 3-speed Combina-**  
tion, with coachbuilt sidecar, Lucas head and  
side lamps, Watford speedometer, guaranteed in perfect  
order, only run 2,754 miles; price £50.—Baker, Middle-  
ton Rd., Ringwood. [5461]

**ARIEL, 1913, T.T., B. and B., Bosch, decompressor,**  
variable pulley, brand new tyres, Miller head lamp  
and rear lamp, horn, Covey speedometer, good service-  
able machine; £23; would consider lightweight in ex-  
change.—Laurel House, Newchurch, Warrington. [X2203]

**Arno.**

**ARNO, excellent order;** any trial; £15.—Warren's,  
386, Euston Rd., N.W. [5559]

**ARNO, 1913, 3½ h.p., 2-speed, and sidecar,** recently  
enamelled and plated, Best and Lloyd lubricator  
fitted, tyres and belt good condition, lamps, horn, etc.;  
£26.—Robins, High St., Wansstead. [5264]

**Auto-Wheels.**

**AUTO-WHEEL, absolutely perfect,** just done Exeter  
outfit; bargain, £6/17/6; seen Chiswick.—Box L2,634,  
c/o The Motor Cycle. [5355]

**AUTO-WHEELS, standard models, in good order,**  
£7; another ditto, quite new, £8.—Wallis, 49,  
High St., Saffron Walden, Essex. [X2232]

**AUTO-WHEEL, 1915, all latest improvements, like**  
new; £11, bargain; unsratched.—W. and H. Motor  
Co., Ltd., 287, Deansgate, Manchester. [4965]

**Bat.**

**6 h.p. 1913 Bat and sidecar, 3-speed gear, luxurious**  
outfit; bargain, £50.—Babington, Ashburton. [5247]

**1913 Bat Combination, 8 h.p., 2-speed, chain drive,**  
Lucas accessories; £35.—Bateson, 5, Poynter Rd.,  
Hove. [5425]

**BAT-J.A.P., 1914, 8 h.p., Gloria sidecar; £55; light-**  
weight part exchange.—Cunningham, Hatfield,  
Heath, Harlow. [5259]

**BATS.—P. J. Evans, Birmingham agent.—Immediate**  
delivery 4-5 h.p. sporting model, 2 speeds; £63/15.  
—87-91, John Bright St., Birmingham. [X2177]

**NEW Bat-Japs, very latest model, in stock: 4-5 h.p.,**  
2 speeds and free engine; £63/5; exchange or easy  
terms.—Wauchope's, 9, Shoe Lane, London. [5455]

**8 h.p. Bat-Jap, free engine, guaranteed perfect, mag,**  
requires adjustment; bargain, £12; exchange with  
cash for lower power.—Dunkley, Postman, Brackley,  
Northampton. [X2263]

**BAT-J.A.P., 1912, 6 h.p., 2-speed, foot starter, chain**  
drive, J.A.P. carburettor, Montgomery M.D.L. side-  
car, run 4,000 miles, tyres renewed; £60.—Oram, 72,  
Clapham Rd., Bedford. [5280]

**Blackburne.**

**BLACKBURNE, 1913, 3½ h.p., 3-speed, handle con-**  
trol clutch, just overhauled; £32.—Belmont, Os-  
borne Rd., Farnborough, Hants. [X2018]

**Blumfield.**

**1914 Blumfield, 5-6 h.p., coachbuilt combination,**  
Druids, Amac, Bosch, 2-speed countershaft, kick  
start, good condition; £38; exchange horizontal twin  
combination, cash adjustment.—5, Selborne Rd., Dudley.  
[X2205]

**Bradbury.**

**BRADBURY 4 h.p. Combination, N.S.U. 2-speed,**  
splendid condition; £22.—Tugwood, 42, Brecon  
Rd., Fulham. [5378]

**1914 Bradbury, 3½ h.p., F.E., N.S.U. gear, sidecar,**  
new 1916 B.B., Bosch mag., in splendid order;  
35 gns.—T. Cooper, West End Forge, Boston, Lincs.  
[5369]

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Coat, half lined oilskin, 36" to 40" long.  
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**value), short gauntlets. Price 5/9.**

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**MOTOR CYCLES FOR SALE.**

**Bradbury.**

**1913 4 h.p. Bradbury, 3-speed (Sturmey), just been**  
overhauled, with new Henderson lightweight side-  
car, complete; £35.—Stacey, 12, Ecclesall Rd., Sher-  
field. [X1899]

**1914 Bradbury, Sturmey 3-speed, with new under-**  
slung coachbuilt sidecar, splendid condition; £33,  
offer.—Allworthy, 50, Upton Rd., Downham Rd., Kings-  
land. [5588]

**BRADBURY 1914 Combination, 6 h.p., perfect con-**  
dition, 3-speed countershaft gear, chain drive, Lucas  
lamps, twin-cyl., C.B. sidecar; £49.—W.T., 285, High  
St., Brentford. [5289]

**Brough.**

**BROUGH, 5-6 h.p., and sidecar; cost Oct., 1915, £89,**  
take £56, or near.—65a, Rosendale Rd., Dulwich.  
[5412]

**BROUGH 3½ h.p. Horizontal Twin, 1915, 3-speed,**  
handle-bar clutch, perfect condition, tyres un-  
scratched; £46.—Davison, Nuneaton. [X2191]

**FOR Sale, 3½ h.p. Brough motor cycle, 2-speed, T.T.**  
model, horizontal twin, fitted with speedometer,  
P. and H. head lamp and generator, acetylene tail lamp;  
price £50.—Skurray, Reading. [5464]

**Brown.**

**BROWN, 3½ h.p., in absolutely perfect condition; £23.**  
—W. and H. Motor Co., Ltd., 287, Deansgate,  
Manchester. [5341]

**BROWN, 3½ h.p., sound order, good condition, good**  
tyres, and fast; £5.—Head, 31, Hainthorpe Rd.,  
West Norwood. [0368]

**B.S.A.**

**B.S.A., 1917 models H and K, with sidecars, in stock.**  
—Moss, Wem. [X2215]

**B.S.A., model K, 1917, 4½ h.p., in stock; £64.—**  
Fryer's, Hereford. [5277]

**B.S.A., free engine, perfect; £30.—Warren's, 386,**  
Euston Rd., N.W. [5557]

**COLMORE Depot, 261, Deansgate, Manchester, for**  
immediate delivery of B.S.A. [0798]

**1916 T.T. B.S.A., all-black finish, demonstration**  
machine, £43/10.—Plastow, Grimsby. [X2221]

**1915 B.S.A. Model K, splendid order throughout;**  
best over £45.—Leatherbarrow, Wolsingham, Co.  
Durham. [X2210]

**B.S.A., 1917 models, in stock for immediate delivery,**  
combinations from 80 gns., solo machines £64.—  
P. J. Evans, John Bright St., Birmingham. [X2173]

**1917 B.S.A. in stock. Catalogues free. Spare parts**  
per return. lin. belts, as fitted by makers, 8/6,  
post paid.—Albert L. Pitts, Redditch. Tel.: 91. [0529]

**1915 B.S.A. Model H, Lucas lamps, horn, tools, 2**  
spare tyres and tubes, Canelet sidecar, all equal  
to new; £52.—Toombs, 18, Avenue Rd., Winchester.  
[5373]

**4 h.p. B.S.A. 1917 Models from stock: 3-speed gear,**  
all chain drive, £66; chain-cum-belt, £64; side-  
cars to fit; exchange or easy terms.—Wauchope's, 9,  
Shoe Lane, London. [5454]

**B.S.A.'s.—Three guaranteed 1917 models H, all chain,**  
£66, actually in stock; exchanges and deferred pay-  
ments arranged; good prices allowed for up-to-date motor  
cycles.—Lamb's, below.

**B.S.A., 1917, guaranteed, model K, belt-cum-chain,**  
£64, actually in stock.—Lamb's, 151, High St.,  
Walthamstow, and 50, High Rd., Wood Green. Tels.:  
Walthamstow 169, and Hornsey 1956. [5326]

**LATE 1915 (Nov.) B.S.A. Combination, B.S.A. side-**  
car, Dunlops, lamps, mechanical horn, absolutely  
new and unsratched; £65.—Arthur Griffiths, Castle St.,  
Conway, N. Wales. [5434]

**B.S.A., 1916, 4½ h.p., chain drive, 3-speed countershaft**  
gear, Phoenix coachbuilt sidecar, accessories, mile-  
age under 2,000 miles; £63, or near offer.—136, Ancona  
Rd., Plumstead, S.E. [5622]

**B.S.A., 1916 model H, all chain drive, as new, guaran-**  
teed perfect, only run few hundred miles, with  
coachbuilt sidecar, and accessories; 60 gns.; without  
sidecar £58.—Moss, Wem. [X2218]

**B.S.A., 1917, latest model K, 3 speeds, and coach-**  
built sidecar, brand new month ago, used few  
times only, in perfect order; £68.—Wallis, 49, High  
St., Saffron Walden, Essex. [X2255]

**B.S.A., 4½ h.p., T.T., 1913, 4 h.p., 2 speeds, Bosch,**  
Amac carburettor, very fast, with collapsible  
chassis, all perfect order; £35; suit business or pleasure.  
—46, Woodgrange Rd., Forest Gate. [5284]

**1916 B.S.A., 4½ h.p., chain drive, Canelet combina-**  
tion, hood, wind screen, Lucas King of Road  
head lights, Stewart horn, perfect condition; £64.—  
Stratton, 31, Mount Pleasant, Redditch. [X2192]

**LATE 1913 B.S.A., 3½ h.p., 2-speed, kick start, all**  
chain, fully equipped, tyres, appearance, and con-  
dition very good; first £30 secures, or call and inspect  
—Perry, 2, Kendal St., Barrow-in-Furness. [X2154]

**1914 B.S.A., in very good order, new tyre, model**  
K, 3 speeds, and new 1916 Canelet sidecar;  
lamp sets, and wind screen, horn, tools, all complete;  
£55.—Wallis, 49, High St., Saffron Walden, Essex.  
[X2231]



## MOTOR CYCLES FOR SALE.

## B.S.A.

B.S.A., 1915, 4½ h.p., model K, 3 speeds, and coach-built sidecar, 2 lamp sets and rear light, horn, tools complete, very good tyres and in nice order; £55.—Wallis, 49, High St., Saffron Walden, Essex. [X2228]

B.S.A., 1916½, model K, chain-cum-belt, 3-speed, kick start, Canelet sidecar, luggage carrier, Lucas lamps and horn, Dunlop 2½ tyres; cost £83, accept £66; perfect, ridden 900 miles.—Topham, Poplar Ave., King's Heath, Birmingham. [X2262]

4½ h.p. B.S.A. and Sidecar, 1916, 3-speed, model H, 44 all chain drive, clutch and kick start, fitted with handsome Canelet coachbuilt sidecar, not ridden 2,000 miles, complete with all accessories; 60 gns, guaranteed.—Wanchope's, 9, Shoe Lane, London. [5456]

B.S.A., new models in stock; 4½ h.p. 3-speed countershaft chain-cum-belt model K, £64; all chain model H, £66; cash, exchange, or extended terms quoted; Montgomery sidecars to match from 10 gns.—Rice and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Canonville St., E.C. [0552]

B.S.A., just arrived, 1917 model K, belt-cum-chain, 3-speed, kick start, and B.S.A. genuine No. 2 sidecar, with their patent spring suspension B.S.A. wind screen; £86/15; easy payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Walthamstow 169, and Hornsey 1956. [5371]

## Calthorpe.

CALTHORPE Junior, 1916, 2-speed; £23.—Warren's, 386, Euston Rd., N.W. [5564]

CALTHORPE 1914 4 h.p. Combination, almost new; £30.—6, Warren St., London. [5576]

1915 Calthorpe, 2-stroke, 2-speed, in good condition; offers.—Box L2,589, *c/o The Motor Cycle*. [4943]

CALTHORPE'S Birmingham Agent, P. J. Evans, John Bright St. Immediate delivery 1917 models. Book now to secure delivery. [X2181]

P. J. EVANS, Sole Birmingham and District Agent, 87-91, John Bright St.—Immediate delivery all models, 2-strokes, 4-strokes, ladies' models. [X2182]

1915 Calthorpe-Jap, 2½ h.p., 2-speed, free, lamps, horn; £24; excellent condition.—Newham, 223, Hammersmith Rd., W. Phone: 80. [5443]

1915 Calthorpe, 2-speed, 2-stroke, specially powerful engine, T.T. bars, good tyres; a bargain, £26/10.—Byfleet Automobile Co., West Byfleet. [4912]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

1915 Calthorpe-Jap, Enfield 2-speed, fully equipped, belt, tyres, and condition excellent; £27; owner bought 3½ h.p.—Hudson, Manor Farm, Hordle, Hants. [5262]

CALTHORPE-J.A.P. 1916, 2-stroke lightweight, with latest pattern taper tank, quite new condition, set of Lucas lamps, etc.; £36/10; exchanges and terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5351]

CALTHORPE-J.A.P. 2½ h.p. model, with Enfield 2-speed gear; three actually in stock; deferred terms, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Walthamstow 169, and Hornsey 1956. [5334]

## Campion.

CAMPION 4 h.p. Combination, 2-speed, free; photo; tyres good, accessories; £25, war bargain; must sell.—39, Dundonald Rd., Leicester. [X2140]

## Chater-Lea.

CHATER-LEA 8 h.p. Combination, 3-speed, chain, splendid condition; £50, or nearest.—Lorimer, Vine P.O., Sevenoaks. [5236]

CHATER-LEA, 1914, No. 7, 8 h.p., 3-speed, engine never re-hushed, C.B. sidecar, hood, screen; cost £122, sell £55.—Perry, Inglenook, Foston, Derby. [X1905]

CHATER, 1916, drop frame, tank, 26x2½ wheels, mudguards, Druid forks, etc. for 3½ h.p., all quite new, plated, and stone enamelled, very smart; £11; enlisting.—4, Kingsley Rd., Wimbledon, London. [5318]

## Clyno.

CLYNO 1914 2-stroke, 2-speed, clutch, splendid condition; £23.—25, Cambridge Rd., Barnes. [5465]

CLYNO, 1913-14, 6 h.p., 3-speed countershaft, chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [5469]

CLYNO New Latest Military Model Combination, sidecar luggage grid, spare wheel; in stock; don't miss it.—Potter, Clyno Agent, Leicester Grove, Leeds. [X2160]

CLYNO, 2-stroke, late 1914, 2 speeds, hand controlled clutch, Lucas lamps, speedometer, total mileage 2,400; owner in Egypt; no reasonable offer refused.—7, Vele Terrace, Chelsea, S.W. [X2194]

LATE 1914 Clyno Combination, clutch, kick starter, 3 speeds, spare wheel, wind screen, new tyres, mechanical horn, overhauled, splendid condition, all accessories; £52.—Lieut. Worfold Hotel, Arundel. [5301]

## Connaught.

CONNAUGHT 2-stroke, in perfect order; £24.—Warren's, 386, Euston Rd., N.W. [5551]

CONNAUGHT, 1914, 2-speed, perfect; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5342]

## SECOND-HAND BARGAINS

## SIDECAR OUTFITS.

REX, 1914, 6 h.p., 2-speed, modele de luxe ..... £35  
TRIUMPH, 3½ h.p., 2-speed countershaft, Sidecar ..... £32  
INDIAN, 1913, 7 h.p., coach-built Sidecar, 2-speed ..... £42  
ZENITH, 1914, 6 h.p., countershaft clutch model ..... £60  
RUOGE 1913 5-6 h.p. Multi, with Rudge Sidecar ..... £46  
ENFIELD, 1912, 6 h.p., 2-speed, twin, Enfield Sidecar ..... £29  
RUDGE 1913 3½ h.p. Multi, coach-built Sidecar ..... £33  
ZENITH, 8 h.p., 1913, clutch, and Sidecar ..... £47  
SCOTT, 1914, 3½ h.p., 2-sp., and Scott sidecar chassis ..... £45  
ZENITH, 1915, 3½ h.p., twin, clutch, and C.B. Sidecar ..... £49  
ENFIELD 1914, 6 h.p., 2-speed Combination ..... £52  
PORTLAND-J.A.P., 1914, 8 h.p., B.S.A. 3-speed ..... £42  
CHATER LEA, 1913, No. 7, 8 h.p. 3-sp., and Sidecar ..... £40  
DOUGLAS, 3½ h.p., 2-sp., Canelet, disc wheels ..... £58  
B.S.A., 1914, 4 h.p., 3-sp., chain drive ..... £50  
MATCHLESS, 1913, 8 h.p., J.A.P. overhead, 6-speed ..... £48

## SOLO MODELS.

DOUGLAS, 1911, 2½ h.p., 2-speed, spring forks ..... £20  
RUDGE 1913 3½ h.p. Multi, T.T. bars ..... £33  
IVY, 1915, 2-stroke, single-speed ..... £18  
NEW HUDSON, 1913, 3½ h.p., 3-speed, J.A.P. engine ..... £30  
REX, 1913, 3½ h.p., 2-speed, and clutch ..... £28  
BROWN, 3½ h.p. model, Bosch magneto ..... £12  
INDIAN, 1915, 5 h.p., 3-speed, twin ..... £52  
DOUGLAS, 1912, 2½ h.p., single-speed ..... £18  
ALLOYS ALLON, 1915, 2-speed, 2-stroke ..... £32  
NEW HUDSON, 1915, 2-stroke, as new ..... £22  
INDIAN, 1914, 7-9 h.p., 2-speed, electric equipment ..... £47  
ENFIELD, 1910, 2½ h.p., twin, Grado gear ..... £14  
HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, twin ..... £56  
LEVIS, 1914, 2½ h.p., 2-stroke, countershaft ..... £18  
HARLEY-DAVIDSON, 1915, 7-9 h.p., 3-speed, as new ..... £53  
IVY, 1915, 2½ h.p., 2-stroke, 2-speed, as new ..... £19  
ROTON, 1915, 4 h.p., T.T. all accessories, Philipson ..... £47  
ALLOYS ALLON, 1916, 2½ h.p., 2-speed, 2-stroke ..... £30  
INDIAN, 1915, 3½ h.p., 3-speed, twin ..... £43  
ALLON, 1916, 2½ h.p., 2-stroke, as new, single-speed ..... £26  
ENFIELD, 1916, 2½ h.p., 2-stroke, 2-speed ..... £33  
TRIUMPH, 1913, 3½ h.p., 3-speed, all accessories ..... £38  
DOUGLAS, 1915, 2½ h.p., 3-speed, all accessories ..... £54  
INDIAN, 1914, 7-9 h.p., clutch model, as new ..... £41  
HUMBER, 1915, water-cooled, 3½ h.p., 3-speed ..... £46  
INDIAN, 1915, 5 h.p., 3-speed, as new ..... £46  
CALTHORPE, 1916, 2½ h.p., J.A.P., all accessories ..... £22  
DOUGLAS, 1913, 2½ h.p., 2-speed. Very fast ..... £32

## NEW 1917 MODELS.

ROYAL ENFIELD 6 b.p. Combination ..... £94 10  
ROYAL ENFIELD, 3 h.p., twin, 2-speed ..... £57 15  
ROYAL ENFIELD, 2½ h.p., 2-speed, 2-stroke ..... £44 2  
B.S.A., 4½ h.p., 3-speed, all-chain, H, 1917 model ..... £86 0  
B.S.A., 4½ h.p., 3-speed, belt, K, 1917 model ..... £84 0  
B.S.A., 3½ h.p., Model D, T.T. ..... £52 10  
ROVER, 1917, 3½ h.p., 3-speed, Combination ..... £89 9  
ROVER, 1917, 3½ h.p., 3-speed, solo ..... £69 10  
ROVER, 1917, 3½ h.p., T.T., Philipson pulley ..... £61 10  
LEVIS, 2½ h.p., single-speed, Popular model ..... £32 0  
COVENTRY EAGLE, 2-stroke, de luxe ..... £37 15

A Few 1916 ROYAL RUBYS to Clear. Send for Lists and Prices.

## LIGHT CARS.

SWIFT, 1913, 9 h.p., all accessories and fine order ..... £92  
G.W.K., 1914, 8 h.p., just re-painted and overhauled ..... £120  
G.W.K., 1915, 8 h.p., just re-painted, detach. wheels ..... £165  
MORGAN, 1917, G.P. No. 1, only done 500, & as new ..... £135  
MORGAN, 1914, G.P. No. 1, all accessories ..... £95  
KNIGHT, 1914, 11.9 h.p., sporting body ..... £145  
OVERLAND, 1916, 12 h.p., 5-scater, electric equip. ..... £195  
CALCOT, 1915, 10.5 h.p., dynamo light and starter ..... £275  
CALTHORPE, 1916, 10 h.p., G.D.M. dynamo, 6 wheels ..... £275  
SINGER, 1914, 10 h.p., dynamo lighting ..... £185  
SINGER, 1913, 10 h.p., 5 lamps, just being overhauled ..... £135

1914 and 1915 DOUGLAS MACHINES bought for SPOT Cash.

**MAUDES**  
**MOTOR MART**  
100 & 136 Gt Portland St. London W.  
Telephone 552 Mayfair Telegrams Abdicale Wesd

## MOTOR CYCLES FOR SALE.

## Connaught.

1914 Connaught, 3-speed, condition as new, lamps, horn, etc.; £21.—Stacey, 12, Ecclesall Rd., Sheffield. [X1896]

CONNAUGHT, late 1914, splendid condition; £22, bargain.—4, New River Crescent, Palmer's Green, London. [5242]

J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X2171]

CONNAUGHT, 2½ h.p., 1915, T.T. model, perfect order, lamps, footboards, Palmer back, Senspray, U.H. mag.; owner shortly for active service; £20, or nearest.—Corporal Abby, c/o 71, Walsall Rd., Lichfield. [X2261]

## Coventry Eagle.

COVENTRY Eagle, 1916, 6 h.p., 3-speed countershaft, coach sidecar and accessories; cost £100, little used, £69/10.—Motor Exchange, Horton St., Halifax. [5471]

2½ h.p. 2-stroke 2-speed Free Engine Coventry Eagle, 500 miles only; must sell, going Overseas next week; first £45 cheque secures.—Box 505, *c/o The Motor Cycle*. [X2164]

## Douglas.

DOUGLAS 1915 4 h.p. Combination.

DOUGLAS 1914 3½ h.p. Combination.

DOUGLAS, 1915, 2½ h.p., 3 speeds.

DOUGLAS, 1914, 2½ h.p., 2 speeds.

DOUGLAS, 1913, 2½ h.p., 2 speeds.

DOUGLAS, 1912, 2½ h.p., 2 speeds.—6, Warren St., London. [5580]

1912 Douglas, 2 speeds, complete, lamps, horn, etc.; £25.—Cross, Edingham Sq., Rotherham. [X2156]

COLMORE Depot, Birmingham, Leicester, and Liverpool, for Douglas motor cycles, also spare parts. [0800]

1911 Douglas, grand puller, tyres and tubes good; any trial; £20.—Clark, Garage, Long Mefford, Suffolk. [5245]

DOUGLAS, 2½ h.p., 1914½, T.T., 2-speed, been carefully used, parts good; £34.—Rev. S. Fowler, Roche, Cornwall. [X2084]

1912 Douglas, 2-speed, footboards, splendid condition, fast, reliable, accessories; £25.—Heath, 21, Robert St., N.W. [5429]

DOUGLAS, 4 h.p., 1915, 2 speeds, new Watsonian sidecar, perfect; bargain, £55.—370, Stratford Rd., Birmingham. [X2223]

1915 2½ h.p. Douglas, lamps, all accessories as new, under 1,000 miles; £45.—Proudlock, Fairthorne, Ridgeway, Enfield. [X2106]

DOUGLAS, 1912, 2-speed, clutch, good condition, new tyres, speedometer, lamps; £25/10.—Hugh, Vicker's Club, Weybridge. [X2274]

DOUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil. Tel.: 50. [5855]

DOUGLAS, 1915½, 2½ h.p., 2-speed, perfect condition, little used, all accessories, spares; £45.—62, Acro Lane, Brixton. [X2102]

DOUGLAS, 1913, 2½ h.p., 2 speeds, perfect condition; can be seen any time; must sell.—Ball, 154, Grosvenor Rd., S.W. [5374]

DOUGLAS, 1913, 2-speed, recently overhauled, long exhaust, 1916 Amac; £32.—Forbes, 16, Mornington Rd., Camden Town. [5372]

1912 2½ h.p. Douglas, 2 speeds, clutch, lamps, footboards, Binks, perfect; £25.—J. Smith, Highfield St., Anstey, Leicester. [X2139]

1913 T.T. 2½ h.p. Douglas, 2-speed, tyres and belt as new, thoroughly overhauled throughout; 32 gns.—Railway Garage, Staines. [5535]

DOUGLAS, 2½ h.p., £15/10; 1913 2-speed, wants tuning up, £26; 1914, single speed, £28.—Motor Exchange, Horton St., Halifax. [5470]

DOUGLAS, 1912, 2½ h.p., 2-speed, all accessories, new, makers' receipt, overhauled August; £22/10, offer.—42, Belvoir St., Leicester. [X1904]

DOUGLAS, 1912 £18, 1913 £30, 1914 £35, 1915 3-speed £45, 1915 4 h.p. combination £65.—Warren's, 386, Euston Rd., N.W. [5565]

DOUGLAS, 1914, 2½ h.p., semi T.T., 2-speed, lamps, and horn, fast and reliable, good condition; £36.—J. C. Phipp, Stanton, Highworth, Wilts. [X2153]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

DOUGLAS, 2½ h.p., 1913 model, 2-speed, kick-starter, fine order, not used this year, all accessories; £38.—H. Blower, 282, Earl's Court Rd., S.W. [5498]

DOUGLAS Motor Cycle, 2 speeds, full equipment, been carefully and little used; cost £56 complete, sacrifice £32 cash.—Box L2,637, *c/o The Motor Cycle*. [5527]



## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1914, 2½ h.p., 2-speeds, lamps, foot-boards, numerous accessories, perfect condition; £40.—A. J. Wake, Albert Villa, Keanington Lees, Ashford. [X2208]

2½ h.p. 1914 Douglas, T.T. model, 2 speeds, thoroughly overhauled, fully equipped with accessories; £35, guaranteed.—Wanchope's, 9, Shoe Lane, London. [54535]

DOUGLAS, 1913, 2½ h.p., splendid condition, tyres included, recently thoroughly overhauled and enamelled, accessories; £27.—Waddams, 110, Orchard Rd., Erdington. [X2163]

DOUGLAS, 2½ h.p., latest 1915 T.T., 2-speed, not scratched, guaranteed 50 m.p.h., all fittings; £50, go offers; joined colours.—22, Norcott Rd., Stoke Newington, N. [53563]

1916 2½ h.p. Douglas, W, 3-speed, clutch, kick start, with lamps, horn, many spares, condition perfect, little used, really new; £54.—Robinson's Garage, Green St., Cambridge. [55055]

DOUGLAS, purchased 1914, clutch, kick start, unused last 2 years, condition like new; bargain, £37/10.—McVoy, 11, Abercorn Place, Maidua Vale, N.W. Hampstead G255. [55558]

DOUGLAS, 1913, 2-speed, clutch model, all accessories, really fine order, £36/10; also another, without clutch, £31/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phone: Walthamstow 169, and Hornsey 1956. [53228]

DOUGLAS, late 1915 touring model, 2 speeds, F.E., Binks carburettor, new Dunlop belt, new 2½ tyres, speedometer, lamps, horn, etc., very fast machine, in perfect condition; what offers? seen by appointment.—Box 470, c/o The Motor Cycle. [X1645]

1915 4 h.p. Douglas, 3-speed, clutch, kick start, C.A.V. mag., complete with Watford speedometer, 2 lamp sets, Lucas horn, new Dunlops, with coachbuilt sidecar, many spares, perfect condition, 1,500 only; £67/10.—Robinson's Garage, Green St., Cambridge. [55058]

## Edmund.

EDMUND Spring Frame Motor Cycles in stock.—Gourlay, The Great Douglas Agent, Fallowfield. [X1754]

EDMUND, 1916, with adjustable spring frame, 2½ h.p. J.A.P. engine, and Enfield 2-speed gear, only used demonstration purposes; usual price £48/10, only £39.—Moss, Wem. [X2219]

## Enfield.

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

LATE 1915 T.T. Enfield, 3 h.p., new condition, with accessories; £42.—James, 27, Walters Rd., Swansea. [X1903]

1916½ 3 h.p. Enfield, 2 speeds, done 700 miles; £39; perfect; cost £60.—Williamson, Ryhill, Wakefield. [X1909]

ENFIELD 1916 6 h.p. Combination, wind screen, lamps, horn; owner called up; £76.—103, Lovely Lane, Warrington. [5290]

1916 6 h.p. Enfield Combination, not done 2,000 miles, like new; £68; seen any time.—24, Rouppell St., Lambeth, S.E. [5257]

1915 Enfield Combination, like new, done 650 miles, 3 lamps, horn, etc.; £65.—Robinson, 75, East Hill, Wandsworth. [5492]

ENFIELD, 3 h.p., 1916, little used, speedometer, lamps, horn, perfect; £48.—Anderson, 434, Main St., Shettleston, Glasgow. [X2112]

1914 Enfield Combination, complete, nearly new tyre; owner called up; a bargain at £50.—Stacey, 12, Ecclesall Rd., Sheffield. [X1902]

1916 Enfield Combination, new July, 150 miles; 75 gns., or exchange for 1916 solo and cash.—34, Devonshire Rd., Rotherham. [X2266]

ENFIELD, three 8 h.p. guaranteed 1917 combinations, latest fittings; £94/10, actually in stock; deferred payments and exchanges.—Lamb's, below.

ENFIELD 1917 8 h.p. Combination, with 2-seater sidecar, in stock, £99/12; good prices allowed on up-to-date machines in exchange.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [53227]

1912½ Royal Enfield, 2-speed, just overhauled by makers, perfect condition; 21 gns., or nearest; owner called up.—C.H.P., Longford, Coventry. [X2151]

ENFIELD Coachbuilt Combination, late 1914, 6 h.p., speedometer, lamps, 2 new tyres, perfect; any trial; £55.—Box L2,624, c/o The Motor Cycle. [5291]

ENFIELD 1914 6 h.p. Combination, new condition, almost new tyres, lamp, and horn, etc., genuine; £52/10.—Colmore Depot, High St., Leicester. [54559]

ENFIELD Combination, 6-h.p. J.A.P., 2 speeds, perfect, will go anywhere 3 up; price £45, or exchange 2-seater.—Kershaw, Lonsdale Rd., Dorking. [5422]

ENFIELD Combination, 1914, 6 h.p., low mileage, condition excellent; trial; 2-seater sidecar, Coventry, all accessories; £55.—53, Ross Rd., Wallington, Surrey. [5375]

3 h.p. Royal Enfield, fully equipped, 2-speed gear, and F.E., speedometer, etc., nice, smart condition; 40 gns.; guaranteed.—Wanchope's, 9, Shoe Lane, London. [5449]

## WHILST

## There is Yet Time.

The Ministry of Munitions have issued an order prohibiting the manufacture of Motor Cycles for private use after Nov. 15th, 1916. It therefore behoves every intending purchaser to place his order immediately, as the stock of motor cycles on hand is quite inadequate for all requirements.

We have decided to deal with orders strictly in the rotation in which they are received, and in cases where immediate delivery is not desired, we will put aside any machine upon which a deposit is paid. Communicate with us without delay, and secure your new machine whilst there is yet time.

## NEW MODELS FROM STOCK.

ALLON, 2-stroke, 2-speed ..... £42 0  
B.S.A., 4½ h.p., 3-speed, chain drive £66 0  
B.S.A., 4½ h.p., 3-speed, Model K ..... £64 0  
CALTHORPE, 2-stroke, 2-speed ..... 33 gns.  
CALTHORPE-J.A.P., 2½ h.p., 2-speed 38 gns.  
ENFIELD, 3 h.p., twin, 2-speed ..... 55 gns.  
ENFIELD 6 h.p. Combination ..... 90 gns.  
JAMES, 2-stroke, 2-speed ..... £42 0  
JAMES, 3½ h.p., twin, 3-speed ..... £69 0  
JAMES 4½ h.p. Combination ..... £86 0  
NEW IMPERIAL, 2½ h.p., 2-speed 39 gns.  
NEW IMPERIAL, 2½ h.p., 2-speed, clutch, and kick starter ..... 46 gns.  
NORTON, 3½ h.p., B.R.S. model ..... £63 0  
ZENITH-GRADUA, 3½ h.p., twin .. £62 0

## EXCHANGES.

We specialise in exchange transactions, and will allow full value for your old motor cycle or light car in part payment for any new one.

## SECOND-HANDS.

The following is a selection from our large stock of machines of all types:

NEW HUDSON, 1914, 2½ h.p., 2-stroke, lamp set ..... £18  
INDIAN 1916 7 h.p. Powerplus Combination, dynamo lighting set, electric horn, speedometer, and mirror, luxurious Sidecar, fitted with hood, windscreen, coverall, and luggage carrier ..... £33  
JAMES, 1916, 2½ h.p., 2-stroke, 2-speed, lamps, and horn ..... £36  
CLYNO 1914 6 h.p. Combination, Lucas electric lighting set, speedometer, etc. £68  
JAMES, 1915, 2½ h.p., 2-stroke, 2-speed, Lucas lamp set, rear lamp, and horn £33  
ALLON, 1915, 2½ h.p., 2-stroke, 2-speed £33  
MATCHLESS, 1913, 8 h.p., 2-speed, clutch, and kick starter, all access. £38  
ZENITH, 1913, 3½ h.p., Grady gear. £30  
PREMIER, 1915, 3½ h.p., countershaft 3-speed gear, lamps, and horn ..... £45  
CALTHORPE, 1915, 2½ h.p., 2-stroke, 2-speed, head light, rear lamp, horn, and speedometer ..... £28  
ZENITH, 1915, 4 h.p. twin, countershaft model, lamps and horn ..... £48  
VINOEC, 1917, 5 h.p., 2-speed, head light, rear lamp, horn, and coach-built Sidecar ..... £22  
CHATER-J.A.P., 1912, 8 h.p., countershaft 3-speed gear, all-chain drive, and coach-built Sidecar ..... £45  
DOUGLAS, 1915, 2½ h.p., War Office Model ..... £50  
ALLDAYS-MATCHLESS, 1915, 3½ h.p., coach-built combination, 3-speed, lamps and horn ..... £45  
TRIUMPH, 1914, 4 h.p., 3 speeds, lamps, and horn ..... £43  
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## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD 1914 6 h.p. Combination, 3 lamps, other accessories, £55; and another, £52/10; deferred payments by arrangement; thoroughly reliable mounts.—Lamb's, below.

ENFIELD 1915 8 h.p. Combination, all accessories, tip-top order, £66/10; also another, electric equipment, hood and screen, battery ignition, £69/10; deferred terms, exchanges.—Lamb's, below.

ENFIELD 1916 6 h.p. Combination, 3 lamps, speedometer; £79/10.—Lamb's, below.

ENFIELD—Seven 1917 3 h.p. touring T.T. models, 2-speed, kick start models, actually in stock, 55 gns. each.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5332]

ENFIELD Combination, 90 gas.; 3 h.p. twin, £57/10; 2-speed, 2-stroke, £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0858]

1916½ Twin 2-speed Kick Starter 3 h.p. Enfield, latest belt rim front brake, Palmer tyres, 2 lamps, also brand new Stewart horn, tool kit, outfit, etc.; bargain, £46.—Rich, Cosham, Portsmouth. [X2110]

ENFIELD Twin, 1914, 2½ h.p., 2-speed, kick start, chain drive, good condition, thoroughly overhauled, not done 250 miles this year, new back tyre, accessories £30, near.—Box 507, c/o The Motor Cycle. [X2267]

ENFIELD Coachbuilt Combination, 1915½, 8 h.p., perfect condition, all accessories, speedometer, with extra interchangeable tradesman's box carrier, easy detachable; 70 gns.—Godfrey, 58, Battersea Bridge Rd., S.W. [5493]

ENFIELD 6 h.p. Combination, purchased new 1916, speedometer, lamps, tools, indistinguishable from new, silent and powerful, and guaranteed perfect throughout; 65 gns., accept Douglas or Triumph part.—280, Caubertwell Rd., S.E. [5437]

ENFIELD 6 h.p. Combination, with spring handlebars, P. and H. lamps and generator, and D.A. cylinder, Lucas horn, Watford speedometer; £65.—Enfield Agents, Pulling, Half Moon Garage, London Rd., Croydon. Phone: 1619. [5401]

ENFIELD Combinations, new models in stock; 6 h.p., 2-speed, £94/10; your present machine can be taken as part payment. We supply on the best cash, exchange, or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

1916 3 h.p. Enfield, 2-speed, specification as list used 50 miles only, and as new; cost 55 gns., accept £48; this machine is offered for sale as the owner, wounded in the leg, finds it impossible to use a motor cycle.—Layton's Garage, Bicester, Oxon. [X2167]

ROYAL Enfield 6 h.p. Motor Bicycle and Sidecar, in splendid condition, new September, 1915, hood, screen, head and rear lamps, horn, spare tyre and tools, only done about 3,000 miles; owner has left for military service; £70, cost over £90.—Smith, 9, Strand, Torquay. [X2019]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all 1917 models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2½ h.p. 2-stroke; prices from 42 gns. [X2170]

## Excelsior.

EXCELSIOR, 8 h.p., and racing sidecar, 1914; £50.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5347]

EXCELSIOR, 1916, 7 h.p., 3-speed, and coach sidecar, both new; £77/10 cash, bargain.—Motor Exchange, Horton St., Halifax. [5472]

EXCELSIOR (American), 4½ h.p., clutch model, 1914; rare bargain, £18/10, no offers.—Brown, 554, High Rd., Tottenham, London, N. [5282]

1913 Excelsior, 4½ h.p., 3-speed hub, clutch, kick start, lamps, horn, etc., excellent condition throughout, also 1916 Phoenix coachbuilt sidecar, wind screen, and apron; £42, or exchange modern Douglas and about £20.—Saunders, 342, Prince Regent Lane, Custom House, E. [5439]

## Fafnir.

3 h.p. Fafnir, new piston, re-hashed throughout, new belt, new tyre, new B. and B. carburettor, standard lamp, ready to ride anywhere; genuine bargain, £57/5.—Clark, Garage, Long Melford, Suffolk [5244]

## F.N.

6 h.p. Shaft Driven F.N., in good condition; worth £20, sacrifice £10/10; must sell.—116, Croydon Rd., Lower Edmonton. [5253]

4-CYL. 50X57 5 h.p. F.N., perfect condition, latest improvements, 115 m.p.g.; inspection invited; bargain, £16/10.—26, Bnlstrose Av., Hounslow. [5497]

4 h.p. F.N., Bosch, B. and B., low, new Avons, unpunctured, stand, carrier, footboards, sound order; £13/10, close offer.—Barlow, Plumber, Monton, Manchester. [X2201]

F.N., 4-cyl., in excellent condition, with coachbuilt sidecar; best cash offer taken; exchanges and terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5350]

## Government.

GOVERNMENT 2½ h.p. 1916 Lightweight; £23/10; part exchange considered.—9, Holly St., Smithwick. [X2202]



## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**HARLEY-DAVIDSON** Combination, 7-9-h.p., 1915, speedometer, accessories, perfect; offer—X., 64, Wellgate, Rotherham. [X2141]

**HARLEY-DAVIDSON** 1916 Combination, run 500 miles only, equals new in every respect; £80.—6, Warren St., London. [5585]

**RIDER TROWARD**, 78, High St., Hampstead.—Harley-Davidson, 1915, 7-9-h.p., 3-speed, dynamo lighting, 20 gns.; sidecar, 58 gns. [5381]

**1915 Harley-Davidson**, 11½, and Gloria sidecar, excellent condition; £65, or exchange.—Howes, 19, Limburg Rd., Clapham Junction, S.W. [5426]

**HARLEY-DAVIDSON**, 7-9-h.p., coachbuilt sidecar, 1915, perfect throughout; £67; seen London.—Pett, 5, Bonheur Rd., Bedford Park, W. [5265]

**HARLEY-DAVIDSON**, 7-9-h.p., new August, 3-speed, unsold; too powerful for owner; bargain, 60 gns., or offer.—Sutton, Little Clacton, Essex. [X2269]

**1915 Harley-Davidson Model F**, with Gloria sidecar (coach), very little used, complete, lamp, etc.; £62/10.—Stacey, 12, Ecclesall Rd., Sheffield. [X1901]

**LATE 1915 Harley-Davidson** Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

**COLMORE Depot, Birmingham, Manchester, Liverpool, Leicester**, for immediate delivery of all models of Harley-Davidsons and spare parts. [0802]

**HARLEY-DAVIDSON**, 7-9-h.p., 11½, electrically equipped, bought last June, owner going overseas; £65, or near offer.—Horsfield, 33, Carlton Rd., Derby. [X2143]

**HARLEY-DAVIDSON**, new June this year, 7-9-h.p., 3-speed, Montgomery coachbuilt sidecar, £70; also commercial body, £5.—Boyd, Baker, Enfield Rd., Leeds. [X2260]

**HARLEY-DAVIDSON** Late 1915 Combination, 7-9 h.p., electrically equipped, 3-speed, clutch, kick start, spares, tools, all in excellent condition; £67.—Priest, Connaught, Av., Frinton-on-Sea. [5416]

**HARLEY-DAVIDSON** 1915-16 Coach Combination, 7-9-h.p., mag., 3 speeds, clutch, overhauled by Harley-Davidson's service 62 gns.—Wandsworth Motor Exchange, Ebner St. Wandsworth (Town Station). [5570]

**HARLEY-DAVIDSON** 1916 Models delivered from stock on the best terms for cash, exchange, or easy payments; sidecars in stock to fit; get in touch with us before deciding.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481]

## Hazelwood.

**HAZELWOOD**, 1914, 6-h.p., coachbuilt sidecar, lamps, and horn; £55.—Fryer's, Hereford. [5276]

**HAZELWOOD** Combination, 3-speed, perfect order; £50.—Warren's, 386, Euston Rd., N.W. [5554]

## Henderson.

**HENDERSON**, 4-cyl., 2-speed, chain drive; £46/10, or exchange.—Motor Exchange, Horton St., Halifax. [5473]

## Humber.

**1914 3½-h.p. Humber**, splendid running order; £18/10.—Driver, Barrington, Burford, Oxon. [5304]

**HUMBER**, 3½-h.p., 2-speed gear; sale or exchange 2-stroke.—Nelson, Gloddaeth St., Llandudno. [X2188]

**HUMBER**, 1914, 6-h.p., water-cooled, 3-speed, sidecar, just overhauled; £85.—Fryer's Garage, Hereford. [5274]

**1912 3½-h.p. Humber**, B. and B., Bosch, Roe 2-speed; £14, bargain.—Pearce, Woodmanote, Cirencester. [5314]

**1914 3½-h.p. 3-speed Humber**, lamp, etc.; £25; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0863]

**HUMBER**, 3½-h.p., 1912-13, 2-speed, engine re-bushed, new gears fitted.—Deacon, 8, High St., Crayford. [5495]

**1917 3½-h.p. Humber**, horizontally opposed twin, 3-speed gear, in stock; £75.—Wilkin, Hunters Bar, Sheffield. [X1912]

**1917 6-h.p. Humber**, water-cooled horizontally opposed twin, 3-speed gear, in stock; £89/5.—Wilkin, Hunters Bar, Sheffield. [X1911]

**1913 3½-h.p. 3-speed Humber**, Canoelet sidecar, lamps, etc., new Dunlop tyres, very little used; £45.—64, Tynemouth Rd., Tottenham. [5379]

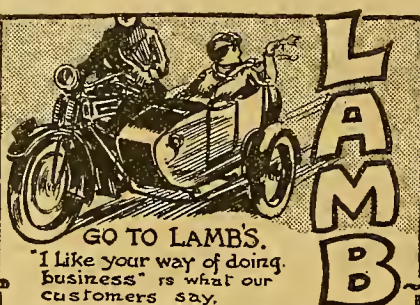
**1913 Humber**, 2-speed, free engine, 3½-h.p., all accessories sidecar upholstered green; cash £21; called up—162, Acton Lane, Brixton. [5254]

**HUMBER** Lightweight, excellent condition, almost equal new; bargain, £13/10.—Armstrong, 17, Goldhawk Rd., Shepherd's Bush, London. [5491]

**HUMBER** Combination, 3½-h.p., 2-speed, free, mag., B. and B., fast, in fine order and condition; £22.—Head, 31, Hamthorpe Rd., West Norwood. [0870]

**HUMBER**, 1915, 3½-h.p., 3-speed, nearly new; special price, £57/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**HUMBER**, 2½-h.p., twin, 3-speed gear and free engine hub, very fast, and in very good order; £20.—Wallis, 49, High St., Saffron Walden, Essex. [X2229]



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## ACTUALLY IN STOCK.

B.S.A., 4½ h.p., chain drive, 1917 model (5 in stock) .....	£66 0
B.S.A., 4½ h.p., belt-cum-chain, 1917 model (4 in stock) .....	£64 0
ROYAL RUBY, 2-speed, 1917 model. Just arrived .....	£40 0
ROYAL RUBY, single-speed .....	£32 10
ENFIELD, 2½ h.p., 2-speed, 2-stroke .....	£44 2
ENFIELD, 3 h.p., k/start, 1917 (4 touring models in stock) .....	£57 15
ENFIELD, 3 h.p., T.T., 1917 model .....	£57 15
ENFIELD 6 h.p. 1917 Combination .....	£96 12
ENFIELD 8 h.p. Comb'n, 2-seater Sidecar, hood and screen .....	£105 2
HARLEY-DAVIDSON, Model 16F, Sidecar .....	£102 9
NEW HUDSON, 2½ h.p., 2-sp., 1917, Mod. C .....	£38 0
LEVIS, 2½ h.p., Popular .....	£32 0
LEVIS, 2½ h.p., Model E, 2-speed Enfield gear, rustless rims .....	£47 10
CALTHORPE-J.A.P., 2-speed Enfield gear, 1917 (3 in stock) .....	£39 18
CONNAUGHT, 2½ h.p. (new 1916), shop-soiled, lamp, horn .....	£29 10

## SECOND-HANDS.

ENFIELD 6 h.p. 1916 Combination, 3 lamps, speedometer .....	£79 10
ENFIELD 6 h.p. 1914 Combination, wind screen, lamp, horn, fine order .....	£52 10
ENFIELD 6 h.p. 1915 Combination, lamp, horn, speedometer .....	£66 10
ENFIELD 6 h.p. 1914-Combination, 2-sp., and accessories .....	£55 0
ENFIELD 6 h.p. 1915 Combination, elec. equip., hood, screen, battery ignition .....	£68 10
MATCHLESS, 7 h.p., late 1914, Model 8B, new Canoelet Sidecar .....	£73 10
ALLDAYS MATCHLESS, 2½ h.p., single-sp. RADCO, 2½ h.p., 1914, single-speed .....	£14 10
RADCO, 2½ h.p., 1915, single-speed .....	£15 15
ELSWICK, 3½ h.p., 1914, water-cooled, 3-speed, coach Sidecar, and access... ..	£29 10
ALLON, 2½ h.p., 1915, 2-speed, Cowey speedometer, elec. equip., accessories. .....	£36 10
ALLDAYS ALLON, 1915, single-speed, all accessories, original tyres .....	£27 10
ALLDAYS ALLON, 1915, single-speed, lamp, horn, and accessories .....	£28 10
ALLDAYS ALLON, 1915, 2-speed, clutch, and accessories .....	£36 10
DOUGLAS, 1913, 2½ h.p., 2-speed, clutch, good tyres, all accessories .....	£36 10
DOUGLAS, 2½ h.p., late 1913, 2-speed .....	£31 10
RUDGE, 3½ h.p., 1912, 2-speed, and cane Sidecar, all accessories .....	£25 10
RUDGE Multi, 3½ h.p., 1914, all access., splendid trim .....	£36 10
JUNO-VILLIERS, 2½ h.p., 1916, ridden 100 miles, all accessories .....	£33 10
COVENTRY EAGLE, 2½ h.p., 2-sp., 2-str., superior finish. Special price .....	£39 10
JAMES, 2½ h.p., 2-speed, new tyres, and accessories .....	£31 10
B.S.A., just arrived, 1917 Model K, with genuine B.S.A. No. 2 sidecar and wind screen .....	£86 15

## CARS.

FORD, 1915, 2 wind screens, 4 shock absorbers; cost £170 21 months ago; used fine weather only .....	£110 0
HUMBERETTE, 1913, air-cooled, 3 speeds and reverse, hood, screen, lamps ..	£52 10
SAXON, 11 h.p., 1915, 2-seater, Stepney, speedometer, lamps .....	£112 10

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## MOTOR CYCLES FOR SALE.

## Humber.

**HUMBER** Underlung Combination, 1914, 3½-h.p., 3-speed, clutch, special vaporiser for paraffin, 110 m.p.g., take 3 anywhere; owner joined up; £37, offer; must sell.—Seen 46, Woodgrange Rd., Forest Gate. [5285]

## Indian.

**INDIAN** 1916 Powerplus Combination, run 318 miles only; £90, a bargain.

**INDIAN**, 1915, 7-9-h.p., T.T., as new; £45.

**INDIAN**, 1915, 3½-h.p. twin, almost new; £40.—6, Warren St., London. [5586]

**INDIAN**, 7-h.p., 1914, sidecar; £55.—Letters, Wade, H.A.C. Cedars, Belmont Hill, Lewisham. [5306]

**1913½ Indian** Combination, spring frame, 2-speed; £37.—230, Archway Rd., Highgate, N. [5408]

**INDIAN**, 5-6-h.p., fixed gear, enamelled red; bargain, £35, or exchange.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5340]

**INDIAN**, 1915, 5-h.p., 3 speeds, clutch, and kick starter, usual accessories; £52.—P. J. Evans, John Bright St., Birmingham. [X2180]

**INDIAN** 1915 7-9-h.p. Combination, complete, and in guaranteed condition; £60, genuine bargain.—Layton's Garage, Biester, Oxon. [5543]

**INDIAN**, 5-h.p., 1915, 3 speeds, and clutch, sporting sidecar, excellent condition; £49.—Clayton, Melbourne Rd., Wallington, Surrey. [5435]

**INDIAN**, 1915, 7-9-h.p., 3-speed, kick start, spring frame, little used; £48 cash; exchange lighter machine.—64, Doggett Rd., Catford. [5421]

**INDIAN**, 1915, 7-9-h.p., 3 speeds, kick start combination; £50, or exchange Douglas.—W. Stradwick, 34, Ashvale Rd., Tooting, S.W. [5403]

**1916 7-h.p. Powerplus Indian** Coachbuilt Combination, new condition, 3-speed, very fast; bargain, £75.—G.O., 131, White Hart Lane, Barnes. [5065]

**1915 Indian** Combination, 7-h.p., fast and powerful, lamps, horn, speedometer, in nice order and condition; £67.—Dalmer, 30, Walton Rd., Liverpool. [X2187]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X2178]

**INDIAN**, 7-9-h.p., Nov., 1915, 3-speed, kick starter, electric lighting and horn, Braubach coach sidecar, as new; £78, or near offer.—Milne, Gairlock, Earlston Av., Coventry. [X2108]

**INDIAN**, Sept., 1915, 7-9-h.p., 3-speed, electrically equipped, 20 gns. sidecar, screen, hood, luggage carrier, numerous accessories; 80 gns.; seen by appointment.—38, The Drive, Golders' Green. [5432]

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Indian, 5-h.p., 3-speed, clutch, kick start, T.T., mileage 2,500, as new, 48 gns.; another similar, with underlung coachbuilt sidecar, 51 gns. [5382]

**INDIAN** 1915-16 (Genuine) Coach Combination, 5-h.p. twin, mag., 3 speeds, speedometer, lamps; trial; greatest bargain known; 49 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5571]

**1916 Indian**, 5-h.p., 3-speed model, clutch, kick start, fitted with coachbuilt sidecar, lamps, and all accessories, very little used, equal to new; price £60.—R. Bamber and Co., Ltd., Birkdale, Lancs. Tel.: 44. [4956]

**INDIAN** Powerplus, 7-h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, with lamps and horn, £78.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X2179]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 7-h.p. T.T. Powerplus, £75; 7-h.p. 3-speed spring frame, and electric light, £78; special de luxe 7-h.p. spring frame, £78; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X2175]

## James.

**COLMORE Depot**, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**JAMES** 1914 4½-h.p. Coach Combination, counter-shaft gear, and accessories; £44/10.—Motor Exchange, Horton St., Halifax. [5474]

**JAMES**—P. J. Evans, John Bright St., Birmingham.—Immediate delivery all models, including 2-stroke 3½-h.p. twin and 4½-h.p. big single. [X2172]

**1916 James** Combination, 4½-h.p., 3-speed, Canoelet S.C., 3 new lamps, only done 100 miles; price £71/10; owner joining up.—Walters Stores, 58, Crown Rd., St. Margarets, E. Twickenham. [5296]

**JAMES** 1916 Combination, 4½-h.p., 3-speed, Lucas dynamo electric lighting set and horn, tools, spare tyres, chain, and exhaust valve, parts, etc., complete, 70 gns.—556, Lordship Lane, E. Dulwich. [5503]  
Phone: 363 Sydenham.

## J.A.P.

**J.A.P.** 5-6-h.p. Twin, coach sidecar, 2 speeds, good tyres, ready ride away; £18/18.—1, Ebner St., Wandsworth. [5572]



## MOTOR CYCLES FOR SALE.

## J.A.P.

1914 4.5-h.p. Twin J.A.P. spring frame, 3 speeds, lamps, horn, speedometer, cane sporting sidcar and wind screen; in good condition.—Roberts, 16, Peterborough Rd., Parsons Green, S.W. [5252]

## J.E.S.

J.E.S. strong frame, good condition; £12.—Write, Smith, St. Stephen's Vicarage, East Ham. (D) [X1907]

## Kerry.

RIDER TROWARD, 78, High St., Hampstead.—1912 Kerry-Abingdon, 3½ h.p. engine, as new; 19 gns. [5383]

## Levis.

LEVIS, latest, brand new, single and 2-speed models in stock.—Moss, Wem. [X2220]

1915 Levis, 2-speed, in good condition; offers.—Box L2, 590, c/o The Motor Cycle. [4942]

BARGAIN.—1915 Levis, 2-speed, perfect condition; £26.—53, Brownhill Rd., Catford. [5487]

1916 Levis, 20 gns, complete; called up; trial given.—Miller, 62, Hampstead Rd., N.W. [5263]

LEVIS, 1916, run 150 miles only, equals new in every way; £26.—5, Warren St., London. [5584]

LEVIS, 2½ h.p., lamp, horn, speedometer, very little used; £26.—38, Scotland St., Ellesmere, Salop. [X2197]

LEVIS, 1915, 2½ h.p., new condition, pan saddle; £19/10.—Bright, 6, Finchborough Rd., Tooting. [X2214]

1916 Popular and Model E Levis; delivery from stock; cash or terms.—Wilkin, Hunters Bar, Sheffield. [X1916]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

LEVIS, 2½ h.p., perfect running condition; £18.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5347]

LEVIS Popular, 2½ h.p., 1915, splendid condition; £18; all accessories.—Rutherford, 19, Stanton Rd., Wembley. [5302]

## Matchless.

SPORTING Matchless, 4½ h.p. twin, o.h.v., excellent condition; £28.—Box L2, 638, c/o The Motor Cycle. [5568]

MATCHLESS 6-h.p. 2-speed Coach Combination; £42/10, or exchange.—Motor Exchange, Horton St., Halifax. [5475]

MATCHLESS 1915 Combination, magnificently equipped, practically new condition.—Box L2, 639, c/o The Motor Cycle. [5293]

1914 Matchless Combination, 7-h.p. M.A.G., 3-speed countershaft, horn, lamps, spares; £70.—Swan, Bridge St., Kelso. [X2272]

1913 8-h.p. Matchless, 2-speed countershaft, chain drive, Montgomery sidcar, first-class order; £42.—Stacey, 12, Ecclesall Rd., Sheffield. [X1900]

1915 8-h.p. Matchless Combination, in new condition, tyres good, all accessories and spares, only wants seeing; £85.—Harvey Hudson, South Woodford. [4487]

RIDER TROWARD, 78, High St., Hampstead.—1913-14 Matchless combination, 8-h.p., 2-speed, clutch, kick start, electric light, speedometer; 35 gns. [5384]

MATCHLESS Combination, 6-h.p., purchased new May, 1915, fully equipped, smart combination, runs perfectly, new condition; 47 gns.; exchanges.—245, Hammersmith Rd., London, W. [5364]

MATCHLESS Model 8B, and brand new Canelet sidcar model D4 attached, all accessories, splendid outfit; £73/10; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green, 'Phones: Walthamstow 169, and Hornsey 1956. [5336]

## Militaire.

MOTOR Cycle Militaire, 10-h.p., 4-cyl. model, 3-speed gear box and reverse, for sidcar use, kick starter, many accessories and spare parts, in new condition; a motor cycle on car lines; £65.—Vare and de Freville, Ltd., 6, Gt. Marlborough St. (Oxford Circus), W. [5233]

## Minerva.

3½ h.p. Minerva; coil ignition, perfect; £7/10.—Lobb, 32, Faringdon, Berks. [5504]

4½ h.p. Twin Minerva, 2-speed, watertight mag., Sen-42 spray, extra tank, belts; £18; 2-stroke wanted.—25, Farley Rd., Catford. [5400]

2-h.p. Minerva, vertical engine, m.o.v., Bosch, B. and B., re-modelled frame, splendid order, good climber; £10.—Swallow, Green Lane, Bolton. [X2226]

## Moto-Reve.

MOTO-REVE Twin-cyl. Lightweight, mag., B. and B., horn, and spares; £10, offers.—79, Adelaide Rd., Leyton. [X2135a]

## Motosacoche.

MOTOSACOCHE, 2½ h.p. V twin, M.A.G. engine, Bosch, Anaco, Druids, new belt, tyre; £10.—Appleton, c/o Garty, 16, Balfour Hill, S.W. [5514]

## New Hudson.

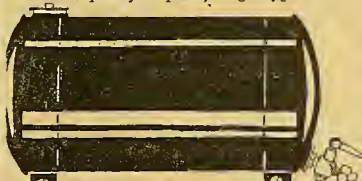
1914 4-h.p. New Hudson, 3-speed, perfect; £36.—53, Brownhill Rd., Catford. [5468]

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Specially designed for PARAFFIN CONVERSIONS, with large filler cap, union cock, T piece, and two feet of copper tubing, the whole forming a complete outfit. Capacity 1 quart, length 7½ in.



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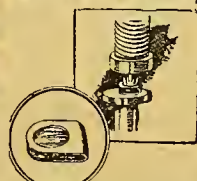
Can also be supplied in Vertical type, for attaching to down saddle tube, at same price.

### KEMPSHALL new heavy ANTI-SKID COVERS at 26 x 24 18/- 26 x 23 19/6

are an opportunity you should not miss.

YOU can overcome the wear on the valve gear of your engine in 10 secs. by the use of the

### Service Valve Tappet Adjusters



Made in following thicknesses:  
"048, "036,  
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Price 2d. each or 6d. per set of 4.

### Second-hand Accessories of all kinds

—and Motor Cycles—in good condition wanted for cash or exchange.

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### "ALL WEATHER" BELT



Lasts twice as long as rubber, is more efficient, and its great flexibility saves 20% of the engine power.  
3 in. 2/- per foot.  
3 in. 2/3 do.  
1 in. 2/6 do.  
1½ in. 2/9 ditto.

Shop-soiled, spliced, and two-length Belts at two thirds of above prices in certain sizes.

## TRADE SUPPLIED.

Telephone: 6430 Holborn.



## MOTOR CYCLES FOR SALE.

## New Hudson.

1912 New Hudson and Sidcar, perfect running order; £32.—Rich, Shitall, Salop. [X2104]

NEW Hudson, 2½ h.p., 3-speed, new gears just fitted, Palmer tyres; £23.—Deacon, 8, High St., Crayford. [5494]

RIDER TROWARD, 78, High St., Hampstead.—1913-14 New Hudson, 3-speed, new coachbuilt sidcar; 29 gns. [5385]

NEW Hudson, 2½ h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co. Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

NEW Hudson, 1914½, 3½ h.p., 3-speed, clutch, and coachbuilt sidcar, excellent condition; £43.—D. Milles, 2nd-Lt., Oliver's Hydro, Buxton. [4878]

NEW Hudson, latest model C, 2-speed, just arrived; £38/10; deferred terms and exchanges by arrangement.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 169, and Hornsey 1956. [5335]

NEW Hudson, 3½ h.p., 3-speed, thoroughly overhauled, and several parts renewed, A1 condition, insurance policy included; a bargain, £30; exchanges and terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5348]

## New Imperial.

NEW Imperial, 8-h.p., 2-speed; £35.—Warren's, 386, Euston Rd., N.W. [5556]

NEW Imperial, latest 2½ h.p. and 6-h.p. models in stock.—Crow Bros., Guildford. [4961]

COLMORE Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

NEW Imperial, 2½ h.p., 2 speeds, variable ignition, 1915, excellent condition; £26.—J.K., 4, Holland Park, W. [5232]

NEW Imperial, 2½ h.p., July, 1916, 800 miles only, 2 speeds, speedometer, etc.; £33.—Mylan, 197, London Rd., W. Croydon. [5534]

NEW Imperial-Jap, 1914, 2-speed, free, lamps, horn, footboards, reliable machine; £22.—Newnham, 225, Hammersmith Rd., W. 'Phone: 80. [5444]

1914 (late) 2½ h.p. New Imperial, 2-speed, horn, Bosch, new tyre and belt, tools, excellent condition; £24; also see A.J.S.—Hillary, The Peak, Basingstoke. (D) [5261]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperial from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X2174]

## Norton.

1917 4-h.p. Norton Combination, De Luxe model.—Fryer's, Hereford. 85 gns. [5278]

NORTON 1917 Big Four Combination, brand new; actually in stock.—6, Warren St., London. [5587]

NORTON, brand new, 3-speed countershaft sporting combination, actually in stock.—Moss, Wem. [X2216]

1916 T.T. Norton, front and rear lighting set, complete, Philipson pulley; £52/10.—Plastow, Grimsby. [X2246]

RIDER TROWARD, 78, High St., Hampstead.—1916 (July) T.T. Norton, Philipson pulley, mileage 1,600, as new; 48 gns. [5386]

NORTON, 3½ h.p., T.T., very fast, 1916 cylinder, piston, new tyres, lamps, speedometer; £30.—23, Bowron's Av., Alpertown. [5407]

## N.S.U.

N.S.U. Combination, twin, 2-speed; £45.—Warren's, 386, Euston Rd., N.W. [5563]

N.S.U., 3-h.p., 2-speed, £14/10; 3½ h.p., 2-speed, £17/10; bargain prices.—Motor Exchange, Horton St., Halifax. [5476]

N.S.U., 3½ h.p., mag., m.o.v., splendid running order, and good condition throughout; £10, or near.—Farmer, 44, Cecil Rd., Upton Park, E. [5233]

N.S.U., 1914 model, spring frame and forks, 2 speeds, kick-start, and free engine, fitted with a coachbuilt sidcar, hood and screen, including all accessories; £35; guaranteed.—Wauchop's, 9, Shoe Lane, London. [5446]

## O.K.

O.K., 1916, 4-stroke, 2-speed, countershaft, elaborate accessories, spares, and tools, as new; £28.—Head, 31, Hainthorpe Rd., West Norwood. [0887]

## P. and M.

1913 P. and M. and cane sidcar, excellent condition, kick starter, Cowey, many spares; £35.—Gillman, 6, Upper Bridge St., Canterbury. [5418]

P. and M., 1913, 3½ h.p. coachbuilt combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4916]

## Peugeot.

5-h.p. 2-speed Twin Peugeot, fast, perfect order; photo free; £18, or exchange lightweight.—W. Gill, Grindelford, Sheffield. [5430]



## MOTOR CYCLES FOR SALE.

## Peugeot.

6 h.p. Peugeot Coach Combination, U.H. mag., Whittle, drip feed, £20; also Montgomery cane sidecar body, side entrance, £1.—29, Thornhill Rd., Lorton, N.E. [5433]

## Pope.

POPE, 1914, 4½ h.p., C.B. sidecar, 2 speeds, F.E., spares, tools, nearest £35; also lady's Triumph bicycle, nearly new, £6/10.—31, Ennersdale Rd., Hither Green. [5404]

## Precision.

PRECISION Junior, 2h.p., 1915, splendid condition, 2 speeds; £17.—7, Vale Terrace, Chelsea, S.W. [X2193]

## Premier.

PREMIER, 1912, 3½ h.p., 2-speed, £23/10; or with sidecar, £27/10.—Motor Exchange, Horton St., Halifax. [5477]

3½ h.p. Premier, 2-speed, F.E., generous allowance for Douglas or other lightweight.—Morgan, Hall, Seven Sisters. [X1910]

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

PREMIER, 3½ h.p., 1914, 2-speed countershaft, speedometer, coach sidecar; £35.—Mouser, Wheelwright, Tolleshunt D'Arcy, Witham, Essex. [5424]

PREMIER, 2½ h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Laytons' Garage, Bicester, Oxon. [X1847]

PREMIER, 3½ h.p., late 1914, with coachbuilt sidecar, all new tyres, speedometer, and lamps, in perfect condition; £40.—Redman, 13, Denhigh Place, Pimlico. [5370]

3½ h.p. Premier, late 1913, 3-speed hub gear, Milford 32 wicker sidecar, splendid condition, spares; £33.—Millsom, Ivydene, Argyle Rd., Causeway, Fishponds, Bristol. [X2270]

PREMIER, 3½ h.p., free engine, Bosch, enamel, plating splendid, lamps, adjustable tappets, perfect, spare tyre; £20, lowest.—Gardner, 31, Olive Mount, Trammere, Birkenhead. [X2198]

PREMIER, 1914, 3½ h.p., War Office model, 3-speed countershaft gear; price and all particulars on application; exchanges or terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5349]

## Quadrant.

QUADRANT, 3½ h.p., spring forks, mag., good tyres and belt, good order, and fast; £12.—14, Dodbrooke Rd., West Norwood. [0872]

QUADRANT, 4½ h.p., 3-speed, solo, September, 1914, and improvements, Pillion seat, perfect; £32.—50, Thornhill Rd., Barnsbury, N. [5399]

QUADRANT, 1912, 4h.p., 2-speed, and sidecar, £29/10; 1913 7-h.p., countershaft gear, chain drive, coach sidecar, £45/10.—Motor Exchange, Horton St., Halifax. [5479]

## Radco.

RADCO, 1916, 2-speed, 2-stroke, all accessories, new this month; owner called up; splendid running; bargain, £50; seen before 6.30.—104, Rotherhithe New Rd., Rotherhithe. [5288]

RADCO, 1914, single-speed, 15 gns.; and 1915 single-speed, 16 gns.; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phone: Walthamstow 169, and Hornsey 1956. [5333]

## Rex.

1911 6h.p. 2-speed Rex and coachbuilt sidecar, fine condition; £18.—Wilkin, Hunters Bar, Sheffield. [X1917]

1912 6h.p. 2-speed Rex Sidette, condition like new, lamps, and horn; £26.—Wilkin, Hunters Bar, Sheffield. [X1914]

REX 1912 6h.p. Combination, 2 speeds, free engine, handle starting, good order; £25.—Plastow, Grimsby. [X2222]

REX 5-6h.p. Twin, clutch model, tyres and Service belt new, in fine order; £17.—14, Dodbrooke Rd., West Norwood. [0873]

REX, 3½ h.p., mag., spring forks, re-enamelled, good tyres, in good order; £10.—Head, 31, Hainthorpe Rd., West Norwood. [0869]

WONDERFUL Opportunity.—2½ h.p. lightweight Rex, Bosch mag.; must sell at once; been stored away two years; first £10 secures.—Edger, House, Sheffield Rd., Chesterfield. [X2185]

REX 7h.p. Twin, handle starting, £23/10; 1913 6h.p. 2-speed Rex Sidette, £36/10; 3½ h.p., mag-neto model, £14/10; 5½ h.p. twin, £13/10.—Motor Exchange, Horton St., Halifax. [5480]

REX Combination, 6h.p., in very good order, recently overhauled; owner joined army; must sell; £30, or nearest offer; seen by appointment.—Oldroyd, China Merchant, New Rd., Middletown, Wakefield. [X2159]

1913 6-7h.p. Rex Combination, handle starting, tyres as new, Whittle belt, lamp, and speedometer, many spares, not done 2,000 miles, plating and enamel as new; £40.—B., 39, Holmwood Rd., South Norwood. [5356]

## Rover.

ROVER Combination, free engine; £35.—Warren's, 386, Euston Rd., N.W. [5558]

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2½ h.p. LEVIS, 2-sp., Model E, chain drive	£47 10
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6 h.p. ENFIELD Combination, elec. equip.	£110 5
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2½ h.p. ENFIELD, 2-stroke, 2-speed	£44 2
7 h.p. INDIAN, Model C, 3-speed	£78 0
5 h.p. INDIAN, Model B, 3-speed	£70 0
4½ h.p. B.S.A., Model H	£66 0
4½ h.p. B.S.A., Model K	£64 0
2½ h.p. DIAMOND-J.A.P., Enfield 2-sp. gear	£40 19
2½ h.p. O.K. JUNIOR-J.A.P., 2-speed	£38 0
2½ h.p. CALTHORPE-J.A.P., 2-stroke	£32 11
2½ h.p. EXCELSIOR, 2-stroke, 2-speed	£39 5
2½ h.p. EXCELSIOR, 2-stroke, single gear	£30 18
2½ h.p. EXCELSIOR, Lady's Model	£46 10
2½ h.p. SPARKBROOK, 2-stroke, 2-speed	£40 0

## SPECIAL DESIRABLE SECOND-HAND BARGAINS IN STOCK AT OUR GLASGOW HOUSE.

An unrivalled collection of reliable second-hands, thoroughly overhauled, perfect in every detail, fully guaranteed for satisfactory running, including these:

CALTHORPE, 4 h.p., 1916, with Sidecar	£60 0
INOIAN, 7 h.p., 1912, 2-speed, and Sidecar	£36 0
HOBART, 2½ h.p., 1915, 2-str., 2-sp., shop-soiled only, worth special notice	£29 10
DOUGLAS, 2½ h.p., 1914, T.T., 2-speed	£34 0
NORTON, 3½ h.p., T.T., extra value	£23 0
CLYNO 6 h.p., 1915 Comb., detach. wheels	£68 0
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Some of the choicest values in second-hand bargain offers, every one a money saver and sure to give the greatest satisfaction.

IVY, 3½ h.p. Twin, very fast	£28 0
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CALTHORPE, 2½ h.p., 1916, 2-str., 2-sp., shop-soiled only, worth special notice	£26 10
CALTHORPE-J.A.P., 1915, 2-speed	£27 0
SPARKBROOK, 2½ h.p., 1915, 2-speed, 2-sp.	£27 10
RUDGE, 3½ h.p., 1912, 2-speed	£27 10
INDIAN, 2½ h.p., 1916, 2-str., 2-sp., kick	£44 0
RUDGE, 3½ h.p., 1913, Multi gears	£35 0
INDIAN, 5 h.p., 1916, 3-speed	£53 0
INDIAN, 7 h.p., spring-frame and Sidecar	£45 0
B.S.A., 4½ h.p., 1914, 3-sp., kick, & S/car	£48 10
DOUGLAS, 2½ h.p., 1915, Mod. V, 3-sp., kick	£48 10

Many others slightly used, at really surprising prices. Full Lists free.

## MOTOR FUEL.

Unequalled values in the most successful brands. Bealco, 2/6 gal. Best Petrol Mixing Fuel, 2/- gal. Doubles your petrol allowance. Splendid for efficiency.

**ALEXANDERS**

113-115, LOTHIAN RD., EDINBURGH.  
272-274, GT. WESTERN RD., GLASGOW.

## MOTOR CYCLES FOR SALE.

## Rover.

ROVER, new 1917 latest combinations, solo, and T.T. models in stock.—Moss, Wem. [X2217]

1917 3½ h.p. Rover, 3-speed, kick starter, in stock; £69/10.—Wilkin, Hunters Bar, Sheffield. [X1913]

ROVER, 3½ h.p., clutch, with nearly new Watsonian wicker torpedo sidecar; £30.—Lloyd, Lewes. [5428]

ROVER, 1917 model, brand new, unused, 3-speed gear; must sell, joining colours; what offers?—No. J.2.621, c/o The Motor Cycle. [5249]

ROVER Combination, 1914, 3 speeds, fully equipped, equals new, run 2,500, £45; another at £40; a 1916 T.T., almost new, at £40.—6, Warren St., London. [5575]

ROVER, T.T., 1915 model, Philipson, pulley; price 40 gns.; smart, fast, and guaranteed mechanically sound, fully equipped.—Wauchope's, 9, Shoe Lane, London. [5447]

ROVER, 3½ h.p., 3-speed countershaft gear, new model in stock; £66/10; cash, exchange, or easy payment terms.—Elce and Co., 15-16, Bishopsgate Ave., Canemile St., E.C. [0491]

1917 Rover Combination, brand new latest model, with all latest improvements; £89/9; willingly entertain Douglas in exchange.—Robinson's Garage, Green St., Cambridge. [5507]

P. J. EVANS, sole Birmingham Rover agent.—Immediate delivery 1917 T.T., semi-T.T. models, with or without Philipson, also latest countershaft models.—87-91, John Bright St., Birmingham. [X2176]

## Royal Ruby.

ROYAL Ruby 2-stroke; £22/10.—Warren's, 386, Euston Rd., N.W. [5555]

ROYAL Ruby, 1917 model, just arrived, single speed, £32/10, 2-speed £40; deferred payments and exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phone: Walthamstow 169, and Hornsey 1956. [5329]

## Rudge.

3½ h.p. Rudge Multi; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0864]

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

RUDGE Multi, 1913, 3½ h.p., new tyres, in new condition throughout; £24.—6, Warren St., London. [5583]

1913 3½ h.p. Rudge Multi and coachbuilt sidecar, lamps, and horn, speedometer; £36.—Wilkin, Hunters Bar, Sheffield. [X1915]

RUDGE, 1912, 3½ h.p., 2-speed, coach sidecar, £29/10; 1913 3½ h.p. Rudge Multi, new coach sidecar, £37/10.—Motor Exchange, Horton St., Halifax. [5478]

REAL Snip.—Late 1913 Rudge, plating, enamel, etc., very good, used fine Sundays only; wonderful bargain, £19 secures, lowest; worth £26.—Bon Marche, Chesterfield. [X2184]

1914 T.T. Rudge, 3½ h.p., and 1916 sporting sidecar (coachbuilt), splendid condition, all accessories, new tyres and belt, 3 lamps, speedometer; £25, or nearest.—Ryan, 9, Waterland Rd., Lewisham, S.E. [X2237]

RIDER TROWARD, 78, High St., Hampstead.—1914 5-6h.p. Rudge Multi, underslung coachbuilt sidecar, 34 gns.; 1913 T.T. clutch Rudge, 24 gns.; 1913 T.T. Rudge, special machine, 23 gns. Exchanges.—'Phone: 5392 Hampstead. [5387]

## Sarolea.

SAROLEA, 2½ h.p., m.o.v., Bosch, B. and B., T.T. model; £11.—65a, Rosendale Rd., Dulwich. [5415]

## Scott.

COLMORE Depots, Birmingham, and Manchester, for Scott motor cycles. [0806]

1912-1913 Scott, new Chinchers, low mileage, fast; £24.—Boydell, Orford, Warrington. [X2088]

SCOTT and Sidecar, all accessories, in perfect order; £45.—Warren's, 386, Euston Rd., N.W. [5562]

SCOTT Combination, excellent condition, just overhauled; £35.—Miss Buttery, High St., Morley. [5317]

SCOTT, 1913, 3½ h.p., 2-speed, kick starter, in good running order; £25.—26, Seymour St., Euston Sq., N.W. [5237]

1912 Scott and Sidecar, Binks carburettor, lamps, etc., splendid running order; owner joining up; £35.—Hodgkinson, 12, Victoria Rd., Northwich. [X2224]

3½ h.p. 1914 Scott and Canelet sidecar combination, 4 lamps, hood, screens, accessories, etc., just overhauled, fine condition, suit lady; £40, no offers.—See 37, Atherton Rd., Forest Gate, London. [5251]

## Singer.

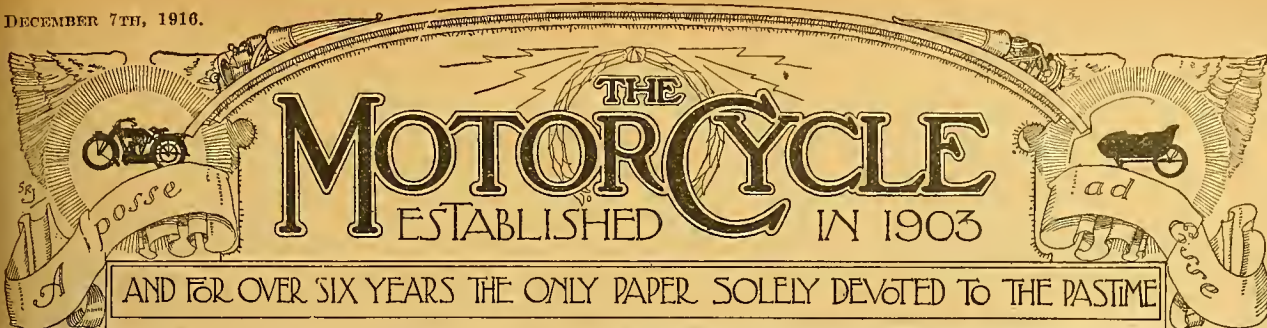
SINGER, 4h.p., 1913, 2-speed, perfect; £29.—7, South-western Rd., Twickenham. [5234]

SINGER 2-stroke, 2-speed, clutch, as new; £25.—Warren's, 386, Euston Rd., N.W. [5550]

SINGER, 1913, 3½ h.p., 3 speeds, coach sidecar; £33/10.—Motor Exchange, Horton St., Halifax. [5481]

2½ h.p. 1912 Singer, B. and B., Bosch, tyres as new, 22.95 m.p.g., marvellously reliable, perfect order and condition; £14, offers.—Draper, 49, Brook St., G-on-Mt., Manchester. [X1897]





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**Manufacture Under Permit.**

**S**INCE the issue of the Order by the Minister of Munitions prohibiting the manufacture of new motor vehicles unless armed with a permit, we have kept readers acquainted with the position from the manufacturers' point of view. Our enquiries of the past week show that, in the majority of cases, firms have been given a temporary permit of fourteen days' duration, this being, apparently, the plan of the particular committee controlling motor permits until its investigations are complete. After particulars have been sent in by the different firms still engaged on motor manufacture, inspections are held by officers appointed by the committee to confirm the statements made.

Already certain firms have received permission to carry on, the Government officials having satisfied themselves that the resources of the works, apart from the output of munitions where possible are being used to the best advantage in the national interest. So far from the Ministry of Munitions Order having thrown works into chaos, we have heard it stated on more than one hand by managers of firms that they are better off under the permit system than formerly. In addition to producing what munitions they can, they are materially assisting our exchange by concentrating their much-reduced motor cycle departments on Overseas trade, and, more important still, the two types of work are being performed with the cognisance of the authorities. We have already pointed out that many firms have thousands of pounds worth of complete stock on hand, which it would be serious to allow to stand aside depreciating in value, when, by the minimum amount of labour, they could be assembled and turned into gold. Whether the conditions may alter later so as to preclude even the smallest amount of labour being diverted from munitions no one can say definitely, but it is to be hoped that such a state of affairs may not be reached, both in the national interest and also from the

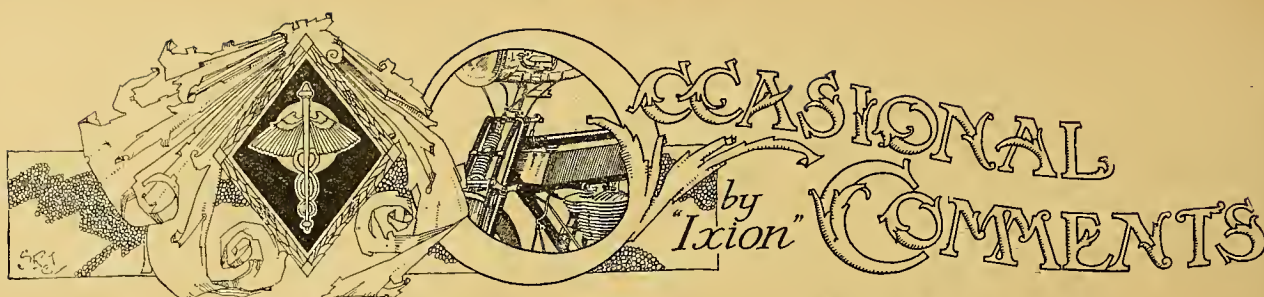
point of view of the British motor trade, which before the war held such an elevated position in the world's markets, but now severely crippled by the war. Even so, should a still greater effort be proved to be needed, the motor industry, which has already proved of inestimable value to the Government in its ready adaptation to the production of special engineering work, is patriotic to the core, and will readily put everything aside to concentrate the whole of its energies on war work.

Meanwhile it may be well to reassure those firms sorely tried by the new Order that the Government are not obstructionists, and recognise, as clearly as other business men, the paramount need of maintaining our exports as far as possible, and also of studying the national interests in regard to important established industries. As the work of the Permit Committee is growing, any firms who have applied for a permit and have not yet received any reply may reasonably carry on until their case has been considered.

**Sidecar Machine Guns for Cadets.**

**N**O doubt the excellent work rendered Overseas by the sidecar machine gun outfits which form the equipment of the Motor Machine Gun Service, has led the authorities to approve the formation of motor machine guns in connection with Cadet Corps. Henceforward the operation of machine guns and their rapid concentration at most favourable points by means of the mobile motor cycle and sidecar will form part of their training, and the youths are looking forward to the latest departure with no small amount of enthusiasm. Whilst the War Office has approved the formation and equipment, it is unable at present to provide the machines necessary, so that the officers commanding the unit are making an appeal for the motor cycles and sidecar chassis necessary. Good luck to this new official recognition of the handiness and good qualities of the sidecar.



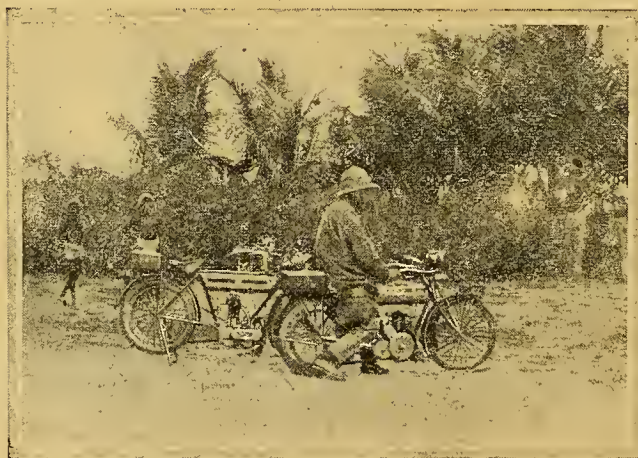


### An Active Service Hint.

A D.R. gravely informs me that when the little end bush of his engine gave out, he made a new one out of a Hun shell fuse, and successfully covered 500 miles on it.

### More Imagination, Please!

Why is it that your brilliant engineer so seldom possesses the necessary imagination to render his work ideal from a user's standpoint? If he plans a car engine it is usually perfectly accessible when it is lying on the bench, but requires a spanner incorporating eight universal joints and a lazytongs handle when it is installed in the chassis. If he designs a powerful twin he forgets (a) that it will probably be used with a sidecar, and (b) on which side the sidecar will go. As a consequence he mounts such items as the oil and petrol fillers and the carburetter on the sidecar flank. By means of long swan-necked funnels one may succeed in replenishing the tanks, but only a professional contortionist can handle the carburetter details comfortably unless the sidecar is first removed, and some of the best modern sidecars are as good as brazed up solid with the cycle frame. I know the modern craze is all for short inlet pipes and straight through carburetters with their communication trenches opening amidships; but most users would sacrifice a fraction of efficiency for an off-side carburetter with a top inlet, like the Longuemare-Hardy; and the excellent functioning of my Claudel vaporiser shows that a hot air supply will atone for many parasangs of inlet piping.



Natives of India interested in the photographer and the rider of a Baby Triumph. The beautiful palms will convey an idea of the climate of Madras, where the sender of the picture—Mr. Douglas Burch—resides.

### Sprung Sidecar Wheels.

It will be interesting to see whether the long tale of broken sidecar tubes in Six Day trials ceases when the sprung sidecar wheel is standardised. This sprung side wheel has been long in coming, chiefly because the chair could be sprung separately from the chassis, and the spring of the chair was not hampered by any dread of lateral sway. Consequently it proved a simple matter to spring the passenger so that he or she rode more comfortably than on most big cars, the designer having nothing but efficient springing to consider, and knowing practically the exact weight for which to provide, instead of having to compromise between extremes represented by one passenger, and by five passengers and luggage, as the car engineer must do. As soon as the passenger was comfortable, sidecar springing was rashly regarded as perfect, and nothing more was attempted, until engines and gears improved so much that the outfits began to be entered for big trials. Then we got large crops of broken frames. Even thus makers coquetted for a time with heavier tubing, girder trusses, and the substitution of mechanical designs with straight tubes for the old bent-up-anyhow affairs. Finally it has dawned on a few bright spirits that tubes are bound to fatigue when they are trussed rigidly tense, and then subjected to an eternal succession of very heavy shocks; and so the sprung side wheel as favoured by Millford and Gloria is appearing on heavy outfits, and our sidecar chassis should gradually cease to fracture. I am speaking here, of course, with an eye to the hard rider's machine. A potterer's sidecar, performing its mileage on easy roads, does not fracture very quickly; but set a driver to average legal limit over bad roads, and to lug his outfit round forty or fifty fierce hairpins in a week—then his frame and wheels will bear rapid testimony to their structural weaknesses. I notice that the War Office is beginning to realise the merits of the more modern sidecar chassis.

### Fact v. Fancy.

If critics were content to say that the bigger flat twins available for the public do not yet evince the same power of tackling heavy jobs on high gears which the best singles possess, I should not complain; for this allegation is true so far as my own wide and varied experience of such engines goes, and *pace* "CP450" these experiences afford a pretty solid basis for convictions. I have owned a couple of 4 h.p. Douglas machines, both of which were worked hard for twelve months, and my present A.B.C. has been in use for a longer period than that, and has probably covered seven or eight thousand miles. I think this interesting discussion is being weakened by two misconceptions, which are closely connected. The first



**Occasional Comments.—**

is the prevalent idea that a modern designer can get the best out of a new pattern or size of engine in three months work; the second is that "Road Rider" and myself pretend that the 500 c.c. twin is already—*hic et nunc*—ineffably and on all scores immensely the superior of the single cylinder, and of all rival types of engine. The first point requires a paragraph to itself, the second is an exaggeration; we both already prefer the existing flat twins to other types of engine at present on the market, and we both think that the superiority which we claim for it will increase rapidly as the possibilities of the type are better comprehended and developed.

**The Evolution of an Engine.**

In the ancient myth Pallas Athene leapt fully armed from the brain of Jove; and "CP450" has a similar explanation of the 350 c.c. Douglas, saying that the substitution of mechanical for automatic valves in 1912 is the only radical innovation it has undergone. I saw the prototypes of this engine years before it astonished the riding world in an ever-memorable End-to-end trial, and though I am not too familiar with its commercial history, I believe at least two firms absolutely failed to make anything of it before the Douglas Co. adopted it, and succeeded. A parallel example from the machine which "CP450" prefers—the Rudge—is germane here. The Rudge people made a great success of the "square" single-cylinder, and a few years ago they introduced a special 5-6 h.p. long-stroke 750 c.c. single, the early models of which were monsters of vibration. A rash judge, drawing premature deductions, might then have asserted that a long-stroke single-cylinder was an impossible monstrosity for inherent technical reasons, and he might have plumed himself on his acumen until he met, for example, the famous long-stroke Norton. The simple fact of the matter is that the designing of petrol engines is still but partially understood; an engineer takes a successful, even a brilliant, engine, and produces a fresh model, diversified by perhaps a single new factor, even a factor so simple as additional capacity; and he is mortified to discover that the new engine is disappointing. To quote another example, some clever makers made up their minds that if they could produce an engine which would set up records on the Brooklands test hill, that engine would win most of the competitions for them. They got their record, and found it impossible to adapt the engine either for speed on the flat, or even for ordinary touring purposes; they scrapped the entire design, and began all over again. Or again, two years ago I owned a 500 c.c. flat twin, which in the way of gear holding up hills was as good as the ordinary 500 c.c. single; and its designer, in trying to incorporate other much needed merits, has lost this quality. Perhaps next year he will manage to combine the lot. To sum up, many flat twins of the larger size are in the position occupied by the 350 c.c. flat twin before the Douglas people metamorphosed it, or the big 750 singles in their earlier days; they constitute a new-type of engine, and their detail design is not thoroughly mastered. They suffer from juvenility in some of their aspects, and in particular they rely overmuch on their gear boxes. But as they can already boast a better balance than any motor cycle engine except the four-cylinder, and as they

further develop quite as high an efficiency as the oldest and best understood types, it is hardly risky to prophesy that in the very near future they will embody all that is best in the singles and V twins, plus an excellence of balance which no previous type has ever attained or can hope to equal at any time.

**An Unfair Comparison.**

Another fallacy is being permitted to cloud our discussions. A number of correspondents actually contrast the road performances of T.T. singles with those of the bulky touring flat twins, replete with kick-starters, three and four speed gears, double springing, and other fittings which these speed merchants would not dream of employing in their road-burning work. "CP450," for example, calmly pits the Brooklands Special Norton against the tourist A.B.C., and even draws a price comparison. His other comparison with a belt-driven Rudge, geared  $5\frac{1}{2}$  to 1 on bottom, is hardly less unfair, seeing that his Rudge, good hill-climber as it is, could not face anything very stiff on such a gear, and is really a road racer, whereas his flat twin could clamber up precipices, and, though a go-anywhere mount, could hold its own tolerably well with the Rudge as a fast mount on the flat (he is, by the way, perfectly right in supposing that the later A.B.C. is perceptibly superior to his old model). Comparisons with T.T. singles ought surely to be drawn against flat twins of a similar type, e.g., the "H.T.T." model Brough or the "C" model A.B.C. The latter machine is one of which very few people have any experience, nor can they taste its paces till after the war. It scales 150 lb. ready for the road, has a two-speed gear with foot change, and can get nearly 80 m.p.h. In other words, it can cut out work for the fastest single ever made. I do not know whether there is any other T.T. special flat twin of the 500 c.c. size in existence; though I have heard rumours of a very fast road racing Brough, I never met it; and I suppose the scarcity of such models explains the calm humour with which correspondents pit machines which ought to be classed with such heavy go-anywhere mounts as a W.D. Triumph against stripped road racing specials.



THE RECOGNISED POSE FOR ARMY MOTOR CYCLISTS.

"Ten up" on a  $3\frac{1}{2}$  h.p. B.S.A. motor cycle. Cpl. Eaton, 58th Division, S.C.R.E., who sends us the photograph, does not state the speed he attained with his merry men aboard.



## THE CARE OF HUB GEARS.

Some General Hints on the Management of Change-speed Hub Gears.

**A**LTHOUGH the countershaft gear is the most popular form of change speed to-day, particularly for sidecar combinations, there still remain a large number of motor cycles in use which are fitted with three-speed hub gears, of which the best known, of course, are the Armstrong and Sturmev-Archer. These hub gears are perfectly satisfactory when the correct model is selected to suit the power of the engine, but, like any other piece of mechanism, they pay for a little attention, and if neglected they are likely to give trouble.

### Maintenance and Care.

Dealing first with the Armstrong, which is the oldest of these hub gears on motor cycles. First and foremost, the rider must not forget to lubricate the gear freely about every hundred miles with *thin* oil, not thick engine oil, and *on no account grease* (this attention is, of course, necessary in the case of all types and makes), while he must also pay particular attention to the tightness of the nuts securing the control to the frame and the axle to the back forks of the machine. Any lack of rigidity between that part of the frame to which the control is attached and the rear forks of the machine may prevent the gear wheels coming properly into mesh, with the result that a breakage occurs, the chipped portion of the teeth gets between the other gear wheels, and trouble at once arises.

Many breakages in gear teeth are due to the spring in the control rod not being sufficiently strong. The spring referred to is that marked with an arrow in fig. 1. If this spring is weak it simply gives, and cannot overcome the pressure of the spring in the horizontal spindle which is shown in the illustration. This second spring serves to push the pinions into mesh, and, unless sufficient pressure is exerted upon it, the teeth will not wholly engage. Very much the same

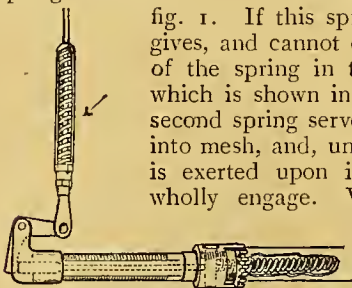


Fig. 1.—A weak spring in control rod may cause breakages in the gear teeth.

effect can be obtained by the control not being tightly fixed to the frame. See fig. 2. The rider has to make sure that the nut on the spindle on which the change-speed lever works is tight, and also that the small grub screw which secures the clip on to the top tube enters a hole in the frame. To secure the clip to the frame by frictional pressure is not enough. Sometimes in cases when the gears are badly fitted the clip is merely a frictional fit, and the screw is omitted; in such cases the nuts are bound to work loose in time, the whole bracket moves along the

frame tube, and trouble ensues because the control no longer allows the pinions to mesh properly.

Referring again to fig. 1. The clip in which the bell crank lever works should be screwed well along the spindle, so that there is enough movement for the crank to work, but not too much. Many people screw the clip and adjusting nut only a few threads along the spindle, with the result that insufficient pressure is placed upon the small push rod inside the hollow spindle.

The gear should never be run with any side shake in the belt rim, and any slackness should be taken up by adjusting the cone on the chain wheel side; if the rim is allowed to run slack the driver attached to the belt rim is likely to get broken.

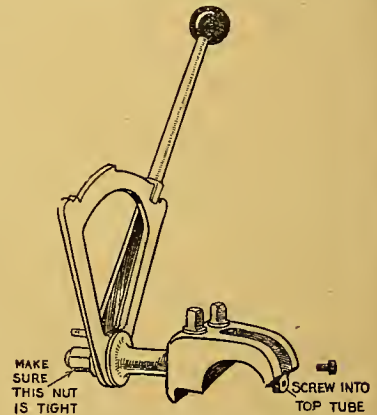


Fig. 2.—See that the gear control is fixed tightly to the frame.

To adjust the gear engage the clutch and put the change-speed lever in the free position, unscrew the lock nut at the end of the control rod, and turn the adjusting sleeve until the free or neutral position is found by rotating the back wheel by hand. This will be found by revolving the wheel and gradually moving the adjusting sleeve on control rod until wheel revolves quite freely. A slight noise will be heard from the pinions, but only what arises from the wheels rolling round: there must not on any account be a harsh grating sound.

### Parts which can be Dismantled.

There is not very much that the average amateur can do to a gear of this kind in the case of internal trouble; in fact, in the case of both gears, he will find that even with the instructions given to him he can proceed to a certain stage and will then have to cease work for lack of special tools. The only advantage that can be gained by dismantling a complex gear is to find the source of the trouble. If such a thing as a broken pinion is discovered there is nothing to be done but to send the gear away to a firm of specialists, or to the manufacturers. By dismantling a gear a rider may possibly be able to send away a smaller part, which will cost him less in postage or carriage by rail than if the whole wheel were sent complete.



**The Care of Hub Gears.—**

With regard to the Armstrong gear, which is the more complicated of the two, the rider should start to dismount from the free wheel end, and remove the star washer and cone. The kick-starter free wheel is now free, and the balls which are exposed may be taken out. The wheel should then be turned over and the

spindle firmly fixed between lead clamps in a vice, and a similar star piece and also a cone removed, allowing access to another row of balls (see fig. 4). The belt rim and driver may now be removed. See that the cone has the projection, which serves to prevent it from turning, intact. Next the hub

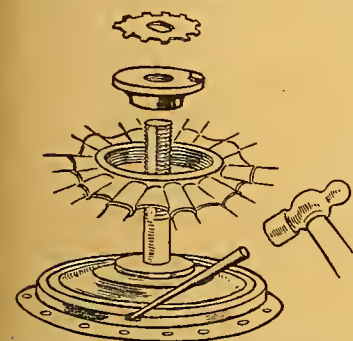


Fig. 3.—Method of removing hub end ring. Remember it is a left-handed thread.

end ring, which is a left-hand thread, should be removed by means of a hammer and punch (see fig. 3). In the case of a gear which we saw dismantled by the County Cycle and Engineering Co., 64, Staines Road, Hounslow, the ball holder was missing, and all the balls had dropped into the gear. This ball holder is a driving fit.

The motor cyclist has now reached the stage beyond which it is inadvisable to attempt to proceed further without special tools, which are not in the possession of the average amateur. With the aid of these latter the makers or specialists can remove the pawl cage, and finally the clutch, which has to be separately dismantled. It will be seen, therefore, that unless the motor cyclist is an amateur with exceptional skill and can make for himself or obtain from the makers the necessary tools he cannot get very far beyond the dismantling process which enables him to examine for broken parts with this type of gear.

**The Sturmey-Archer Gear.**

With the Sturmey-Archer, however, he can proceed a little further. This gear is much simpler in construction, and up to a certain stage the dismantling is rather easier. As in the case of the Armstrong, the spindle should be held in a vice, and operations should be begun at the free wheel end. The cone should be removed and then the balls, as shown in fig. 4. The chain wheel may now be lifted off, and also the pawl ring with which the free wheel engages. Another cone, cup, and balls are now exposed, and should be unscrewed with a hammer and a punch. This cone has a right-hand thread. Next the wheel

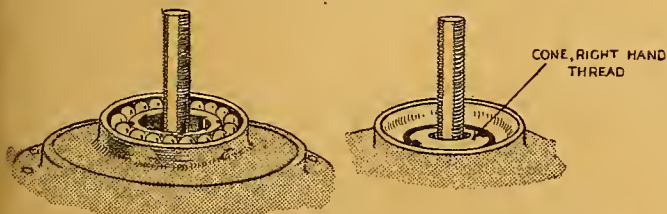


Fig. 4.—The cone removed from free-wheel end, showing the balls.

should be turned over, refastened in the vice, and the ring, similar to that on the Armstrong, shown in the left-hand drawing of fig. 5, should be removed by means of a punch. This has a left-hand thread. When this is done the whole gear may be lifted out, leaving the clutch in the hub. When this stage has been reached the clutch can be examined, and fresh clutch plates can be added if necessary, also any defects that may have developed in the outer shell should be visible. This is about as far as the amateur can go with this type of gear. Even removing the belt rim is a fairly difficult operation, which is quite beyond the skill of the average amateur rider-mechanic.

**Difference between the Various Types.**

Some further interesting facts about the gears are here appended.

**ARMSTRONG.**

The earliest types were Mark II. and Mark III., which latter had rather more clutch plates.

Marks V. and VI. had a still further improved clutch.

Mark VII. a larger clutch.

The T.T. type no clutch and a larger sun pinion.

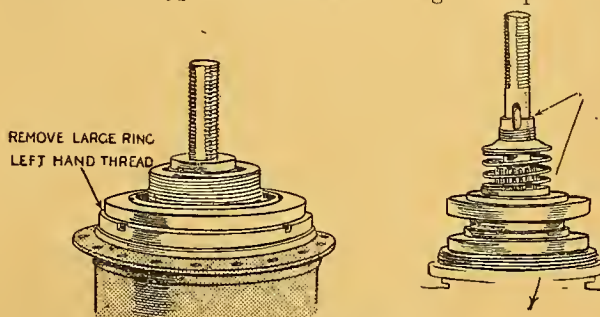


Fig. 5.—IMPORTANT. On depressing the spring and removing the key A, the whole gear will come to pieces.

As regards the number of balls in all ball races, when fitting new balls or checking the old ones, a sufficient number of balls to fill the race completely should be inserted in every case, and afterwards one ball should be removed.

The following are the various sizes of balls fitted to different parts of the Armstrong hubs.

Marks VI. and VII., belt rim side:

Outside cone,  $\frac{5}{16}$  in.

Round driver,  $\frac{1}{4}$  in.

Inside of driver support,  $\frac{3}{16}$  in.

Other side:

One row,  $\frac{5}{16}$  in.

Underneath clutch body,  $\frac{3}{16}$  in.

Clutch fork,  $\frac{1}{4}$  in.

Marks II., III., and IV., same as above, except  $\frac{5}{16}$  in. on driver support instead of  $\frac{3}{16}$  in., and a  $\frac{1}{4}$  in. under clutch body.

**STURMEY-ARCHER.**

The sizes of balls in this hub are:

J.S. type, belt rim side.

Outer cone,  $\frac{5}{16}$  in.

Round driver,  $\frac{5}{16}$  in.

Inside driver, working on internal clutch cone,  $\frac{1}{4}$  in.

In clutch round central ball ring,  $\frac{1}{4}$  in.

Clutch thrust cone,  $\frac{1}{4}$  in.

Underneath free wheel,  $\frac{5}{16}$  in.





### A Further Selection of Letters from Readers scattered all over the World.

**O**BSERVATIONS of general interest are embodied in the selection of letters appended from Overseas readers. They come from all sorts of out-of-the-way places, and the views expressed are a reflex of our month's correspondence. We repeat our invitation to other motor cyclist readers scattered all over the world to take part in this round table conference of motor cyclists in the different hemispheres. It is by such comparison of views and experiences that the motor cycle will become a perfected mount, and our incomparable sport rendered still more pleasurable.

Owing to the unpleasant attentions of German submarines of late, it is highly probable that there have been letters to us among the lost mails, consequently any reader who finds his letter not published and unanswered would do well to duplicate any communication sent to us.

#### The Munitions Order.

Regular readers will have noticed that, since the last instalment of Overseas letters was published, an Order by the Minister of Munitions prohibits the manufacture of motor vehicles in future without a permit. At first this Order was interpreted by firms generally to mean that the production of new vehicles was to cease entirely, but such is not the case. The Government is desirous of knowing just how much motor work is proceeding, and is furthermore desirous of avoiding any hindrance to the output of the very necessary munitions of war. Where it can be shown that new motor cycles can be built up from parts in stock, and that munitions will in no way be affected, permits will be granted freely. It will clear the air if we remark that the British Government is just as convinced of the desirability of maintaining Overseas connections and specialising on export trade as it has been all along, and it may be taken that the effect of the new Order will, where shipping permits, mean an increase in the number of machines sent Overseas.

We publish below a few letters received from motor cyclists Overseas during the past month:

#### Road Conditions in South Africa.

A South African reader says: "Out here powerful machines are really needed, and we are therefore not keen on the baby two-strokes and other lightweights. Most riders want at least  $3\frac{1}{2}$  h.p., and prefer  $4\frac{1}{4}$  h.p. and even 5 and 6 h.p. for solo work, while 7 h.p. is none too much for sidecar work, as we get gradients as steep as 1 in  $4\frac{1}{2}$ . Spring frames would greatly improve many machines for use in South Africa."

MR. J. W. SHOEBOOTHAM, East Griqualand, South Africa: "The conditions here are very different from those existing at home in England, where there are garages every few

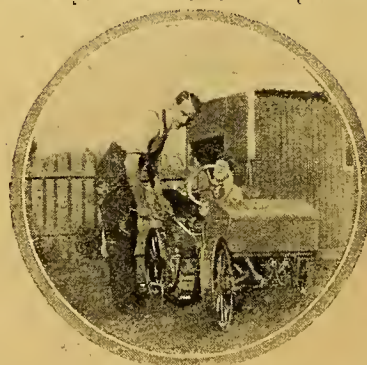
miles. Here they are few and far between, and one has to tackle repairs and overhauls oneself, so that manufacturers should endeavour to produce a strong machine that will withstand these rough roads. At the present moment the roads are one mass of dust, especially on the through postal route from the Colony to Natal. There are large holes filled with loose sand and dust, and only personal experience of the roads enables one to steer clear of them. We have not had a drop of rain for three months, and only .11in. during the last sixteen weeks, so you may perhaps imagine what the dust storms have been like. When the rain eventually comes we shall have to pilot our machines through a sea of mud."

#### Watersplashes and Belt Drive.

STAFF-SGT. C. R. TURNER, Barrachpore, India: "I have been ten years in India, and have been motor cycling since 1911. I have always favoured Triumphs, and I must say for solo riding I have found them very good. The belt drive is a bit of a nuisance in wet weather, and the road I used often to cover from Rawal Pindi to Abbottabad was full of watersplashes. On the Murree-Kashmir road both I and a Clyno were unable to proceed owing to snow nine feet deep. . . . The worst of this part is that the only hills are canal bridges."

#### An Australian's Opinion of the Scott Sociable.

MR. C. G. SOWELL, Guildford, Australia: "It is with great interest that I have read your description of the new Scott cycle car in the issue of *The Motor Cycle* dated July 27th, and I regard your laudatory leader thereon as a hall mark to a good thing. I have been an enthusiastic cycle car experimentalist for the past five years, although, unfortunately, most of my designs have remained on paper for lack of funds and proper appliances. However, my latest tryout is similar to Mr. Scott's idea. I have had the design in my head for the past two years, and I commenced the construction some ten months ago. I felt I had hit the right nail at last, and I am in agreement with your comment that this design will become the true cycle car. Moreover, such a vehicle with a big firm behind it will find a fair-sized fortune



An Australian reader's home-built cycle car evolved from the remains of an old car. (See Mr. C. G. Sowell's letter.)

in Australia alone. Incidentally, if big manufacturers properly realised the prospective size of the motor cycle market in this country if properly catered for, they would establish branch depots without delay at the termination of the war. "Referring again to my cycle car, I might mention that it is partly constructed from an old car, including the 700 x 85 mm. artillery wheels, all three of which are sprung independently of each other, different types of springs being also fitted to each according to the varying conditions of



**Overseas Opinions.—**

working. When completed it will have spring upholstery, and the gear is of the Gradua type, the countershaft being attached to the engine, which will pivot in order to take up the slack in the Whittle belt. The body has room for two passengers on the seat and a child in front, and is so arranged that it cannot sag down at the unsupported front corner. The wheelbase is 4ft. 9in.; track 3ft. 4in. The weight will not exceed 350 lb. unladen."

**Petrol Pipe Unions—a Useful Tip.**

MR. L. W. J. DEUSS, Fort Johnston, Nyasaland: "Who has not had trouble from his petrol pipe parting company at the union? Sooner or later almost everybody is sure to experience it, so the following tip may be welcome:

"Cut a small strip of tin about  $\frac{3}{8}$ in. wide and long enough to make a ring round the part where the leak occurs. Tin the leaking part thoroughly, put fluxite on, the little tin ring over the offending place, and sweat it on with a very hot soldering iron. That union will never leak again, the thin tin strip holding the parts together much more effectively than soldering alone could do.

"My petrol tank (of brass) often sprang a leak along the top, where it had been joined. There also I sweated on a long strip of tin, and I have had no more trouble since."

"I wonder why carburetter makers do not fix the unions of the petrol pipes in a way that will last for ever, as the above strip does. Perhaps they think their way does last; but we know how often the unions come off."

**Dust in the Engine.**

PTE. A. DENDY, Nowshera, India: "Having read 'Ixion's' remark in *The Motor Cycle* of August 31st re dust being the cause of rapid cylinder wear, I thought perhaps you might like to hear of a somewhat similar instance which came under my notice. The machine in question was a 6 h.p. twin of well-known make, and the symptoms were a sluggish running engine and a decided rattle. The engine had just been taken down and decarbonised, so what was actually the cause was not looked for.

"Everything possible was done in the way of carburetter tinkering, and timing checked, but all of no avail, so in desperation the engine was again dismantled, and imagine our surprise on finding the oil in crank case like glue and choked with dust. It was gummed as thickly as could be on flywheels and inside case, pistons and all.

"The carburetter had the usual double gauze over air intake, so that it is difficult to suggest how the dust got inside the crank case. It could hardly have got by the piston in such quantities, and yet it was there. Also it was not in the oil tank, as this was not emptied, and the engine ran satisfactorily on town riding after.

"From this time onwards the engine had a decided piston rattle. I had not the necessary gauges to measure for wear, but have little doubt as to the cause; also the tappet guides were enormously worn.

"The majority of country roads on the frontier are nine or ten inches thick with dust, as they, as a rule, are unmetalled.

"Another fault I have found pretty frequently is gudgeon pin play in piston, the pins of driving fit variety being the offenders. Frames of sidecar outfits continue to break, mostly at the steering head."

**Mountainous Districts.**

"T.C.H.," Nilgiris, India: "This is a mountainous district, in which elevations run from 1,000 to 8,000 feet above sea level, and although, on the whole, our roads are good, we have an abundance of hairpins, 'Irish bridges,' etc., which are sufficient to give any newly arrived motorist, however proficient in the art, 'furiously to think.' In fact, I do not think you have anywhere in the British Isles such a 'sporty' district from the motor cyclist's point of view. To quote an instance: Our main 'ghat' road from Mettappolium to Ootacamund (thirty-two miles) rises 6,000 feet in that distance, has seventeen hairpins (always with the chance of a couple of bullock carts or a herd of cattle round the corner), and gradients varying from 1 in 8 to 1 in 30, without a single stretch on which one can 'rest' one's engine in the whole distance. A T.T. in this district would produce some fun! Another point which baffles most new arrivals here is the effect of the rarefied atmosphere on

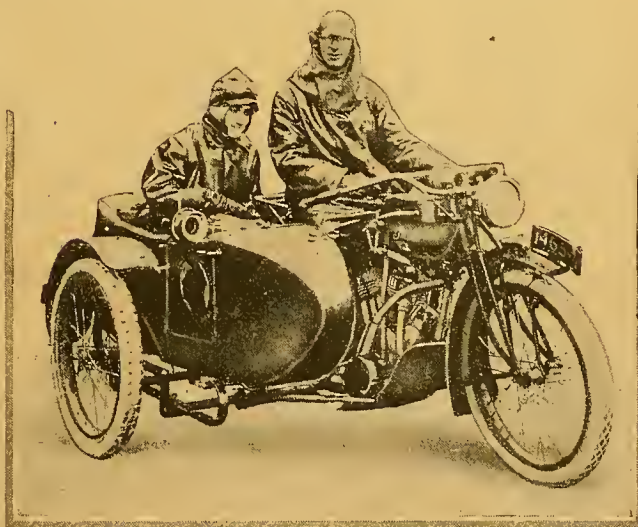
their engines. No standard carburetter will give good results here until some provision is made to give the engine more air. The way in which the majority of machines stand up to their work in such a severe district is a striking tribute to British manufacturing principles. I know of a Scott (to mention one instance) which has done over 30,000 miles in three years, and has just been sold for over £40. Of course prices, both new and second-hand, rule high as compared with home prices; about 30% seems to be the average increase. In conclusion, let me say that, to compensate for our many drawbacks, we have a delightful climate, an equable temperature, incomparable scenery, and petrol at 2s. 1d. per gallon (war price) in this, the 'Queen of Indian Hill Stations.'"

**ITEMS FROM OVERSEAS.****Road Records.**

A considerable amount of interest has been aroused of late in the Overseas Dominions in town-to-town records. One of the latest comes from New Zealand, one of the favourite record road routes there being from Christchurch to Hammer Springs and back, the total distance being 174 miles. On October 2nd, Mr. Harold Jones, of Christchurch, mounted on a Harley-Davidson sidecar, made an attack on the sidecar record for this journey, which he succeeded in beating by 1h. 33m. The route is a very difficult one, and included several watercourses.

**High Speeds in Australia.**

The extraordinary speed of 103 m.p.h. is claimed to have been obtained on a motor cycle in Australia. In the early morning of October 7th, Jack Booth, the famous Australian rider of an eight-valve Indian, is credited with the above remarkable speed along a straight stretch on the Gawler Road. The distance covered was one mile, and the time taken 35s., which works out at just under 103 m.p.h. His machine was, of course, a 7.9 h.p. twin Indian, stripped of all unnecessary fittings, but was run without auxiliary ports, and what makes the figures the more remarkable (and probably doubtful to many record-holders) is the fact that he used large size tyres in order to comply with the local conditions. On the same morning E. Ferguson, a local rider, also mounted on an Indian, is reported to have established a South Australian half-mile road record by covering that distance in 19 $\frac{3}{4}$ s., equalling a speed of 92 m.p.h.

**AN OUTSTANDING PERFORMANCE.**

In the issue of Nov. 23rd we described the reliability trial held by the Victorian M.C.C. on Sept. 23rd under appalling weather conditions. In this event only one of the four competitors to finish completed the course to schedule time. The competitor was J. H. Rhodes, who, with his wife in the sidecar of his Powerplus Indian, covered the course in the best time, and won what is termed—appropriately enough!—the "winner's" cup.



## Test of a Spring-frame Hobart.

Adapting Front Fork Springing Methods to the Rear of the Machine.

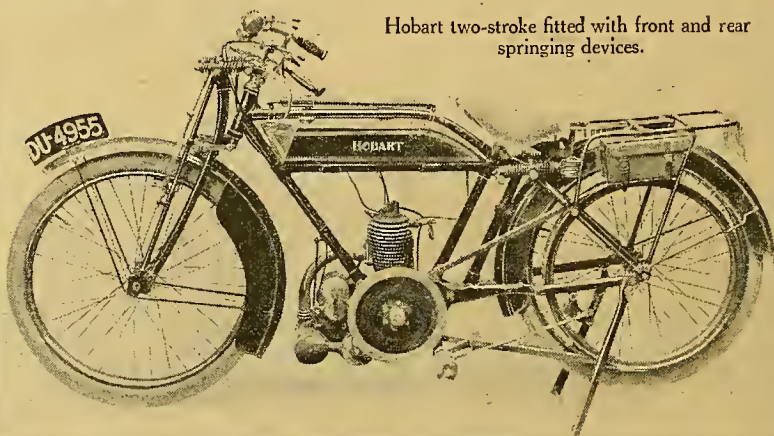
A MONTH ago we described a rear springing device, owned jointly by Messrs. Richardson and Downs, both well-known men in the trade. In the interim we have been privileged to test a Hobart lightweight machine sprung at the rear on the same lines. There is no need for us to go into details again, as the sketch and photograph render the system sufficiently clear. The system is very similar to the Brampton front fork spring, Mr. Richardson, the designer, being connected with that company.

The machine we have been using is owned by Mr. Downs, who uses it regularly in his business. It was intentionally fitted with an old saddle of comfort in order further to

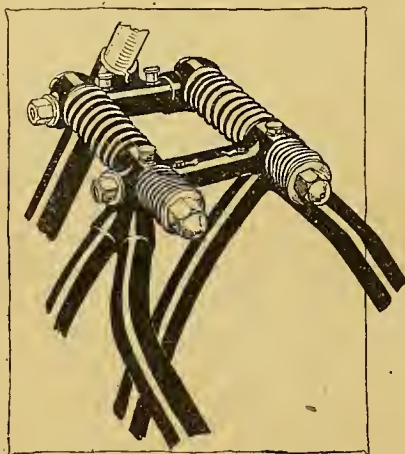
practically devoid demonstrate the efficiency of the springing system. For our test we naturally selected exceptionally rough stretches of road in the district, and we had no difficulty in finding pot-holes galore, thanks to the remarkably heavy and constant lorry traffic.

First of all, steering was entirely unaffected. We

found that road shocks were damped considerably by the aid of the coil springs, whilst riding on good ordinary main roads was positively luxurious. When pot-hole stretches were encountered, however, the springing did not show up to the best advantage, owing to the small amount of movement possible in the springs. This will be appreciated from an inspection of the springs, which have comparatively little space between each coil to allow free movement. This criticism, however, does not expose a defect of the design, but more of the type of spring fitted, and we feel sure that when fitted with larger springs allowing increased movement, the design will go a long way to solve the spring frame problem. It is conceivable that if this design were purchased in quantities, many firms would be disposed to adopt and fit it in the same way that they do the various accepted designs of spring forks now available for manufacturers who specialise in assembling. It will be appreciated that the design would be quite easy to adapt to the accepted type of motor cycle frame, requiring little or no structural alteration.



Hobart two-stroke fitted with front and rear springing devices.



Showing details of the rear springing.

## The Scott Sociable through American Goggles.

WHEN the Scott Sociable was described in *The Motor Cycle* a month or two ago, among the considerable number of enquiries which followed from home and Overseas was one from the Editor of *The Scientific American*, who expressed interest in the design, and mentioned his desire to publish details. We now have before us the issue of November 11th, in which the description appears, and we cull the following extract, as showing the American view of Mr. Alfred Scott's latest design:

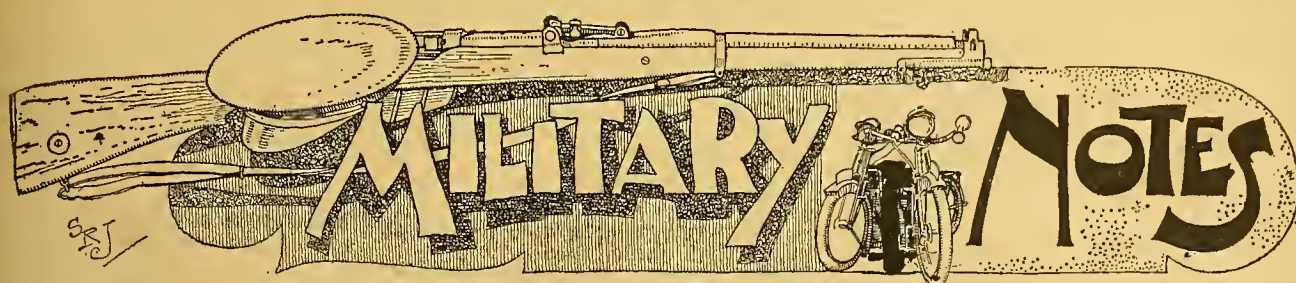
"Another attempt has recently been made to provide a low-priced vehicle that will comfortably accommodate two people and give them practically all the comforts of a large automobile, and at the same time be economical to maintain and easy to operate and care for. This creation is the work of an English designer, and, as will be seen by the illustrations and the picture on the cover of this issue, he has produced a decidedly neat and

convenient little car; but interest does not cease with the general appearance of the car, for it embodies a host of ingenious details, only a few of which can be noted here."

*The Scientific American* replies to the criticisms which have been offered by some readers on the appearance of the machine in the following terms:

"Some comment has been made as to the appearance of this car, but the worst that can be said against it is that it is novel, and we all know that many a novel creation is approved as soon as we become accustomed to it, as is demonstrated by a comparison of the horse-drawn vehicles of twenty years ago and the present motor car. As to the question of practicability, it may be said that every individual feature involved has been thoroughly tried out, and the identical type of engine has been in successful use in England for at least six years. This little car can make as good an average speed as a regular automobile, and operate in places impossible for the latter."





### RECRUITS WANTED.

WE are informed that important work is being done by the 1st Battalion City of London Volunteer Regiment, Maj. E. A. Dodd, T.D. Commandant—Headquarters, 57-58, Leadenhall Street, E.C. Recruits are needed who ride either sidecar or solo machines. Further particulars can be obtained from Sergeant-Instructor T. J. B. Cross, 8, Upper Thames Street, E.C.

### A PROMINENT A.C.U. OFFICIAL.

WE congratulate Capt. A. E. Davidson, R.E., D.S.O., on his promotion to the rank of major, which was gazetted on Friday. Maj. Davidson was on many occasions judge at various A.C.U. competitions, and though not actually the rider of a motor cycle, he has a keen knowledge of the machine, and long before the war made a very careful study of the use of the motor cycle in warfare.

### HOW THE TANK MEN FARE.

THE following are some very interesting extracts from the diary of a member of the crew of one of His Majesty's Land Ships (Tanks): MONDAY.—Out in a fog. Completely at sea for first part of day, travelling at rate of 1,000 yards per hour. Furious gun fire and ceaseless racket of machine guns. Enemy attack. Enough lead to smother us. Came through unscathed. Went blindly at foe. Terrible crash and ceaseless jolting. Up and down like a switch-back. Dashed into a party of enemy, and crushed them under machine.

TUESDAY.—Out in abominable weather. Gun fire all the time. Vicious rattling on our metal hide. Machine guns everywhere; passed through without a scratch. Seemed to run into an earthquake. Nothing serious; only an enemy trench. Suddenly everything seemed to go wrong. Could not make the old thing move as much as half an inch. Stranded! Enemy thought we were done for and closed in with great glee; came right up to us. Still no sign of life; then sudden recovery. We opened fire; enemy went down like ninepins. Ship gave sudden lurch, then on as fast as we could. Enemy had not time to get clear. We knocked them over, and they were crushed underneath.

WEDNESDAY.—Had weirdest experience imaginable just as we were well under way. There was a sudden upheaval. "Tank" seemed to be lifted from the ground and tossed sky high. Felt sure it was all over. Terrible jar back on land again. Little the worse. Enemy had sprung a mine under us. Went forward again at full speed.

### MOTOR CYCLISTS WANTED IN THE R.F.C.

THE Royal Flying Corps is open to enlist a number of experienced motor cyclists. In order to be accepted men must have held driving licences for the last two years, and must be in Class A or Class B1. There are also openings for motor drivers, whose medical category must be B1 or B2. Application should be made to Major Robert Mitchell, organiser of R.F.C. Technical Instruction, R.F.C., the Polytechnic, Regent Street, London W.

### A CHANCE MEETING IN FRANCE.

THE accompanying photograph shows Sgt. H. E. Ashley and Cpl. H. J. Beal, both well-known amateur motor cyclists, who met accidentally a few weeks ago "somewhere" in France. These happy and unlooked-for meetings frequently occur at the back of the line, and in this case the riders commemorated the event by being photographed together with their mounts. Cpl. H. J. Beal, of Ilford, on the right, and his friend Ashley, who hails from Manchester, have several times competed in Six Days Trials with invariable success, mounted on L.M.C. machines. In civil life the former finds good use for his motor cycle as a commercial traveller, and is, besides, a well-known competitor in M.C.C. trials, notably the London-Edinburgh run. In 1913 Beal secured ten awards, including three gold medals and a silver cup, with his L.M.C., of which make the owner speaks most highly. Out in France the



Sgt. H. E. Ashley and Cpl. H. J. Beal, who previous to the war were enthusiastic riders of L.M.C.'s.

strain upon Beal is not so great as to some of the men, seeing that in England for five days a week he used his motor cycle for business purposes.

### FROM A MOTOR CYCLIST COLONEL.

WE have had an interesting letter from Col. D. F. Nicholl, D.S.O. (the judge in former A.C.U. Six Days Trials), since he has taken up his quarters in France. He travelled from the port of arrival to his destination by road, and his opinion on the road conditions over there are quite interesting. "The roads," he writes, "on the whole, are much better than most of the English main roads are in these days, and even up here, where *pavé* and mud abound, any amount of new metal is being shoved into the sides of the road, and soon gets rolled in by the incessant traffic, nearly all very heavy motor vehicles. I took out one of our bicycles, a new Triumph, and liked it immensely. The latest 4 h.p. is certainly some bicycle, and the acceleration is fine. The Triumph carburetter appears to be pretty automatic, though one cannot use full throttle on these bumpy surfaces, apart from other traffic on the roads, so I cannot say how the carburetter works at large openings."

### FROM A LORRY DRIVER

FROM Pte. J. F. Spencer, A.S.C., M.T., an official of the Coventry Motor Club, now serving with the 5th Australian contingent, comes a very cheerful letter. Among the general items of interest Pte. Spencer says: "I receive *The Motor Cycle* each week, and find it is greatly appreciated by others of the workshop party, and many who use our canteen. Since last writing we have moved our quarters, and are now stationed at —. We are situated on a main road, our lorries parked each side, with the workshops, etc., in a field. We sleep in a hut, fortunately, for every kind of weather comes our way—sharp frosts, rain, and strong winds. Our ablutions are performed in a running stream at 6 a.m., work commences at 7.30, and ceases at 4.30 p.m.; 'Lights out' at 8 p.m. The nearest town is about twenty minutes' walk, and from the state of the buildings there it is evident that our enemies have been ventilating their wrath. At the moment of writing two fellows are having a boxing contest, and as the dimensions of the hut are approximately 16ft. x 12ft., it is something of a job to concentrate one's mind on this epistle. As we are near an aerodrome plenty of 'planes are to be seen all day long. I have not yet come across a single fellow whom I know. I am keeping fit and well."



## THE FLAT TWIN AT THE BAR.

### INDUCTION PIPE DESIGN — DISPOSITION OF VALVES AND THEIR ACCESSI- BILITY —

#### THE "HOT" SIDE OF A CYLINDER.

**T**HE recent controversy on the alleged disadvantages of the flat twin of larger sizes, and "Ixion's" defence in particular, have interested me greatly.

To the designer accustomed to close investigation of every detail of design from all points of view the arguments against flat twins over 350 c.c. show nothing more than a lack of knowledge of the subject.

The most pitiable attempts are shown in sketches, every one of which is exaggerated favourably to illustrate the claims advanced, and unfavourably where it is attempted to show the disadvantages of the types disapproved of. For instance, in the type of pipe called "direct induction," the valve springs are not shown, because it is not possible to work them into the design without ruining the claims put forward. A truly journalistic touch!

The principal arguments against the flat twin of over 350 c.c. capacity appear to be summed up in "the difficulties that have to be overcome in the induction and exhaust pipe system" and "the innumerable bends and increased pipe lengths."

Why such difficulties do not arise in *small* flat twins is, to say the least of it, puzzling. One would imagine that these difficulties are associated with types, and not with cylinder capacity, and I must confess that I personally fail to see any connection whatever between cylinder capacity and the number of bends in the induction and exhaust pipes.

But supposing we ignore this blunder and investigate the deductions which follow. It is stated that with overhead valves the efficiency gained in a vertical engine is lost entirely in the horizontal, on account of the innumerable bends and increased pipe lengths, and the carefully arranged sketches above referred to are produced to prove that with side valves the induction passage has fewer bends. Actually it has more, and if a complete engine had been sketched, with all parts necessary to its working, this would have come to light. The induction pipe must leave room for a valve spring and valve gear, and this necessitates its entry at something approaching a right angle.

Fig. 1, which is properly drawn to scale, will serve to show this. Fig. 2 shows an overhead valve also drawn to scale, and both views show the path of the gases by means of arrows.

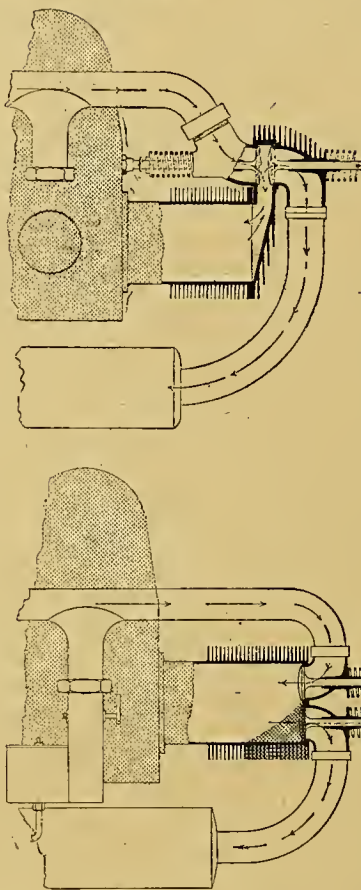


Fig. 1 (top). Showing the induction pipe arrangement on a flat twin.

Fig. 2 (bottom) indicates the cause of a "hot side" in an overhead valve engine.

A Defence (if one were needed) of the Flat Twin of over 350 c.c. capacity.

By GRANVILLE E. BRADSHAW,  
The Designer of the A.B.C.

Increased induction pipe length does not matter in the least, except that in nearly all engines this is an advantage, and one has only to read expert carburetter manufacturers' catalogues to find particular stress laid in fitting a considerable length of pipe between carburetter and engine to allow of thorough mixing of the gases. Further, the engine of high efficiency is invariably timed with a late closing inlet in order to obtain an increase of volume in the cylinder occasioned by the gas being carried in by momentum after the piston has commenced to travel on the up stroke.

A long induction pipe assists in piling more gas into the cylinder, and is therefore of great benefit where high efficiency per cylinder volume is concerned. But why is so much importance attached to the so-called impossibility of fitting overhead valves efficiently, when overhead valves are seldom desired, either by the manufacturer or the motor cyclist, neither are they fitted in the particular 350 c.c. engine which was put forward as "the finest example of opposed engine efficiency"?

Nevertheless, and just to show how far the question was studied before such wild views were expressed on it, I would remark that this "finest example of opposed engine efficiency" obtained its well-known and existing record of seventy-two miles per hour by the use of overhead valves. This speed has not been equalled by a single-cylinder engine of the same capacity, and yet it is asserted that overhead valves in flat twins cannot be efficient.

The remarks are unmistakably written to discourage the development of the flat twin, and yet we find the following admission, "here we have a design the very foundation of which is perfect balance—the designer's Utopia."

#### The Duties of a Designer.

What is a designer for if not to choose the best principle, and to make a commercial job of it? It is just this which determines the difference between the clever designer with an eye to development and the inefficient man satisfied with lesser victories, that are more easily achieved. The horizontal engine is the designers' Utopia, and yet it has no future! Surely this is not what one would call fostering the industry!



**The Flat Twin at the Bar.—**

The successful designer is the man who realises that difficulties are there to be overcome. He will say, if this is the best design I can score heavily by making a successful practical job of it—and this sort of thing ought to be encouraged by the technical press.

Another accusation is that the larger flat twin has not proved itself so successful as the little twin. Of course it has not, but it has not had a chance. The small flat twin has had many years in which to prove its value, and has entered into almost every competition and trial. Nearly all the large flat twins have materialised since the commencement of the war, and have had no chance of demonstration in competition. I can confidently promise the sceptical a rude shock when competition does start again.

Continuing, the writer in a contemporary says that why it is necessary to link minimum weight and b.h.p. together, in motor cycle engine designing, is beyond him. Truly this is surprising, particularly as it is generally recognised that the 350 c.c. flat twin so deservedly applauded has achieved its wonderful popularity on account of its lightness and handiness, combined with its exceptional power. Manufacturers are constantly aiming at light weight combined with power, and those who have attained this very desirable feature have been singularly successful. One would think it superfluous to add any remarks about decreased tyre wear, lower petrol and oil consumption, and greater hill-climbing capacity, with the light and efficient machine, but one is tempted to point such details out to those who are so short-sighted that they cannot see them.

**The Hot Side.**

In one sentence the critic says he does not know exactly what is meant by a "hot side" to a cylinder, but he *does* know that such a side cannot exist in an overhead valve engine! Perhaps I can enlighten him on a subject of which "Ixion" is evidently cognisant. In water-cooled engines the cylinder is kept at an approximately even temperature on all sides, due to the heat distributing capacity of the constantly moving water, and maximum power can be obtained for long periods. In air-cooled design, however, the material is very thin, and unfortunately generally of material of low heat conductive capacity: the result is that the exhaust valve has to be extremely carefully placed in order to prevent one side of the cylinder becoming much hotter than the other, and distorting the cylinder walls. I can assert, after years of careful experiment, that the reason the air-cooled engine is looked upon unfavourably for continuous high duty is principally due to this defect with its resultant leakage past the piston, blackening the rings, and scorching the oil. In some standard side valve engines that I have measured the distortion has been as much as one hundredth of an inch, and, despite the inexperienced assertions to the contrary, the distortion occurs even to a greater extent in many overhead valve engines.

A few minutes' consideration of the overhead valve design shown in sketch fig. 2, where I have shown the "hot side" shaded, should be very convincing, and I do not mind stating that this was the principal reason the A.B.C. overhead valve engine was discarded. In the new A.B.C. design, a perfectly concentric cylinder barrel of steel is used with a separate head, on which

the exhaust valve is isolated from the cylinder as much as possible, as shown in fig. 1. The result is that this engine can now be sold with a guarantee of twenty hours' running on wide open throttle, with a loss of power of not more than one per cent. throughout the whole run. A test of 150 hours has actually been successfully carried out, at the first attempt, and incidentally I might mention that a careful test has been taken of the wear on the roller bearing big end of an engine that has done over 11,000 miles on the road, and that "Ixion" was perfectly right in what he said. It was impossible, on an ordinary micrometer, accurately to read any wear, but on a special instrument this was found to be two-tenths of one thousandth (or one five-thousandth) of an inch.

To put it briefly, the flat twin is particularly desirable because its balance is practically perfect with only two cylinders—it is the lightest type of engine known—its impulses are at regular intervals. It is considerably cheaper to manufacture than the four-cylinder vertical prophesied to be the future engine, and it is more economical from almost every point of view.

It is extremely accessible, and has a minimum number of working parts. Overhead valves, which are more efficient than other types, can be readily applied to the flat twin, but for reasons foreign to this particular type of engine, they are not desirable in an air-cooled engine, except for short speed contests. Both cylinders can be operated from the same cams, and synchronisation is easy. Lubrication offers no greater difficulties than in any other type of engine, and there are no limits to its capacity for present-day motor cycle purposes. Its particular limitation is overall length, and unsuitability to the adoption of a long stroke, but its inherent capacity for revving easily counterbalances the latter.



Sgt. F. E. Barker, A.S.C., M.T., formerly with Zenith Motors, Ltd., off to dinner with a load of eighty-five stones. Of the many uses the motor cycle is put to in the great military camps, not the least appreciated is when it is commandeered as a "hack" to give acquaintances a lift.





## TIMES TO LIGHT LAMPS

## GREENWICH TIME.

Dec.	7th	...	...	4.20	p.m.
"	9th	...	...	4.20	"
"	11th	...	...	4.19	"
"	13th	...	...	4.19	"

## Sidecar Machine Guns on Home Defence.

In connection with the home defence forces, a Motor Machine Gun Section is to be formed. Offers of sidecars are invited.

## The Mersey Tunnel.

There is talk in Liverpool of a project to construct a tunnel beneath the Mersey, to afford direct road communication between that part of Lancashire and the county of Cheshire.

## A Missing Motor Cycle.

A three-speed late 1915 model Douglas owned by an R.E. officer was stolen from Chatbam on Friday. It is a 2½ h.p. model; engine No. 26,451, gear box No. 1,791, and cylinder No. 28,122. The machine has a clutch and kick starter, and in case any reader is offered it for sale he should immediately advise the police or *The Motor Cycle*.

## The Internal Combustion Engine.

In a paper read before the Royal Society of Arts on Wednesday last week some striking remarks were made both by the chairman, Sir Charles Algernon Parsons, and by Dr. Dugald Clerk, whose paper was on the internal combustion engine. In the course of his introduction Sir Charles said: "The internal combustion engine to-day ranks among the most important prime movers. It is also the most economical in the conversion of the energy in oil and gas into mechanical work. On it depends all aircraft, and nearly all submarines and motor transports of all descriptions. It has become an ever present part of our modern life, and is exercising on the community at large an educational influence in mechanics and engineering far greater than we are accustomed to suppose."

## German Influence.

Dr. Dugald Clerk, who in the near future will be assuming an important Government position in connection with developments in this country, said that "Some of our engineers seemed unaware of the leading part taken by England in the great field of invention covered by internal combustion engines. An impression that we are wholly indebted to Germany, and that the work of invention here is small compared with that of the Continent, has arisen, because of the indefatigable propaganda of scientific engineering Germany and the

distinct bias to German methods shown by some of our prominent men. The younger engineer of to-day has a huge field of effort open to him, and he will need all the scientific and practical knowledge available to fit him for his task. The fate of the British Empire in the future depends on the scientific engineer; our present existence, as a free nation, depends on our sailors and soldiers, but the distant future is subject more to the efforts of the engineer than to the labours of war or politics."

## Triumph Cycle Co.'s 30% Dividend.

The directors of the Triumph Cycle Co., Ltd., are unable to submit the accounts usually presented to the annual general meeting, owing to the fact that the company was declared a "controlled" establishment in August, 1915. Until an adjustment of accounts has been made with the Ministry of Munitions and the Inland Revenue Department it is quite impossible to present reliable figures as to the net result of the company's trading since the dates of the last accounts. The directors are satisfied, however, that the company has made sufficient profit to justify them in paying 6½% (free of tax) on the preference shares, which absorbs £2,627; 20% (free of tax) on the ordinary shares, £16,000; a bonus of 2s. per share on the ordinary shares, £8,000; and to carry to pensions fund the sum of £2,000.

## SPECIAL FEATURES

MOTOR MACHINE GUNS FOR CADET CORPS.

WAR MODELS ON TEST.

THE CARE OF HUB GEARS.

## American Style.

Will trade.—For three-speed twin, will trade complete motion picture outfit, with gas machines, Powers's electric, with rheostat; taken in on mortgage. Good as new; worth 250 dollars. Packed in travelling trunk.—*Vide American Motor Cycling.*

## The Future of Second-hand Shows.

The promoters of the display of second-hand vehicles held at the Agricultural Hall recently write in an optimistic vein concerning the holding of such exhibitions in the future. Judging by the diverse location of some of the sellers and buyers at the show recently held, it must have attracted motor cyclists from all parts of Great Britain. The towns where it has been definitely decided to hold shows either yearly or bi-annually are Birmingham, Glasgow, Edinburgh, Bristol, and Dublin. Messrs. Glass and Co. hope to announce the dates shortly, but, owing to most of the halls being still in the occupation of the Government, nothing definite can be stated at present.



DESPATCH RIDERS OF THE FRENCH ARMY.

The men shown in the photograph belong to divisional headquarters, and have been in the neighbourhood of Verdun since the beginning of the great German attacks. Their mounts are B.S.A.'s and Triumphs.



**Another Airman Motor Cyclist Killed.**

We regret to note among the casualties the name of George L. Columb, Sec.-Lt., London Regiment, attached to the R.F.C. Lt. Columb was well known to Midland manufacturers and competition riders as a motor journalist.

**The National War Funds.**

At the week-end the principal war funds stood as follow:

The Prince of Wales's Fund (distributed £3,489,465) ..	£6,000,706	0	0
British Red Cross Fund ..	5,366,677	11	6
The Queen's Work for Women Fund ..	170,924	10	1
Tobacco Fund ..	120,471	0	0

**Large Size Flat Twins.**

In defence of the flat twin-cylinder engine over 350 c.c., a leading motor cycle designer, Mr. Granville E. Bradshaw, enters the arena this week. It is a pity that the time is not propitious for an actual demonstration of the qualities of large size flat twins—not that their efficiency is doubted by more than a minority.

**A Posthumous Award.**

Mrs. Baxter, wife of the late Sec.-Lt. E. F. Baxter, V.C., late Liverpool R., received the posthumous award at Buckingham Palace on Wednesday last. It will be remembered that Lt. Baxter was awarded the Victoria Cross for conspicuous bravery whilst engaged in bombing the enemy trenches. His exploits were fully described in our issue of October 5th.

**Competition Rider Granted Commission.**

S. Charles Perryman, a leading official of the Birmingham M.C.C., has been granted a commission as Lieutenant R.N.V.R. for R.N.A.S. Perryman will be recalled by all motor cyclists as a T.T. and competition rider. He has, in fact, competed in no fewer than seven T.T. races, and has, moreover, won three gold medals in London-Land's End trials. He was chiefly responsible for the introduction of the Senspray carburetter.

**Wheeling Cycles at Night.**

In the London area, hitherto, cyclists wheeling their machines at night, even on the edge of the roadway, were liable to be fined, though throughout the rest of the country this stringent Order has been modified. The Home Secretary has now stated in a letter to the secretary of the Cyclists' Touring Union that an amendment will be made in the Lights (London) Order at the next convenient opportunity, and that in the meantime no action will be taken against cyclists who take advantage of the proposed relaxation, but he does not see his way to authorise a similar relaxation in the case of tricycles.

**Should Unlit Cycles be Wheeled?**

The Auto Cycle Union is not satisfied with the proposal that the lighting regulations as regards pedal cycles shall be relaxed, so as to permit them to be wheeled close to the edge of the road without warning lights. The A.C.U. secretary has addressed a letter to the Home Secretary protesting against this proposed exception to the general rule, and pointing out the danger of unlit pedal cycles, even if wheeled on the left of the road.

**Real "Tail" Lights.**

The new British Order requiring drovers in charge of cattle to carry a warning light will be fresh in our readers' memories. Near Los Angeles a disastrous accident occurred recently, a lady driving her car into a drove of mules. In order to overcome the possibility of such an accident in the future, a red reflex light mounted on a strap is now used to buckle around the mules' tails.

**Volunteers and Cadets.**

Volunteers are at last to be recognised under certain conditions. The announcement of the terms of recognition was made officially last week, and would please thousands of our readers who are members of motor volunteer sections. Another development of interest to men on Home Service is the decision to form sidecar machine gun batteries for attachment to cadet battalions.

**A Sunset Table.**

We have received from the Under Secretary of State a copy of "Tables of Local Sunsets," which may be purchased, price 1d., from Messrs. Wyman and Sons, Ltd., 20, Breams Buildings, Fetter Lane, E.C. These tables have been prepared in connection with the Orders under the Defence of the Realm Regulations with regard to the lighting of lamps on vehicles. The times given in the tables are in all cases the times of local sunset (Greenwich mean time), "sunset" being taken as the moment when the upper edge of the sun reaches the horizon. The times of sunset are stated for twenty-nine places in the United Kingdom, and the figures given have been furnished by the courtesy of the Astronomer Royal.

**Water-cooling Systems.**

For the next few months hard frosts may be expected any night, and riders of water-cooled machines, such as Scott, Humber, Williamson, and Morgan, will no doubt be already wondering whether they will risk a frozen water jacket or radiator or go to the trouble of draining off the water after each run. Those who are interested in this subject should see the article in our sister journal *The Light Car*, which describes a simple home-made device which has been designed to keep the water in the system circulating and so to prevent freezing.

**Quantity Production and Overseas Trade.**

"British Subject" in *The Autocar* this week discusses the future of the British motor business Overseas, and hits the nail on the head when he says that "directly you go for quantity (production) at all you must fight in the quantity market of your class, and the mere fact that you must turn out a large number of cars of some one model without alterations means that you cannot cater for the individual who has his own special ideas." That will be a point in our favour when the time comes for us to commence the new war for trade supremacy in the Colonies. That one asset and the other of fine quality are, in the eyes of some pessimists, about all we have left. We certainly have some leeway to make up; the records of the American exports of motor cycles to the Colonies at the present time do not make particularly cheerful reading.

**THE NATIONAL MOTOR VOLUNTEERS.****Inspection of the Lancashire Volunteers by Lord French.**

SATURDAY, the day appointed for the inspection of the Lancashire Volunteers, was a red letter day for Preston. All the main streets from the railway station to Avenham Park were lined up with the Royal Field Artillery, and the streets were almost impassable. As it was impossible to handle all the members of the National Motor Volunteers, it was ordered that sixteen should be the number to represent each section of the N.M.V.

The Blackpool men paraded at the No. 3 Assembly Hall at 11.30, where, at the invitation of Half Squadron Commander V. Prestwich, the company partook of lunch.

At twelve o'clock the men proceeded, under the command of Half Squadron Commander V. Prestwich, Adj. S. O. Taylor, and Sgt.-Maj. Sanderson, for inspection at the Town Hall by His Worship the Mayor, Commander A. L. B. Parkinson. After a brief halt here they wended their way to Preston. Outriders Robert Hall and J. Wilkinson, who had proceeded two hours before, carried out their duties remarkably well, and awaited the Commander at Lea Gate Hotel with a map of the route to be taken through Preston and the place of inspection. Arriving at Preston, the section took up its appointed place along with sections from the East Lancashire district.

The six staff cars awaiting Lord French and party at the station required six motor cyclists to accompany the party as orderlies, and the selection was taken from the Blackpool contingent, which can be considered one of the honours of the day. The men were Cpl. T. Sharples, Ptes. Rogers, Clough, and Miller, Bugler Horner, and Drummer Clarke. The sight was a magnificent one.

**New Volunteer Bill.**

It will be remembered that, as announced officially last week, the Volunteers have at last been formally recognised by the Government. A man can now volunteer for the duration of the war, in which case he will be liable for certain drills and duties, be subject to military law (the men when engaged on military duty and the officers at all times), and receive a grant. Those who volunteer for the term of the war will not be allowed to retire from their corps except under special circumstances.

**AN ATTRACTIVE ALMANAC.**

LAST year we received a very artistic almanac published by Messrs. Abdulla and Co., Ltd., 168, New Bond Street, W. This year we have received another, which contains fourteen reproductions of work by British and Allied artists. As was the case last year, twenty thousand copies of this almanac have been given by Messrs. Abdulla and Co. for sale, the proceeds of which go to the funds of the British Red Cross Society. The price per copy is 1s. 4d., and it is hoped that at least £1,000 will be realised.



# WAR MODELS ON TEST

ONE of the several flat twin - cylinder motor cycles which have made their bow to the public this autumn is the  $3\frac{1}{2}$  h.p. Humber, described in detail in our issue of October 12th last. Since we first inspected and introduced this machine to motor cyclists, we have been privileged to test its capabilities on the road. Before dealing with the running of this entirely new mount, it might be well for us to recount its main features of design. The bore and stroke of each cylinder are  $68 \times 68.75$  mm., giving a cubical capacity (or cubicity, as a well-known designer put it the other day) of 497 c.c. In the description of this new Humber we dwelt upon the substantial nature of the



The W.D. Triumph and Humber at the Round Tower at the summit of Edge Hills, Warwickshire.

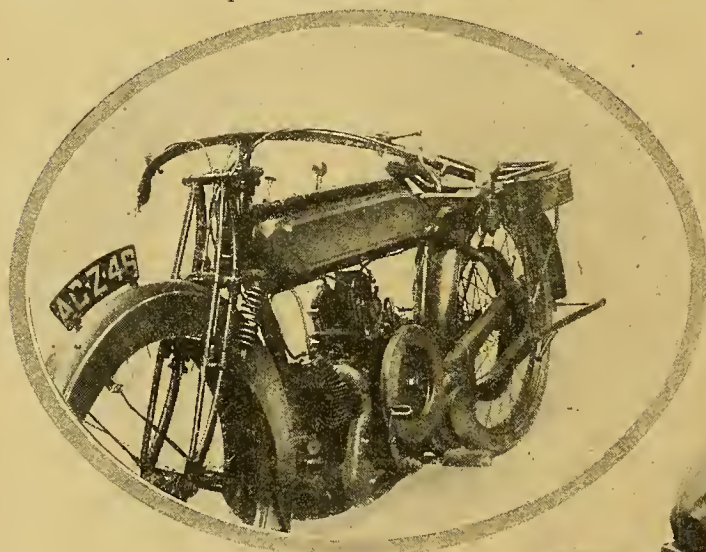
working parts; indeed, the solidity of the design is its most striking feature.

The machine we rode was fitted with ordinary touring handle - bars, footboards, and a foot - controlled clutch. As our riding experience included stretches of greasy roads, the need for a semi-T.T. position to impart to the rider a greater feeling of security and control over the

machine was rather pronounced. Accordingly we suggested to the makers that their latest twin would be rendered still more attractive by the fitting of a flat bar, a handle-bar controlled clutch, and footrests in lieu of footboards. Our suggestion was acted upon, and the first example of the type outlined is illustrated on this page. The natural riding position of the Humber tester, seen in one of the photographs, will be appreciated by practical riders who desire a machine for all-weather work.

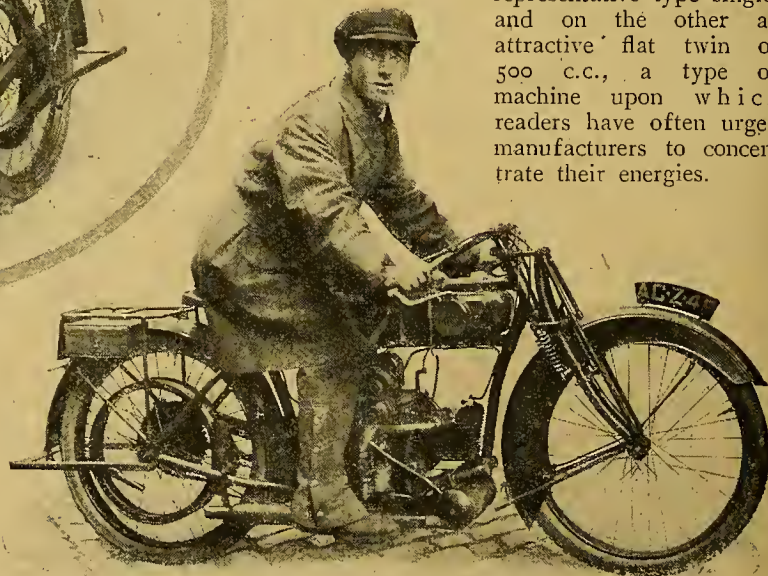
During our tests of the Humber machine, which were made on the noted Edge Hill range, we had as companion a well-known motor cyclist, to whom we loaned for the occasion our War Office model 4 h.p. Triumph, the idea being that we could compare side by side their respective capabilities. On the one hand, we had a

representative type single, and on the other an attractive flat twin of 500 c.c., a type of machine upon which readers have often urged manufacturers to concentrate their energies.



## A SEMI-T.T. FLAT TWIN HUMBER.

The new  $3\frac{1}{2}$  h.p. flat twin Humber was dealt with in our issue of Oct. 12th last (pages 311-313). Since that date certain modifications rendering the machine more suitable for military requirements have been effected, such as the fitting of semi-T.T. bars with a handle-bar controlled clutch and footrests in lieu of footboards.





**War Models on Test.—**

Within two minutes of our visit to the garage both engines were firing away merrily, both with entirely different voices. The air was crisp and dry on this autumn morning, and we sped through avenues of trees over falling leaves, the hedgerows in their autumn garb, and the ever-changing tints being delightful to behold. Through Leamington and Warwick, thence through Barford and Wellesbourne

towards Kineton, we maintained a good average speed, our object being to tackle Edge Hill, the most severe of the range, with hot engines. Of course, nowadays there is nothing exceptional in climbing the 1 in 6 gradient of Edge Hill after a non-stop run from the city of motors, but now that change-speed gears are generally adopted it is instructive to observe how far a machine will climb the hill before calling for a change down. We led the way on the smooth-running Humber, and at the foot of the hill opened out, and away the machine darted, revelling in its work. The roads were deserted, and the machine was travelling so fast that it was only just possible to scrape round the first bend without switching off, and the next bend was reached with very little perceptible falling off in speed. Then on the steepest portion the engine commenced to slow down, and, glancing over our shoulder, we saw that our companion was rapidly overhauling us on the Triumph. Side by side we progressed, the Humber just losing ground, so we snicked in the second gear, and the twin attained its maximum revolutions again in the space of a few yards despite the severe gradient. Soon we had overtaken and left the Triumph standing, the twin romping over the summit of the hill on its middle gear, the Triumph rider, who had been late in changing, following thirty or forty yards in the rear. A descent of the hill for another try with cooler engines gave an opportunity of proving that both machines were capable of climbing the hill on the top gear, but near the top they were much faster on the middle gear. Partly descending the hill with the Humber, we turned the machine round, and, engaging the clutch, made a restart on the steepest section without difficulty or

real effort. Turning in the narrow road with the engine running demonstrated to us, however, that the foot clutch and footboard could very well be improved upon.

**Acceleration Powers.**

Proceeding to Sunrising, again both machines toyed with the gradient, and were even able to answer to the throttle whilst still on top gear. On the middle gear, engaged at the corner, it was possible to slow either machine right down and suddenly open up, the engines responding in a twinkling and gathering speed to the summit.

We next tried an acceleration test on the level, the weights of the riders being approximately the same, viz.,  $12\frac{1}{2}$  stone, and the top gears of the machines approximately equal, viz.,  $4\frac{3}{4}$  and  $4\frac{7}{8}$  to 1. At a signal when travelling at 10 m.p.h. the throttles were suddenly swept open, and both machines bounded away, the Triumph, with its 550 c.c. engine, just having the advantage in

two bursts.

Warmington Hill is much easier than Sunrising and Edge Hill, and both the main road and by-road, which crosses the hill at the church, were as nought to these delightful war models. One could stop and restart with ease on any portion of the hill.

So far we have dealt mainly with hill-climbing and acceleration, but it would be unfair to lead readers to suppose that the twin Humber in particular can be judged on these two counts alone. It is in the controllability of its engine and smoothness of running generally that the Humber is so attractive to the rider. With its one lever Loguemare carburetter the engine will tick

along so slowly and regularly that it is easily possible to count the explosions.

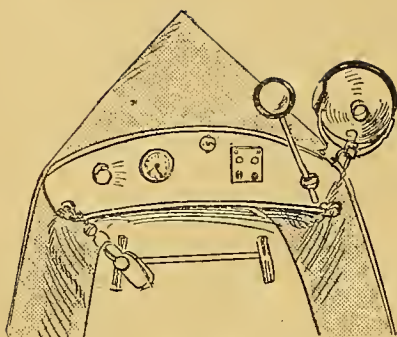
Throughout the test, despite its newness, the engine kept remarkably cool. Even when cold the engine would start after two or three turns of the starting handle without the necessity for an injection. Altogether our experience proved most enjoyable, and left us with an impression that a good deal more will be heard of the  $3\frac{1}{2}$  h.p. flat twin Humber when the company have satisfied the demands of the allied Governments.

At the bend near the summit of Sunrising Hill, where the gradient is approximately 1 in 6.



A top gear climb up Warmington Hill, near Banbury.

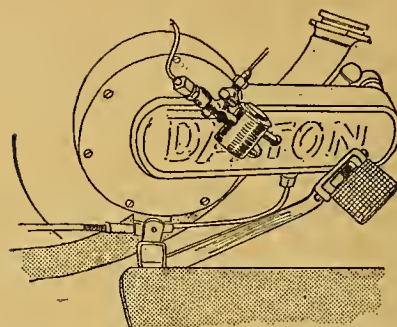




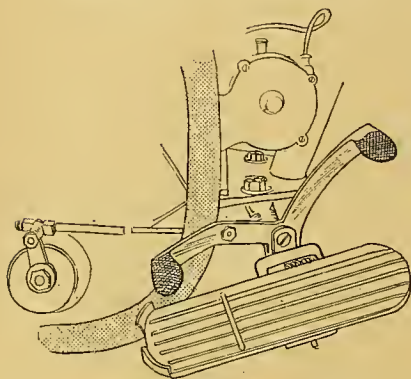
The dash on the "Flexible" sidecar shown fitted, with clock, switch, lamp, and mirror.

## 1917 AMERICAN TREND OF DESIGN.

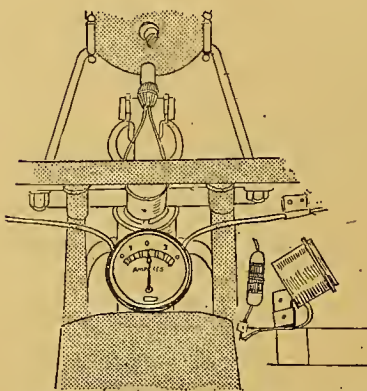
Details of some of the  
Principal Exhibits at  
Chicago Show.



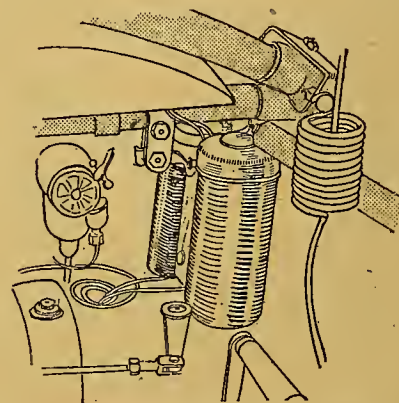
Mechanical oiler and brake pedal on Dayton models.



The Emblem three-speed gear is actuated by a rocker pedal on the right footboard.



On the Henderson a small ammeter is fitted on the top tube, set at an angle to facilitate easy reading.



Dry battery case on Henderson, made of pressed steel and attached to the seat tube.

THE motor cycle show held at the Chicago Coliseum gives a very good indication of the trend of motor cycle design in America. Probably the most notable and drastic change in design is the introduction by the Hendee Company of the small flat twin lightweight, which, undoubtedly, anticipates a greater demand in the future for the lighter twins as solo mounts in place of the heavy 7 h.p. twins as heretofore. Although the baby two-stroke has apparently made little headway, some firms are still manufacturing them, so there is evidently a certain demand for these machines, though evidently nothing like so great as that which exists in this country. With regard to the ordinary machines, the only alterations in design noticeable are improvements in details, while efficiency has been aimed at by improving the design of such parts as valve ports, inlet pipes, exhaust pipes, etc. The three-speed gear, usually placed in the countershaft, is also a feature of practically all 1917 models, while electric lighting outfits are now almost universal on all but the lightweights.

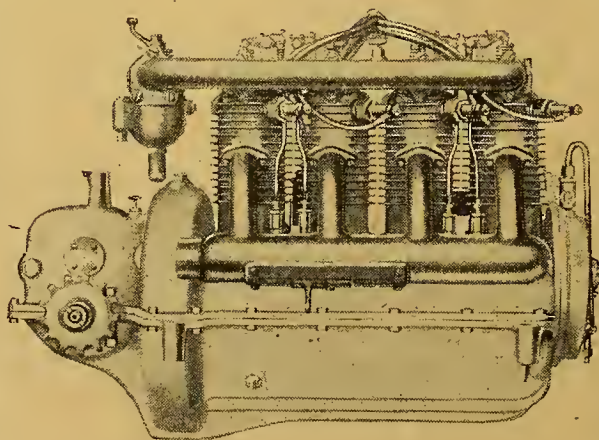
In looking through the specifications of the latest models, it is interesting, and at the same time almost amusing, to notice how the horse-power ratings of the engines have gone up, although the capacities remain the same. It is quite common to see what are generally known in this country as 7 h.p. twins rated at 16 h.p., while 6 h.p. is the common rating for many single-cylinders under 600 c.c. With the exception of the flat twin, the Indian models remain unaltered, though an interesting detail point of the 1917

model Powerplus is the fitting of valve caps equipped with extensive radiating fins. This is a most desirable feature, for, as mentioned many times before in this journal, the masses of metal usually situated in the neighbourhood of the valves are often the prime cause of many overheating troubles. Another slight alteration in design in the Powerplus Indian which is of interest is the fact that the pocket beneath the inlet valves has been eliminated in order to allow the incoming gas to flow easily into the cylinder.

Enclosed valve springs are becoming standard on most American mounts, and are to be found, to mention only a few makes, on the Indian, Harley-Davidson, and Reading Standard, in which makes they take the form of telescopic sleeves.

Several of the big twins even now require the engine to be removed from the frame before the cylinders can be taken off. In the Excelsior provision is made so that the tank tube can be removed so as to give room for dismantling cylinders.

The Henderson power unit is undoubtedly a very neat piece of work, and, as mentioned in a previous review of American models, contains a three-speed gear box situated at the rear end of the crank case, the bottom half of the crank case casting forming the lower half of the gear box.



The chief alteration in the latest four-cylinder Henderson is the inclusion of a three-speed, sliding dog clutch type gear box incorporated as a unit with the engine. The overhead inlet valve rockers are also much more substantial. This 8-10 h.p. engine, as most of our readers will already know, follows car practice throughout.



# MOTOR CYCLIST GUIDES.

A Reader's Suggestion and a Reply by the A.C.U. Secretary.

**T**HE following interesting letter has been received from a reader, who considers, and we think rightly, that a minute geographical knowledge of the whole country would be useful to the military authorities. It seemed to us that, if such a corps were to be formed, it should be done under the auspices of the A.C.U. We therefore consulted the secretary, and append his reply to our correspondent's letter:

## The Suggestion.

Sir,—I notice that you give the Volunteer movement, as far as it affects motor cyclists, your hearty support. Such being the case, could you not organise a National Corps of M.C. Guides?

A guide should know thoroughly some hundred, or even more, square miles of country. By "thoroughly" I mean—

1. All roads and byroads.
2. All bridges, and—
  - (a) Whether over road, rail, or water.
  - (b) Approximate weight they will each carry.
  - (c) Length of span.
3. Nature of country—arable or pasture; character of field boundaries—hedges, ditches, stone dykes, etc.
4. Any other special characteristic of the district.

In my opinion, a body of men possessed of such information as I have above stated would represent a human map of considerable value to the military authorities.

I would suggest a head guide in each county—perhaps more in special cases—and, in addition, one more guide per one hundred square miles. A register of such guides, showing areas, could be kept at the various military centres.

I should mention that about two years ago I endeavoured to form a similar body of guides from my fellow officers in the Excise Department. Over 800 volunteered readily, but, owing to lack of official encouragement and time, the matter dropped. As far as I can remember, the War Office stated that motor cycling sections were being formed in the different counties. I have, however, after several enquiries, failed to find that a body of men of the type indicated have been enrolled as volunteers.

It may be asked why I have not again brought the matter forward in my own department? I should like to have done so, but my belief now is that the body should be composed of motor cyclists only.

In the event of the idea receiving your support, I should be pleased to do anything in my power in this part of the country.

Wolsingham.



## Cadet Corps and Motor Machine Guns.

War Office Approval for Formation of a Machine Gun Section.

**T**HE good work in connection with Cadet Corps throughout the country is to be further aided by a new development now in progress. The Motor Machine Gun Service now forms a very important section of our Overseas forces, and their great value has been proved beyond all doubt. With this example before them, we are advised by an officer interested, the War Office has sanctioned the formation of Motor Machine Gun Sections of each Cadet Infantry Brigade throughout the country. At present the authorities are not supplying the necessary motor equipment, and steps are being taken to raise the required number of motor cycles and sidecar chassis by loan or gift from various sources.

The Warwickshire Cadet Infantry Brigade, under Col. Ludlow (who holds the rank of brigadier-general in this connection), is progressing rapidly with the new scheme. Capt. B. Fray, the machine gun officer

## The Reply of the A.C.U.

"C.J.L.'s" suggestion is valuable, inasmuch as it draws attention to the military value to the Volunteers of the motor cyclist as a guide, and for despatch carrying and communication purposes.

His idea of a separate "National Corps of Motor Cycling Guides" is impracticable in the present condition of the Volunteer movement. Such a corps would be analogous to the Motor Cyclist Section, Signal Service, R.E., and presupposes the grouping of Volunteer Battalions into brigades and divisions, each with its complement of auxiliary services, of which the Signal Service would be one. Such an organisation of the Volunteer Forces, however desirable, is remote, and in the event of invasion and mobilisation no attempt would, I think, be made to use the Volunteers as a separate mobile force, complete in itself. They would then undertake special duties in connection with the guarding of lines of communication and the preparation of defence works, and they would possibly act as reserves to our regular infantry.

The value and the use of Motor Cyclist Volunteers seems to me to be essentially of a local character. Their knowledge as guides would be that of a particular locality, and they would be of great value to the particular Battalion operating in that locality. The Volunteer Force is organised on the Territorial basis, the Battalion composing a county regiment having its headquarters in various parts of that county. On mobilisation the Volunteers would, as a general rule, take up duties in their own districts.

This is not to imply that there is no necessity for co-ordination. On the contrary, I consider that the standard and methods of training, and to some extent recruiting, of Volunteer Motor Cyclists should be under the direction of a central authority. For discipline and command purposes they would be under their Battalion C.O., who would also be responsible for their training and readiness for war and for the maintenance of proper system in the section.

The Central Association might be requested to arrange for:

1. A syllabus of training for motor cyclists other than the usual training in signalling.
2. Examinations and certificates of proficiency.
3. Circularising of County and Battalion Commandants, drawing their attention to the military value of motor cyclist volunteers, and encouraging them to recruit such men.

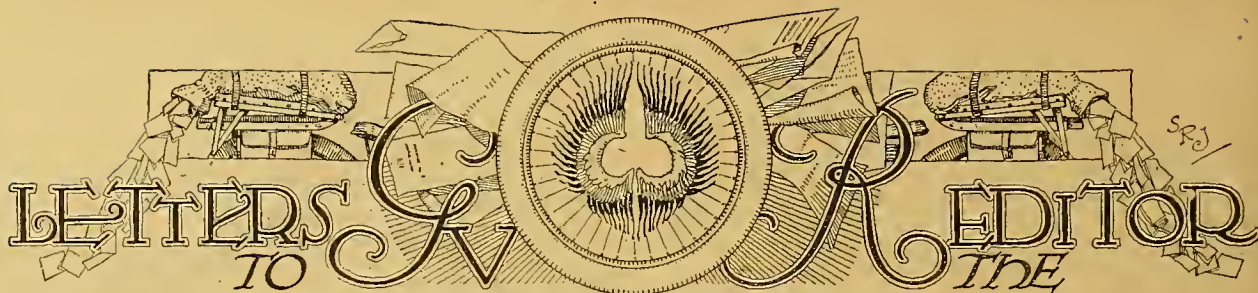
In all these matters I should be pleased to give any assistance possible.

(Signed) T. W. LOUGHBOROUGH,  
Secretary Auto Cycle Union, Major Surrey Volunteer Regt., etc.

appointed, and Sec.-Lt. E. L. Girling are busily engaged in collecting together the necessary sidecar outfits to form their equipment. Twenty-four are required, and offers by any patriotic manufacturers or private owners who may have new or second-hand machines which they care to devote to this work would be appreciated. *The Motor Cycle* will gladly place any such offers before the proper authorities. Heavy machines, preferably about 6 h.p., with sidecar chassis only, capable of carrying three men, are necessary, but some solo machines also will be very acceptable. These Cadet Motor Machine Gun Sections are nearly complete in point of members.

The intention to make the Cadet Corps training still more efficient by the introduction of this, one of the latest forms of military operations, is very commendable, and will be watched with considerable interest.





The Editor does not hold himself responsible for the opinions of his correspondents. All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

#### Water in a Petrol Engine.

Sir,—In reference to a paragraph of the article signed by Mr. S. Holt in *The Motor Cycle* of November 9th, I would like to state that the idea of introducing water into the cylinder of his engine is by no means new, for the same was patented by Prof. Banco in Germany some years ago, and the said Professor claims that the water is immediately dried by the intense heat, leaving behind a hydrogen and oxygen gas, and by these gases the engine gains its advantageous properties. Therefore I really cannot see the grounds on which Mr. Holt can patent his idea without encroaching on international patent laws. Prof. Banco patented his idea for internal combustion engines, which, of course, includes petrol engines. L.G. (R.N.).

[As we stated in a recent issue, the idea of injecting water into an internal combustion engine is not new, but though the idea may not be patentable, it is quite possible that the method employed would be subject matter for a valid patent.—Ed.]

#### Throttle-controlled Lubricators.

Sir,—With reference to the various apparatus constructed within recent years to couple throttle and oil supply, I think I can fairly lay claim to have been the first to advocate the system; in other words, to point out that the feed of oil should be proportional to consumption of petrol. I cannot at the moment put my hand on the papers; but, from recollection, the lecture at which I first made the suggestion, as an ideal to be aimed at, was before the Essex Motor Club, in the spring of 1907—March, I think. Anyway, Mr. A. G. Reynolds remembers the occasion, and can confirm.

The Best and Lloyd mechanical pump with throttle control is most efficient, as engine speed as well as throttle is allowed for. Coasting down hill with the throttle shut consumes some oil, and the B. and L. passes a little oil in proportion to the engine speed. In the case of the drip feed controlled by the throttle, with the throttle shut coasting, a little oil might pass, but the quantity would be constant and irrespective of engine speed, which is not right.

J. W. G. BROOKER.

#### Coloured Lights for Cattle.

Sir,—With reference to "Ixion's" paragraph on the above in the issue dated November 9th, I have had the necessity of distinctive coloured lights borne in upon me by the following experience. When returning home the other night about 9.30 I encountered eight or ten horses, led in pairs, on the left side of the road approaching. The leading man (or boy) carried a white light, quite steady, about 18in. above ground level, which I naturally took for a cyclist's lamp. I was going very cautiously at the time, preparing for a corner, but only a white blaze on the outside leader, which I caught sight of just in time, saved me from a spill. I did a lightning swerve and pulled up, and then heard what seemed like countless hoof beats. The road was about 12ft. wide, and the horses in pairs occupied about 8ft. of this space. The man leading the rear pair also had a glimmer of white light, which was totally invisible from behind the horses. There was absolutely no waving or swinging of lights whatever. With the dimming discs now in vogue, there is no chance of detecting cattle or horses in time to avoid disaster at above 10 m.p.h. My point in this case is that if a distinctive coloured light had been shown I should have known what to expect on the road. The kind of incident described is fairly common in this district (Brackley).

BT8

Perhaps after a few serious accidents have occurred the regulation will be amended. I hope you will continue to raise the point in your valuable journal, which I have read regularly since 1903, though this is the first time I have written to you. W. CHARLES ROBSON.

#### Will the Single Cylinder Survive?

Sir,—One cannot help noticing with interest in the correspondence columns of your excellent paper, the various missives dealing with the supposed superiority of twin-cylinder machines over singles. Judging from their contents, I venture to say that an impartial observer reading them over would soon make up his mind to make any and every "single" his absolute *bête noire*!

Now I am the—let me say, "unfortunate"—possessor of a  $3\frac{1}{2}$  h.p. single motor cycle, purchased new in 1915. May I then be allowed to lay bare a few facts about my machine which I think will show that twins have not it all their own way just at present.

The week ending October 28th, I went for a run of 132 miles with a friend. We were both mounted on singles. I allow the roads were pretty good—most of the way we were on the Portsmouth Road—at the same time they were inclined to be slippery, as there were several showers; also we had to contend with a strong head wind the whole way. The first twenty miles or so were through traffic, as we had to pass through the south suburbs of London.

Our speed worked out at 33 m.p.h. which—as we did not attempt any abnormal speed, the maximum done being 50 m.p.h.—shows a fairly good constant speed.

As regards power my throttle slide was never more than half open.

The most satisfactory result, however, was our petrol consumption, my friend's working out at 120 miles per gallon, mine as 140 m.p.g.; both figures, to say the least, are fairly useful.

The two machines in question are 490 c.c. Nortons, mine being the ordinary three-speed countershaft touring model, my friend's the standard T.T. The usual disclaimer.

M. A. PYKE.

#### Paraffin Starting Device.

Sir,—I notice from your issues of October 26th and November 2nd that your correspondents "Brightonian" and Mr. F. Lewis would like further particulars of my method of starting up for running on paraffin, so I am giving a detailed description of how this is carried out.

The petrol is contained in a small tank and led to the jet in the anti-blow back cap by means of the ordinary  $\frac{1}{4}$ in. diameter copper pipe (see page 233, September 14th). I find that a common failing is to attempt to use too large a jet in this position as a most suitable size is, to give satisfactory starting, a 24 Amac, as, of course, if too large a jet is employed too rich a mixture will be drawn into the engine, and considerable difficulty will be found in starting. This method is quite satisfactory with practically all types of engines; but, if possible, the head of the jet should be  $\frac{3}{16}$ in. from the carburetter slides, and as near as possible in the middle of the tube.

With reference to Mr. Lewis's remarks, the two-stroke machine that I am now using has a Best and Lloyd drip feed oil pump fitted, and with this the same amount of oil should be used as when running on petrol. However, if the machine should be fitted with the petrol system, the correct proportion of oil to paraffin is half a pint of oil to a gallon.



of paraffin. It is a well-known fact that when paraffin is used a small jet is required to break up the heavy fuel; but, if this is used, the power obtained will not be very great, so, to get over this difficulty, I have sealed up the hole in the jet of my Amac carburetter and drilled three small holes, each about a third of the size of the Amac 28 jet. Any watchmaker will be able to carry out this work at a minimum of expense. However, if this is not carried out, for general running I have found the 27 Amac most satisfactory.

F. A. MILWARD.

#### Bearing Pressures.

Sir,—“A.A.S.’s” article on the above subject contains no reference to the relative quantity and quality of work obtained from the two types of engines discussed. All reference to such essential features of good running and efficiency as petrol consumption, oil consumption, speed, pulling power, and cool running, of the two machines is omitted. The public would like to know which of the machines did the better all-round work.

He also compares machines of completely different cubic capacity. I have had five long-stroke singles, including one of the 82×120 mm. type criticised by “A.A.S.,” and I know of no better lubricated single. I gave mine some hard work, too, both pulling and revving. Reading his article made me wonder why he did not choose a square engine for purposes of comparison. Then we might have had some valuable data.

Despite “A.A.S.’s” condemnation, a complacent motor cycling world is slowly being given in homœopathic doses what it refused a few years ago—the long-stroke engine. Even the flat twin is getting inoculated with the virus. Witness the Matchless and Brough productions; their performance will be watched keenly.

B.E.F.

A. LINDSAY (Capt.).

Sir,—With regard to the letters in reply to mine, in the issue of November 23rd of your esteemed paper, *re* “Bearing Pressures.”

(1.) With regard to this point, I am quite prepared to go by the opinion of manufacturers. I have yet to see an engine with a piece taken out of the flywheel rim, and should be pleased to be informed of one out of the hundreds of different engines made. This, I think, fairly establishes the point on Mr. Bonython’s own reasoning.

(2.) This point I will explain fully, thus: Assuming an explosion pressure of 200 lb. sq. in. on piston head.

Area of 82 mm. piston = 8.18 sq. in. Total explosion pressure = 1,636 lb.

Bearing area of crank pin = diameter × length =  $\frac{7}{8}$  in. ×  $1\frac{3}{8}$  in. = 1.2 sq. in.

Pressure per sq. in. =  $\frac{1,636}{1.2} = 1,363$  lb. per sq. in.

Area of 88 mm. piston = 9.42 sq. in. Total explosion pressure = 1,884 lb.

Bearing area of crank pin =  $D \times l = 1\frac{1}{2}$  in. ×  $1\frac{3}{8}$  in. = 1.72 sq. in.

Pressure per sq. in. =  $\frac{1,884}{1.72} = 1,095$  lb. per sq. in.

Now, it is customary to keep bearing pressures as low as possible, and certainly not to exceed 800 lb. per sq. in. in first-class practice. It is perfectly clear which of these engines approaches the pressure which is thought to be best practice. Also, it is obvious even the medium stroke engine is a long way off being correct, as 200 lb. the explosion pressure taken, is easily exceeded in certain instances. I conclude, therefore, we can do with a larger bearing in both instances, and that, this being the case, the arguments which I brought forward are correct, and hold good for any reasonable size of engine. The remainder of the question is rather a misconception—I expect, unconsciously. The point is this. In each revolution of the engine the crank pin rotates once in either case. The distance turned is  $\frac{1}{2}\pi$  and  $1\frac{1}{2}\pi$  respectively inside the big end bush. The first turns under a pressure of 1,363 lb. per sq. in.; the second at 1,095 lb. per sq. in. In the sense in which I mentioned the distance, I intended the distance measured the path of the circle the crank pin centre describes during one upward and one downward stroke of the piston. The other is too obvious to need elaboration. Of course, the crank pin rotating under least pressure in our case will suffer least

wear, as the pressure is outside the 800 lb. per sq. in. which is advisable.

(3.) I am pleased to see Mr. Bonython agrees on this point.

(4.) The only reason I can think of for this statement is because the long stroke engine is larger than the medium stroke by the ratio of 12 to 11 suggested (approximately). I think, however, for this point we must take engines of equal capacity, I only having used the example I did because I had no other to hand. However, the basic argument of greater centrifugal pressure is admitted, and I take it Mr. Bonython is again in agreement with me, at least, judging by his figures.

(5.) This, again, is rather a misconception. In the formula  $F = \frac{Wv^2}{gr}$ , it is so self-evident the larger “ $r$ ” is the smaller  $F$  will be that I did not think it necessary to explain any further. However, to anyone to whom this is not clear.

As our factor  $v$  is obtained by multiplying the r.p.m. by the length of the circular path of the crank pin centre—or thus, R.P.M. × stroke ×  $\pi$  and the factor  $r$  is half of the stroke—it becomes evident that the smaller  $r$  is (given the same r.p.m.) the smaller will  $F$  be. I do not think it necessary to elaborate any further, as the reader can easily see this by substituting various figures. I do not think anyone can say I either thought wrongly, or even my use of the English language is unfortunate, as the whole matter is so simple. I have so much made a point that r.p.m. is the governing factor, and not  $v^2$ , that all I can think is that a deliberate misconception is being put on the article. For anyone to think that the factor  $v^2$  can be the same when r.p.m. are the same is unthinkable. However, to be quite clear, I once more repeat that r.p.m. are equal, as I have taken all through my article, this being perfectly clear in the calculation I made in my article, the velocity being in one case 30.9 ft. per second, and in the other 26.4 ft. We must assume an equal rise in r.p.m. at high speeds, i.e., one engine cannot be compared at, say, 3,000 r.p.m. with another at 1,500 r.p.m. Both must run at the same revolutions to make a fair comparison. I trust this point is now clear to Mr. Bonython, and that he can once more agree with me.

Mr. North’s letter is answered to a large extent with the other. With regard to the gudgeon pin pressure. As we may assume the pressures are equal in either case, we must see that the less distance the motion occurs through, the less will be the wear. For instance, if no motion occurs, no wear will take place. As far as taking a piece off the gudgeon pin bosses, this can be done to as great an extent on the bigger diameter piston, thus preserving its initial advantage of larger area.

The lubrication point I leave to your readers’ decision, but merely ask if the oil can reasonably be expected to splash as much up a small diameter long tube as up a large diameter and shorter tube. With regard to explaining carbonisation, as this can be caused by faulty combustion and other causes, e.g., closing the throttle with the engine in motion and drawing oil past the piston into the combustion chamber, I do not think it affects the case either way.

I do not think anyone can contend that a cylinder does not wear oval, I myself having come across numbers of old engines suffering from this. The wear always occurs on the front and rear walls, as any motor engineer of wide experience can vouch. Indeed, if I am not mistaken, I have seen in *The Motor Cycle* advice columns, on more than one occasion, complaints about this, and questions as to reboring. With regard to cylinder wearing large at the top, it naturally wears quicker where the lubrication is poorest. May I also add that piston ring wear is not very considerable, the pressure exerted by an average ring not being more than 10 lb. to 15 lb. per sq. in. The pressure of the piston on the cylinder walls is much greater than this on the explosion stroke.

In conclusion, as I have not noticed the usual disclaimer from either of the gentlemen who have written, might I venture to enquire if they, like myself, are totally uninterested parties in the making or selling of long stroke engines, or engines of any sort for motor cycles?

I must apologise for trespassing on your valuable space to such a great extent, but I think we may possibly learn a little from this discussion.

Bournbrook.

A.A.S.



# QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Shorting the Plug Points.

**?** Is there a danger, if the plug points are set extra wide apart, and then become oiled or fouled up, of the current breaking down the mica insulator in order to find an easy path to earth?—S.H.R.

If the plug points become oiled up there is no risk of the current shorting through the insulation. No spark occurs at the points, simply because the burnt oil between the points makes an easy path for the current.

## Size of Jet for 3½ h.p.

**?** Would you kindly tell me what size of jet is necessary in a Senspray carburetter when fitted to a 3½ h.p. single, ridden solo with a variable gear.—J.H.

It is impossible to say what size of jet is required. The only way to arrive at the correct size is by experiment, as so many things affect the size of the jet, such as different valve timings, petrol levels, compression ratios, etc. Use as small a jet as possible, consistent with satisfactory all-round running; too large a jet causes overheating. If much too large, black smoke will come from the exhaust. The result will be fouled plugs, excessive petrol consumption, and loss of power. Too small a jet causes difficult starting, popping back through carburetter, refusal to take extra air, while the weak mixture resulting will also cause overheating, lack of power, and the engine will be difficult to start from cold.

## Brazing Materials.

**?** Would you kindly tell me what materials are needed for brazing, and how to proceed with the work? I have a powerful brazing blow-lamp.—H.A.

To make really satisfactory brazing jobs much skill and practice is required. The materials required are the following: A brazing lamp, forge, or blow-pipe large enough to supply plenty of heat. A brazing hearth, which, if a blow-lamp or blow-pipe is used, should be filled with asbestos cubes, or some material to concentrate the heat. Boron Comp. or some similar brazing flux, brazing wire, or spelter. The articles to be brazed should be cleaned bright and pinned together in the desired positions. The joints should then be heated in the forge, placing the asbestos cubes in position, so as to concentrate the heat to the best advantage. Apply the flux when red hot, and continue to heat until the brass spelter runs evenly around the joints.

## Difficult Starting.

**?** I have a 1914 single-cylinder motor bicycle, which is very difficult to start at times. When the machine has been standing indoors, I can start the engine up on the stand by pulling the back wheel round in top gear; I can also paddle it off when starting out for a ride, but when I have been riding a few miles, and then stop and allow the engine to cool down, I have a difficult job to get it to fire again, even by giving it an injection of petrol, or running by the side of the machine in bottom gear (11 to 1). The next day it will start quite easily again indoors. I have bound all carburetter joints with adhesive tape, and the plug sparks all right. I should be grateful if you would tell me the cause of this mysterious behaviour.—F.M.

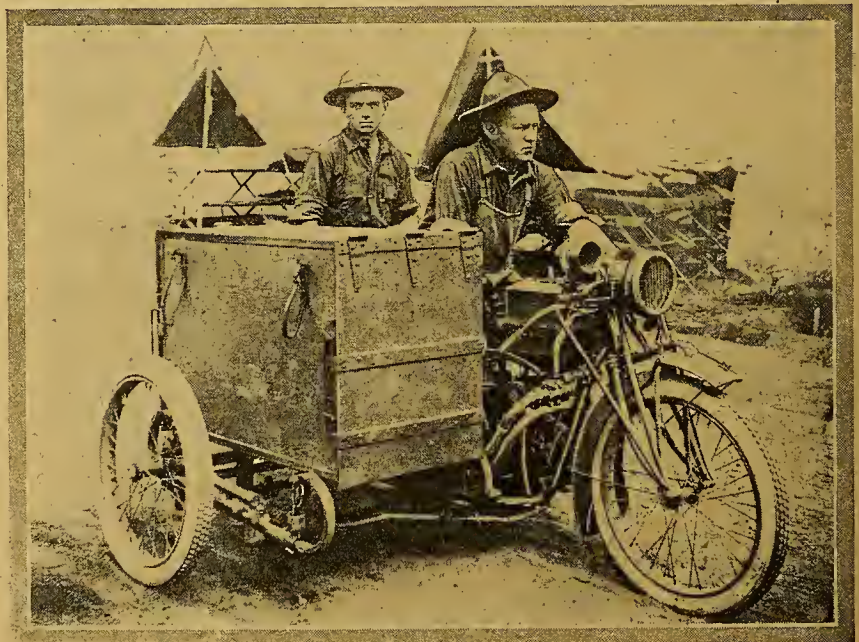
The trouble is certainly difficult to diagnose. We should be inclined to think that it is caused by oil or condensation of moisture on the plug points. Try

slightly increasing the plug gap. If the machine is only difficult to start when warm, it is quite possible that the trouble is due to too large a jet, so that when warm the mixture is richer than when cold, and is just too rich to allow easy starting. If this be the case, slightly opening the air should rectify the starting, and of course injection would make matters worse.

## Belt Slip.

**?** I ride a 3½ h.p. single and sidecar, and in wet weather I am much troubled with belt slipping (an ordinary rubber belt is used). Will you please help me out of this difficulty? Raising the gear by means of the adjustable pulley does not make any difference, and there is never any slip in dry weather.—H.V.M.

You might try using a slightly larger belt, also see that the pulley flanges are true and made to the correct angle, viz., 28°.



THE UTILITARIAN SIDECAR.

The sidecar has been adopted for many and various purposes. We have seen machine gun motor cycles, sidecar ambulances, tradesmen's carriers, and now we have the field kitchenette and ammunition caisson manufactured by the Hendee Co. It has already done excellent service in the field on the Mexican border, we are told.

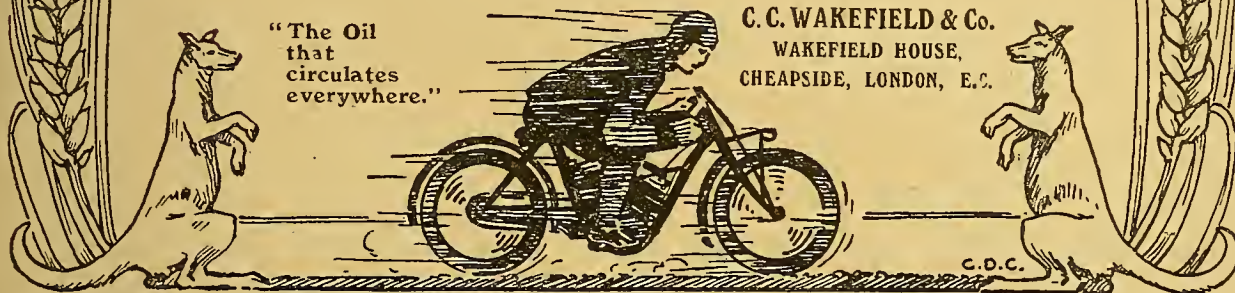


# A MILE IN 35 SEC.<sup>DS</sup>

## MOTOR CYCLE WORLD'S ROAD RECORD accomplished on WAKEFIELD 'CASTROL' MOTOR OIL.

On Saturday, October 7th, at Adelaide, Mr. Jack Booth, riding a 7 h.p. Indian, covered a mile on the road in the remarkable time of 35 seconds, equivalent to 102 MILES per hour. As usual, "Castrol" was the lubricant which was used.

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that  
circulates  
everywhere."



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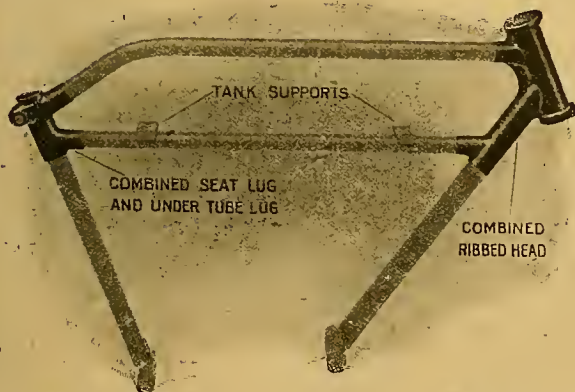
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—is attained by the careful study of the requirements entailed in the power developed, and the embodying in the construction the elements of safety and reliability.—A good example of this is the "New Imperial" frame illustrated with combined head and seat lugs giving the strength where needed.

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Two-speed Clutch and Kick Starter.. 46 "  
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# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

**ADVERTISEMENTS** in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pay carriage one way. For all transactions exceeding 10 in value, a deposit fee of 2s. 6d. is charged, when under 10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A J.S., 1914, 2½h.p., 2-speed, just overhauled by makers; £39.—Below.

A J.S., new model, just delivered, 2½h.p., 2-speed, model B.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480]

A J.S., 1914, 2½h.p., 2-speed, kick start, hand clutch, all chain drive, and accessories; £38/10.—Lamb's, below.

A J.S., 1915, 2½h.p., 3-speed, original tyres, first-class order; £44/10; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [5667]

LATE 1914 6h.p. A.J.S., and sidecar, in almost new condition; any trial; £62.—Elce, Daisy Bank, Lutlock. [X2570]

A J.S., 1916, 2½h.p., 3-speed, lamps, horn, speedometer, 700 miles; £52.—Palfreeman, Pleasley, Mansfield. [X2299]

1916 4h.p. A.J.S. Combination, only done 300 miles; bargain, complete, £82; no exchanges.—Manby, Kirkgate, Wakefield. [X2443]

A J.S. 1912 6h.p. Twin Combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4915]

HUNDREDS OF BARGAIN LINES OF DOUBLE VALUE are offered at



CALL NOW OR WRITE FOR TO-DAY'S BIG LIST, WHICH INCLUDES THESE—

Double value because of lowest price and easiest Easy Terms on which they are offered, and from their perfect excellent condition, ready for immediate riding, and fully guaranteed, combined in many cases with the fact that they are scarce, much sought-after models, hard to get, and steadily growing in demand.

No.	h.p.			
10782.	7-9	1916 3-sp. HARLEY-DAVIDSON and Sidecar	£100	0
10785.	3½	1913 3-speed TRIUMPH	£32	10
10786.	2½	1911 Single-speed HOBART	£20	0
10789.	8	1914 HUMBERT	£75	0
10794.	4-5	1914 ZENITH-GRADUA	£42	10
10795.	3	1914 2-sp. ROYAL ENFIELD	£42	10
10796.	3½	1915 single-sp. T.T. ROVER	£45	0
10799.	4	1914 4-speed F.E. BRADBURY and Sidecar	£32	10
10800.	7-9	1915 3-speed EXCELSIOR	£60	0
10802.	4½	1915 3-speed B.S.A., chain-cum-belt	£52	10
10804.	3½	1913 3-speed TRIUMPH	£37	10
10805.	4	1911 3-speed BRADBURY and wicker Sidecar	£32	10
10806.	3½	1912 3-speed TRIUMPH	£30	0
10808.	3½	1915 2-speed SCOTT and Sidecar	£63	0
10760.	3½	1913 3-sp. ROVER and Sidecar	£58	0
10763.	2½	1916 2-sp. NEW HUDSON	£33	0
10768.	3½	1910 single-speed TRIUMPH	£20	0
10772.	4	1915 3-sp. DOUGLAS and Sc.	£65	0
10776.	3½	1911 single-sp. LINCOLN-ELK and Sidecar	£20	0
10779.	2½	single-speed WOLF	£15	0
10739.	2½	1915 2-sp. NEW IMPERIAL	£27	10
10740.	2½	1916 2-sp. NEW IMPERIAL	£30	0
10744.	2½	1915 2-sp. ALLON	£27	10
10746.	2½	1914 single-sp. SUN VILLIERS	£17	10
10748.	2½	single-speed HOBART	£20	0
10750.	4½	1915 3-sp. B.S.A. and Sidecar	£65	0
10751.	8	1915 MORGAN Runabout, De Luxe Model	£94	10
10754.	3½	1916 L.O.M. RUDGE Multi	£50	0
10705.	12-16	VAUXHALL Car	£125	0
10713.	4-5	1914 ZENITH-GRADUA	£37	10
10717.	4½	PRECISION	£22	10
10724.	3½	1912 3-sp. TRIUMPH and Sc.	£42	10
10727.	4½	1915 3-sp. B.S.A. and Sidecar	£60	0
10682.	3½	1914 3-sp. BRADBURY	£47	10
10687.	1½	single-speed J.E.S.	£10	0
10688.	2½	1911 2-sp. DOUGLAS	£22	10
10699.	3	1913 3-sp. HOBART & Sidecar	£35	0
10701.	2½	1911 single-speed	£22	10
10638.	3½	1912 single-speed INDIAN	£20	0
10643.	3½	1914 RUDD Multi	£49	0
10649.	3½	1913 single-speed B.S.A.	£25	0
10661.	6	1913 ENFIELD and Sidecar	£45	0
10663.	7-9	1914 2-sp. INDIAN	£35	0
10673.	4½	1914 3-sp. B.S.A. and Sidecar	£45	0
10603.	2½	1913 2-sp. DOUGLAS	£30	0
10610.	2½	1914 3-sp. NEW HUDSON, Sc.	£45	0
10614.	3½	1911 single-speed HUMBER	£25	0
10629.	3½	1914 3-sp. ROVER and Sidecar	£50	0
10633.	4	1914 3-sp. SINGER and Sidecar	£45	0
10587.	3½	1914 3-sp. QUADRANT & Sc	£42	0
10588.	3½	1913 RUDGE Multi and Sidecar	£45	0
10596.	3½	1913 RUDGE Multi	£35	0
10567.	2½	1915 2-sp. 2-str. GALTHORPE	£25	0
10573.	2½	1915 2-sp. GALTHORPE	£31	10
10584.	3½	1912 PREMIER and Sidecar	£20	0
10538.	3½	1915 twin INDIAN	£47	10

**WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON.**  
Phone: 5777 Holborn. Wires: "Opidcar, London."

## MOTOR CYCLES FOR SALE.

### A.J.S.

A J.S., 6h.p., and coachbuilt sidecar, fitted with hood and screen, electric head lamps, in good condition; £72.—A. Downie, 19, Haymarket Terrace, Edinburgh. [5606]

1916 2½h.p. A.J.S., 3-speed, latest model, ridden 700 miles only, condition genuinely as new; specification as list.—Robinson's Garage, Green St., Cambridge. [5811]

A J.S. Late 1915 4h.p. Combination, hood, screen, lamps, horn, speedometer, leg shields, interchangeable wheels, first-class condition; £75.—J. C. Phipps, Stanton, Highworth, Wilts. [X2586]

1914 6h.p. A.J.S. Combination, in good condition, complete with all accessories; £60, or would accept smaller power machine and cash.—Williams, 19, Portland St., Cheltenham. [X2546]

1916 A.J.S. and Sidecar, 6h.p., only done 2,000 miles, perfect condition; cost over £115, electric lighting throughout, spare wheel, tyres unused, A.J.S. spring seat-pillar, many spares; price £95.—Pearce, Corn Exchange Chambers, Ipswich. [5685]

1916 2½h.p. A.J.S. Sporting Model, used 580 miles only, and complete with Lucas head lamp, tail lamp, Lucas horn, spare sprockets, spare valve, speedometer with maximum hand, etc., cost £70, condition as new; accept £56, or very near offer.—Layton's Garage, Bicester, Oxon. [X2688]

### Alldays.

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796-]

ALLON, 1915/4, single speed, excellent throughout, lamps; offers wanted.—Arrowsmith, 21, Village Way, Beckenham. [5726]

ALLON, 1916, 2½h.p., 2-stroke, 2-speed, speedometer, electric lights, like new; £35.—29, St. Leonards St., Bow. [5759]

ALLON, 1916, 2-speed, 2-stroke, Lucas lamp and horn, tools, etc., as new; £38.—A. Downie, 19, Haymarket Terrace, Edinburgh. [5607]

ALLON, 1916, single-speed, practically new, best accessories; £29; seen by appointment only.—Boyce, Bank House, Cheam Rd., Sutton. [5821]

ALLON, late 1915, 2-speed, bought March, 1916, good condition, all accessories; officer going abroad; bargain, £32.—12, Wentworth Rd., Redland, Bristol. [X2661]

ALLON, 1916, 2-stroke, 2-speed, excellent condition, bought July, with all accessories, Dunlop tyres, P.H. lamp; £30.—22, Agaur Crescent, Stranraer, Scotland. [X2448]

ALLDAYS, 3½h.p., 1912 clutch model, engine, tyres, enamelling excellent condition, little used; a bargain, 20 gns.—Fairey, 23, Shaftesbury Rd., Ravenscourt Park, London, W. [5668]

ALLON, 2½h.p., 2-speed model, £44/2, or on easy purchase terms, deposit £11/0/6, and 12 monthly payments of £2/16/6.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5643]

ALLON, 2-speed, new June, 1916, auxiliary ½-gallon tank, lamp, horn, and usual tools, in excellent condition throughout, actual machine illustrated page 426, *The Motor Cycle*, November 16th.—Box 500, c/o *The Motor Cycle*. [X2134]

ALLONS, 12 models in stock, just arrived from works; deferred payments if desired, exchanges entertained.—Lamb's, 151, High St., Walthamstow, and at 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5673]

### Ariel.

1912 3½h.p. Ariel 3-speed Combination; £28.—239, Liverpool Rd., N. [5799]

1917 Ariel, 3½h.p., 3-speed C.S., actually in stock.—Ross, 86, High Rd., Lee. [5782]

3½h.p. Ariel, free engine, good condition, new tyres; £18.—Lambert's, Thetford. [5823]

ARIEL, 3½h.p., latest 3-speed model, in stock, with or without sidecar.—Crow Bros., Guildford. [4962]

RIDER TOWARD, 78, High St., Hampstead.—1913 3½h.p., 3-speed Ariel, overhauled and re-enamelled, fast; 22 gns. [5868]

ARIEL, 3½h.p., semi T.T., with variable pulley gear, fast, most excellent condition; £24, bargain.—Layton's Garage, Bicester, Oxon. [X2685]

ARIEL, 1916, 3½h.p., 3-speed countershaft gear, lamps, horn, tools, etc., in use 8 weeks only, equal new; cost £69, sell £58.—A. Downie, 19, Haymarket Terrace, Edinburgh. [5608]

ARIEL, 1913, 3½h.p., 3-speed combination, guaranteed perfect order, complete with head and rear lamps, apron, carrier, etc.; great bargain, lowest £27/10.—Ellis, 560, Lillie Rd., Fulham, London. [5656]

I CAN Give immediate delivery of 1917 5-6h.p. Ariels, 3½h.p. Ariels, solo or combinations; also 1916 5-6h.p. combination as new, guaranteed, £80; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5192]



## MOTOR CYCLES FOR SALE.

## Ariel.

**C**OLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

## Auto-Wheels.

**A**UTO-WHEEL, B.S.A. de Luxe, perfect condition; £7/10.—Bishop Kingsbury, Martock. [5611]

**A**UTO-WHEEL, 1915, like new; £11, or exchange.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5806]

**A**UTO-WHEEL, 1916, in new condition, hardly used; real bargain, £9.—Groves, 27, Tyson Rd., Forest Hill. [5765]

**S**EVERAL Genuine Auto-Wheels, late models, absolutely as new, from £7 to £10 each.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X2624]

## Bat.

**B**AT-J.A.P., 1913 6-7 h.p. twin, Bosch; must sell; £19/10.—1, Ebner St., Wandsworth. [5840]

**8** h.p. Bat, 2-speed, chain drive, Mills-Fulford C.B. sidecar, perfect order; £55.—Smith, Plumber Wivenhoe, Essex. [5698]

**B**ATS.—P. J. Evans, Birmingham agent.—Immediate delivery 4-5 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X2593]

**N**EW Bat-Japs, very latest model, in stock; 4-5 h.p. 2 speeds and free engine; £63/5; exchange or easy terms.—Wanchope's, 9, Shoe Lane, London. [5831]

## Blackburne.

**19** 15 Blackburne Combination, only done 1,200 miles, perfect condition, lamps, horn, speedometer, wind screen, new tyres, 3 speeds; any trial; sacrifice £55.—Island, Compton, Guildford. [5595]

**B**LACKBURN, 1916, 3 1/2 h.p., 3-speed countershaft gear, Lucas lamp, horn, tools, etc., fitted with torpedo coachbuilt sidecar, fast sporting outfit, only done 300 miles, condition as new; £72.—A. Downie, 19, Havmarket Terrace, Edinburgh. [5609]

## Bradbury.

**F**OR Sale, Bradbury and sidecar, N.S.U. 2-speed, fine order; any trial; £27, or nearest offer.—8, Castleford St., Chadderton, Oldham. [X2494]

**B**RADBURY, 1912, 4 h.p., N.S.U., capital case sidecar, good spares, splendid engine, 90 m.p.g.; £24.—T.F.B., 2, Alcester Rd., Wallington. [5683]

**B**RADBURY, 1915, 4 h.p., coachbuilt sidecar, 3-speed gear box, h.b. clutch, lamps, horns, etc., splendid condition, little used, £50; also 3 1/2 h.p. 1913 New Hudson, 3-speed, clutch, coachbuilt sidecar, lamps, nearest £40.—Beever, Station Rd., Holmfirth. [X2696]

## Brough.

**B**ROUGH, 1915, 3 1/2 h.p., flat twin, T.T. model, 2-speed countershaft, very fast and powerful, all accessories, including speedometer, perfect condition, unspratched; £40.—C. Hurlock, 63, Denmark Hill, S.W. [5725]

## Brown.

**B**BROWN, 3 1/2 h.p., in absolutely perfect condition; £23.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5341]

**B**BROWN, 3 1/2 h.p., sound order, good condition, good tyres, and fast; £5.—Head, 51, Hainthorpe Rd., West Norwood. [0668]

**R**IDER TROWARD, 78, High St., Hampstead.—1913 T.T. Brown, 3 1/2 h.p., re-enamelled, overhauled, pan saddle; 16 gns. [5863]

## B.S.A.

**B**.S.A., 1917 models in stock.—Lambert's, Thetford. [5824]

**C**OLMORE Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**19** 16 T.T. B.S.A., all-black finish, demonstration machine; £43/10.—Plastow, Grimsby. [X2610]

**B**.S.A., 3 1/2 h.p., £20; approval, or exchange light-weight for lady.—Mrs. Kipps, Eastry, Kent. [X2565]

**B**.S.A., 4 h.p., 1915 model, 3-speed, all-chain, good order; £38.—Ferris, Spa Rd., Radpole, Weymouth. [5214]

**3** 1/2 h.p. B.S.A., 2-speed gear, sound condition throughout; £30.—Hayes, 344, Euston Rd., N.W. [X2707]

**B**.S.A., late 1913, 4 h.p., 3-speed, all chain, Gloria sidecar; £40.—Box 527, c/o The Motor Cycle. [X2650]

**L**ATE 1913 B.S.A., 3 1/2 h.p., 2-speed, Montgomery sidecar, guaranteed perfect; £36.—20, Whitley St., Reading. [5854]

**19** 12 3 1/2 h.p. B.S.A., 2-speed, free engine, excellent condition; £25, or near offer.—248, Bentley Rd., Doncaster. [X2673]

**19** 15 1/2 B.S.A., 4 1/2 h.p., 3-speed countershaft, electric light, Swan sidecar, all new tyres; £57.—20, Whitley St., Reading. [5853]

**3** 1/2 h.p. B.S.A. Motor Cycle for sale, 2-speed gear, in excellent condition; price £25.—Forster, 18, Priest Hill, Caversham, Oxon. [X2481]

**19** 16 B.S.A., 4 1/2 h.p., 3 speeds, countershaft chain drive, lamps, tools, complete, run 500 miles; £64.—Childs, Berkeley Rd., Berkeley, Glos. [X2643]

## SECOND-HAND BARGAINS

## SIDECAR OUTFITS.

**R**EX, 1914, 6 h.p., 2-speed, modele de luxe ..... £35  
**TRIUMPH**, 3 1/2 h.p., 2-speed countershaft, Sidecar .... £32  
**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed .... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model .... £50  
**RUDGE**, 1913, 5-6 h.p. Multi, with Rudge Sidecar .... £46  
**ENFIELD**, 1912, 6 h.p., 2-speed, twin, Enfield Sidecar .... £25  
**RUDGE**, 1913, 3 1/2 h.p. Multi, coach-built Sidecar .... £33  
**SCOTT**, 1914, 3 1/2 h.p., 2-sp., and Scott sidecar chassis .... £46  
**ZENITH**, 1913, 3 1/2 h.p., twin, clutch, and C.B. Sidecar .... £49  
**ENFIELD**, 1914, 6 h.p., 2-speed Combination .... £55  
**PORTLAND J.A.P.**, 1914, 8 h.p., B.S.A. 3-speed .... £42  
**CHATER LEA**, 1913, No. 7, 8 h.p. 3-sp., and Sidecar .... £40  
**DOUGLAS**, 3 1/2 h.p., 2-sp., Canelet, disc wheels .... £58  
**MATHLESS**, 1913, 8 h.p., J.A.P. overhead, 6-speed .... £48  
**HARLEY-DAVIDSON**, 7-9 h.p., 1915, 3-sp., C.B. S/car. .... £68

## SOLO MODELS.

**DOUGLAS**, 1914, 2 1/2 h.p., T.T., loog exhaust, 2-speed .... £45  
**DOUGLAS**, 1915, 2 1/2 h.p., 3-speed, like new .... £54  
**DOUGLAS**, 1915, 2 1/2 h.p., 2-speed, splendid order .... £48  
**DOUGLAS**, 1914, 2 1/2 h.p., 2-speed, Zephyr pistons, very fast ..... £48  
**DOUGLAS**, 1914, 2 1/2 h.p., 2-speed, kick-start ..... £48  
**DOUGLAS**, 1914, 2 1/2 h.p., 2-speed, Model V ..... £47  
**DOUGLAS**, 1915, 2 1/2 h.p., 3-speed, T.T. bars ..... £52  
**DOUGLAS**, 1911, 2 1/2 h.p., 2-speed touring bars ..... £20  
**DOUGLAS**, 1913, 2 1/2 h.p., 2-speed, touring bars ..... £37  
**RUDGE**, 1913, 3 1/2 h.p. Multi, T.T. bars ..... £33  
**IVY**, 1915, 2-stroke, single-speed ..... £16  
**NEW HUDSON**, 1913, 3 1/2 h.p., 3-speed, J.A.P. engine .... £30  
**R**EX, 1913, 3 1/2 h.p., 2-speed, and clutch ..... £28  
**BROWN**, 3 1/2 h.p. model, Bosch magneto ..... £12  
**INDIAN**, 1915, 5 h.p., 3-speed, twin ..... £52  
**ALLOYS ALLON**, 1915, 2-speed, 2-stroke ..... £32  
**NEW HUDSON**, 1915, 2-stroke, as new ..... £22  
**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equipment ..... £47  
**ENFIELD**, 1910, 2 1/2 h.p., twin, Grado gear ..... £14  
**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, twin ..... £56  
**LEVIS**, 1914, 2 1/2 h.p., 2-stroke, countershaft ..... £18  
**HARLEY-DAVIDSON**, 1915, 7-9 h.p., 3-speed, as new ..... £53  
**F.N.**, 2 1/2 h.p., 2-speed, lightweight ..... £18  
**ALLOYS ALLON**, 1916, 2 1/2 h.p., 2-speed, 2-stroke ..... £30  
**ALLON**, 1916, 2 1/2 h.p., 2-stroke, as new, single-speed ..... £26  
**ENFIELD**, 1916, 2 1/2 h.p., 2-stroke, 2-speed ..... £33  
**TRIUMPH**, 1913, 3 1/2 h.p., 3-speed, all accessories ..... £38  
**INDIAN**, 1914, 7-9 h.p., clutch model, as new ..... £41  
**HUMBER**, 1915, water-cooled, 3 1/2 h.p., 3-speed ..... £45  
**INDIAN**, 1915, 5 h.p., 3-speed, as new ..... £46  
**CALTHORPE**, 1916, 2 1/2 h.p., J.A.P., single-speed ..... £22  
**PREMIER**, 1913, 2 1/2 h.p., lightweight ..... £14  
**TRIUMPH**, 1913, 3 1/2 h.p., tourist, fixed gear ..... £19  
**INDIAN**, 1914, 7-9 h.p., 2-speed, spring frame ..... £38  
**ENFIELD**, 1916, 3 h.p., twin, 2-speed, speedometer ..... £48  
**HUMBER**, 1913, 2 1/2 h.p., twin, had careful usage ..... £21  
**RADCO**, 1915, 2 1/2 h.p., 2-stroke, done about 500 ..... £20

## NEW 1917 MODELS.

**ROYAL ENFIELD** 6 h.p. Combination ..... £94 10  
**ROYAL ENFIELD**, 3 h.p., twin, 2-speed ..... £57 15  
**ROYAL ENFIELD**, 2 1/2 h.p., 2-speed, 2-stroke ..... £44 2  
**B.S.A.**, 4 1/2 h.p., 3-speed, all-chain, H, 1917 model ..... £66 0  
**B.S.A.**, 4 1/2 h.p., 3-speed, belt, K, 1917 model ..... £64 0  
**B.S.A.**, 4 1/2 h.p., Model D, T.T. .... £52 10  
**ROVER**, 1917, 3 1/2 h.p., 3-speed, Combination ..... £89 9  
**ROVER**, 1917, 3 1/2 h.p., 3-speed, solo ..... £69 10  
**ROVER**, 1917, 3 1/2 h.p., T.T., Philipson pulley ..... £61 10  
**LEVIS**, 2 1/2 h.p. single-speed, Popular model ..... £32 0  
**COVENTRY EAGLE**, 2-stroke, de luxe ..... £37 15  
**MORGAN G.P.** No. 1, M.A.G. engine, discs, etc. £150 0

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**G.W.K.**, 1914, 8 h.p., just re-painted and overhauled ..... £120  
**G.W.K.**, 1915, 8 h.p., just re-painted, detach. wheels ..... £165  
**MORGAN**, 1917, G.P. No. 1, only done 500, & as new ..... £135  
**KNIGHT**, 1914, 11.0 h.p., sporting body ..... £145  
**CALTHORPE**, 1916, 10 h.p., G.D.M. dyn., 6 wheels ..... £275  
**SINGER**, 1914, 10 h.p., dynamo lighting ..... £198  
**SINGER**, 1913, 10 h.p., 5 lamps, just being overhauled ..... £135  
**SINGER**, 1913, 10 h.p., 5 lamps, dickey ..... £145  
**HILLMAN**, 1915, 9.5 h.p., speedometer, little used ..... £205  
**MATHIS**, 1914, 15 h.p., 5-seater, dynamo ..... £300

Machines started (\*) are complete with lamps, horns, etc. 1914 and 1915 DOUGLAS MACHINES bought for Spot Cash.

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## MOTOR CYCLES FOR SALE.

## B.S.A.

**B**.S.A., late 1913, clutch model, splendid condition, unused for 12 months; £26. Lightweight wanted.—436, Whitehorse Rd., Thornton Heath. [5771]

**19** 17 B.S.A. in stock. Catalogues free. Spare parts per return. 1 in. belts, as fitted by buyers; 8/6, post paid.—Albert L. Pitts, Redditch. Tel.: 91. [X0529]

**B**.S.A., 1913, 3 1/2 h.p., variable gear, excellent condition, lamps, etc.; bargain; owner baylor cur; £25, quick sale.—Box 12,690, c/o The Motor Cycle. [5855]

**19** 14 B.S.A., 4 1/2 h.p., 3-speed countershaft gear, chain drive, coachbuilt sidecar, tyres practically new, in excellent condition; £44.—Stead, Market St., Cinderford. [X2305]

**B**ARGAIN.—1913 1/2 B.S.A., 3 1/2 h.p., 2-speed and free, chain drive, tyres nearly new, engine re-hushed; first cheque £23 secures.—6, Broomfield Place, Headingley, Leeds. [X2645]

**B**.S.A., 1915, model K, complete with nearly new accessories, excellent outfit; £55.—Layton's Garage, Bicester, Oxon. [X2689]

**19** 17 B.S.A.'s, all models from absolute stock; cash, or deferred, or exchanges, Douglasses preferred; Jones, Garage, Broadway, Muswell Hill. Phone: Hornsey 2562. [5836]

**B**.S.A., 1916, 4 1/2 h.p., chain drive, 3-speed countershaft gear, Phoenix coachbuilt sidecar, accessories, mileage under 2,000 miles; £63, or near offer.—136, Ancona Rd., Plumstead, S.E. [5522]

**B**.S.A., 1916 model H, all chain drive, as new, guaranteed perfect, only run few hundred miles, with coachbuilt sidecar, and accessories; 60 gns.; without sidecar £58.—Moss, Mem. [X2613]

**B**.S.A., 1916, 3-speed gear box, clutch, kick starter, Lucas head and tail lamps, horn, speedometer, perfect condition throughout; £50.—Sussex Garage Co., Grand Parade, Brighton. [X2308]

**B**.S.A., 1915, 4 1/2 h.p., 3-speed countershaft, chain-cum-belt, lamps, horn, and Millford coachbuilt sidecar, spares, splendid order; must sell; £47.—Reeves, 13, Cromwell Rd., Whitstable. [5802]

**R**IDER TROWARD, 78, High St., Hampstead.—1914-15 B.S.A., 4 1/2 h.p., 3-speed countershaft gear, clutch, kick-start, all-enclosed chain drive, good order and appearance; 36 gns. [5811]

**B**.S.A., 3 1/2 h.p., 2-speed, F.E., 1915 Canelet sidecar, all A1 condition, tyres as new; £37/10, or best offer; must sell, joining up.—Woodward, 203, Pershore Rd., Selly Park, Birmingham. [X2670]

**B**.S.A., 1916, 4 1/2 h.p., belt-cum-chain drive, best 1916 Millford sidecar, Palmer tyres, and new spare Dunlop, best lamps and horn, splendid condition; £65.—Edmonds, Market Place, Fairford, Glos. [X2537]

**B**.S.A. 4 1/2 h.p. Combination, late 1914, only run 8,000, enamelling, plating as new, mechanical horn, speedometer, all accessories, excellent condition throughout; £55.—12, Wentworth Rd., Redland, Bristol. [X2662]

**B**.S.A., new models delivered from stock, chain driven 3-speed model H £66, model K, chain-cum-belt, £64; your present motor cycle taken in part payment.—Eagles and Co., High St., Acton, London, W. [X2640]

**B**.S.A., 3 1/2 h.p., 2 speeds, drip feed, speedometer, horn, lamp, and 18 gn. Gloria sidecar, splendid condition; bargain, £37, or exchange higher power, cash adjustment.—57, Atwell Rd., Peckham, S.E. [5730]

**B**.S.A., 1913, 3 1/2 h.p., 2-speed, chain drive, kick start, new tyres just fitted, all accessories, speedometer, lamps, with coachbuilt sidecar, splendid order; £40, or exchange 4 1/2 h.p. model.—Waddy, Arnold Villas, Church Walk, Rugby. [X2493]

**B**.S.A., 1915, 4 1/2 h.p., 3-speed, all-chain drive, fitted with B.S.A. best sidecar, apron, large head lamp, rear lamp, horn, speedometer, etc., condition almost as new; bargain, £59, or offers.—Ellis, 360, Lillie Rd., Fulham, London. [5655]

**4** 1/2 h.p. B.S.A. and Sidecar, 1916, 3-speed, model H, all chain drive, clutch and kick start, fitted with handsome Canelet coachbuilt sidecar, not ridden 2,000 miles, complete with all accessories; 60 gns, guaranteed.—Wanchope's, 9, Shoe Lane, London. [5832]

**B**.S.A. Latest New Models can be delivered from stock: Chain drive model H, 3-speed countershaft gear, £66; chain-cum-belt model K, £64; Montgomery sidecars in stock to fit from 10 gns; your present machine can be taken as part payment.—Below.

**B**.S.A., 1916, 3-speed countershaft, model K, with coachbuilt sidecar; £64.—Elee and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

**B**.S.A.'s.—Three guaranteed 1917 models H, all chain, £66; and three model K's, £64; and a No. 2 sidecar, £21; deferred payments arranged, exchanges; good prices allowed for second-hand up-to-date machines.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5663]

## Calthorpe.

**C**ALTHORPE, 2 1/2 h.p., excellent condition, new engine; offers.—Weed, Harboro' Rd., Northampton. [X2514]

**C**ALTHORPE, 2 1/2 h.p. J.A.P. engine, Enfield 2-speed gear, brand new, unused; £35.—Moss, Wem. [X2616]

**C**ALTHORPE, 2 1/2 h.p., 2 speeds, fitted for substitutes, runs well; £14/10.—51, Gilpin Av., East Sheen, S.W. [X2541]



## MOTOR CYCLES FOR SALE.

## Calthorpe.

1915 Calthorpe-Jap, 2-speed, splendid condition; trial; price £21, with lamps.—Clifford House, Burnham Somerset. [5796]

1915 Calthorpe-Jap, 2½ h.p., 2 speeds, fully equipped; bargain, £21.—394, Finchley Rd., Child's Hill, N.W. [5737]

1915 2½ h.p. Calthorpe-Jap, Enfield 2-speed, Lucas horn, lamps, speedometer, first-rate order, £24.—2/Lt. Adams, H.A.C., Westbore, Canterbury. [5661]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

CALTHORPE J.A.P., 2½ h.p., with Enfield 2-speed gear; three actually in stock; deferred terms, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5671]

CALTHORPE Latest 1916 Models: 2½ h.p., 2-speed, J.A.P. engine, 36 gas.; 2½ h.p. ladies' model, 2-stroke, 2-speed, 34 gas.; catalogue and full particulars sent on request.—Elice and Co., City Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

## Chater-De Dion.

CHATER-DE DION, Bosch mag., Senspray carburettor, splendid condition; £7/10.—Royston, 17, North Side, Clapham Common, S.W. [X2440]

## Clarendon.

CLARENDON, 3h.p., accessories, battery, good condition; £5.—Smith, 41, Congo Rd., Plumstead. [5732]

## Clyno.

1914 2½ h.p. 2-speed Clyno, 2-stroke, like new; £27.—Wilkin, Hunters Bar, Sheffield. [X2632]

CLYNO Combination, 2-speed gear, kick-starter, fitted lamps and apron.—Hayes, 344, Enston Rd., N.W. [X2706]

CLYNO, 1913-14, 6h.p., 3-speed countershaft, chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [5469]

CLYNO 5-6h.p. Combination, carburettor and tyres new, all just overhauled, condition and appearance excellent; £37/10.—Fisher, 48, High St., Chelmsford. [5774]

## Connaught.

CONNAUGHT, 1914, 2-speed, perfect; £24.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5342]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X2594]

## Coventry Eagle.

COVENTRY Eagle, 1916, 6h.p., 3-speed countershaft, coach sidcar, and accessories; cost £100, little used, £69/10.—Motor Exchange, Horton St., Halifax. [5471]

COVENTRY Eagle, fitted with 2½ h.p. Villiers engine, Brampton forks, 26in. wheels, £37, or on easy purchase terms, deposit £9/6/8, and 12 monthly payments of £2/7/4; ditto, but fitted with 2-speed gear, £44/5, deposit £11/1/8, and 12 monthly payments of £2/16/9.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5641]

## De Dion.

BARGAIN.—3h.p. De Dion, B. and B., Michelin's, tubes unpunctured, in good condition throughout; £6/10.—Apply, Wapshott, York Cottage, Farze Platt, Maidenhead. [5781]

## Douglas.

1912, 1913, 1914 Douglas's, £25, £27, £32.—Ross, 86, High Rd., Lee. [5787]

DOUGLAS, 1914, 2-speed, speedometer, lamps; £35.—Leading, High St., Sutton. [5819]

1911 Douglas, 2½ h.p., perfect order, good tyres; £12.—58, Garfield Rd., Lavender Hill, S.W. [5696]

1911 2½ h.p. Douglas, good condition; gift, 12 gas., great bargain.—30, Talbot St., Burnley. [X2626]

COLMORE Depot, Birmingham, Leicester, and Liverpool, for Douglas motor cycles, also spare parts. [0800]

DOUGLAS, 1913, new 1914, perfect condition, unscratched; 27 gas.—245, Hammersmith Rd., London, W. [5715]

1913 2-speed Douglas, clutch model, splendid running order; £26, no exchanges.—Manby, Kirkgate, Wakefield. [X2444]

1912 Douglas, 2-speed, footboards, splendid condition, fast, reliable, accessories; £25.—Heath, 21, Robert St., N.W. [5734]

RIDER TROWARD, 78, High St., Hampstead.—1914 T.T. Douglas, 2-speed, enamelled red, very fast; 35 gas. [5858]

DOUGLAS, 2-speed, 2½ tyres, lamps, footboards, full equipment; £30.—Shand, 14, Brandram Rd., Lee, London. [5728]

DOUGLAS, 1912, 2½ h.p., lamps, horn, etc., in fine condition; £15, or nearest offer.—6, High St., Lewisham, S.E. [5645]

DOUGLAS, 1911, new tyres, 2 generators, lamps, Brooks saddle; Farnborough; £15.—Box 528, C/o The Motor Cycle. [X2564]

DOUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil. Tel.: 50. [5855]

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## Douglas.

DOUGLAS, 1916, 2½ h.p. War Office, all black, ridden less than 200, accessories; £58.—Duna, 177, Knightsbridge, S.W. [5619]

DOUGLAS, 1911, 2½ h.p., splendid condition; bargain, £19/10, offer; side door.—115, Lady Margaret Rd., Tufnell Park, N. [5713]

DOUGLAS, 2½ h.p., £15/10; 1913 2-speed, wants tuning up, £26; 1914, single speed, £28.—Motor Exchange, Horton St., Halifax. [5470]

1914 Douglas, 2½ h.p., new back tyre, spares, lamps, etc., in splendid condition; £34; trial by appointment.—101, Tooting Bec Rd., S.W. [5689]

DOUGLAS, 2½ h.p., single, guaranteed in good condition, ready to drive away; genuine bargain, £22/10.—17, Goldhawk Rd., London, W. [5740]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

1916 2½ h.p. Douglas, W. 3-speed, clutch, kick start, with lamps, horn, many spares, condition perfect, little used, really new; £54.—Robinson's Garage, Green St., Cambridge. [5808]

DOUGLAS, purchased 1914, clutch, kick start, unused last 2 years, condition like new; bargain, £37/10.—McVoy, 11, Abercorn Place, Maida Vale, N.W. Hampstead 6255. [5358]

1914 Douglas, 2½ h.p., 2-speed, just overhauled, new tyres and inner tubes, Stewart speedometer, horn, accessories, enamel and plating perfect; £35.—44, Horse Fair, Birmingham. [X2309]

DOUGLAS, 2½ h.p. T.T., late 1913, 4,000, perfect, very fast, climb anything normal on top; trial; deposit: owner in army 18 months; £33.—Newman, Minorities, Newcastle-on-Tyne. [5879]

DOUGLAS, 1913, 2-speed, clutch model, all accessories, really fine order; £36/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5665]

GUESS This is Some Douglas.—Latest War Office all grey model, T.T., all accessories, practically new, very fast, perfect; £54, or with cash for 1915-16 twin combination.—Albert, 23, Market Place, Kingston, S.W. [5765]

DOUGLAS, 1913-14, 2½ h.p., 2 speeds, excellent condition, fully equipped, valuable spares, T.T. or touring bars, long exhaust, running on 50% paraffin; accept £32/10; appointment.—136, Dalmain Rd., Croydon. [5705]

1915 4h.p. Douglas, 3-speed, clutch, kick start, C.A.V. mag., complete with Watford speedometer, 2 lamp sets, Lucas horn, new Dunlops with coachbuilt sidcar, many spares, perfect condition, 1,500 only; £67/10.—Robinson's Garage, Green St., Cambridge. [5810]

## Enfield.

6h.p. Royal Enfield Combination, unscratched; £68.—Morrison, John St., Langholf. [5604]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

1913 Enfield, 6h.p., C.B. sidcar, just renovated; a bargain, £41.—Ross, 86, High Rd., Lee. [5784]

1914 6h.p. Enfield Combination, very good order; £55.—Gough, Castle Court, Shrewsbury. [X2495]

ENFIELD Combination; £55, or exchange for Morgan.—Jane, Wood Rd., Pontypridd, Glamorgan. [X2606]

ENFIELD 1916 6h.p. Combination, electric lights, hood, screen; £75.—29, St. Leonards St., Bow. [5757]

ENFIELD 1916 6h.p. Combination, little used, splendid order, guaranteed perfect; £69.—Moss, Wem. [X2617]

ENFIELD 1914½ 6h.p. Combination, speedometer, new condition; 55 gas.—29, St. Leonards St., Bow. [5758]

1916 Enfield Combination, new July, 150 miles; 75 gas., or exchange for 1916 solo and cash.—54, Devonshire Rd., Bexhill. [X2266]

RIDER TROWARD, 78, High St., Hampstead.—1916 Enfield combination, luxuriously equipped, cost £100, mileage 450; 72 gas. [5876]

3h.p. 1916 Twin Enfield, ridden 3,000 miles, auxiliary tank, starting jet, vaporisers, spares, new condition throughout; £42.—Thistlethwaite, Grassington, Skipton. [X2447]

ENFIELD 3h.p. Twin, 1915, fully equipped, speedometer, done 2,000 miles, condition guaranteed; £35, or nearest offer.—Holland, Fairfield, Harlow, Essex. [5711]

ENFIELD Combination, 90 gas.; 3h.p. twin, £57/10; 2-speed, 2-stroke, £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0038]

ENFIELD 6h.p. Combination, late 1915, hood, wind screen, speedometer, spare inner tube, outer cover, lamps, all accessories; any trial; bargain, £65.—54, Lincoln Rd., Ponders End. [5617]

ENFIELD 1916 Combination, with hood, speedometer, lamps, horn, mirror, numerous spare parts and tools, in beautiful condition; 72 gas.—Crawley Bros., Bishop's Stortford, Herts. [5661]

ENFIELD, 2½ h.p., 1913, 2-speed, free engine, kick starter, complete with speedometer, mechanical horn, lamps, etc., new Dunlop rear; £20.—Heppell, 33, Milton St., Newcastle-on-Tyne. [X2492]



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miles. Price £52

1916 Lady's CALTHORPE, 2-speed, new, un-  
used, cancelled order; cost £33 14s.  
Price £33

1914 6 h.p. A.J.S. Combination and windscreen.  
Price £67 10

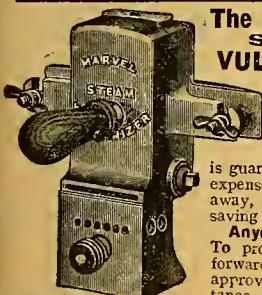
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tance. Money returned,  
less carriage, if not satisfied.  
Complete with supply of all necessary materials.  
Price—motor cycle and cycle car size, 13/9; car  
size, 25/-. Carriage paid.

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now ready, post free.**

**SPECIAL AGENTS for REX and J.A.P.  
PARTS. TRADE SUPPLIED.**

### MOTOR CYCLES FOR SALE.

#### Enfield.

ENFIELD.—Six 1917 3h.p. touring and T.T. models,  
2-speed, kick start, actually in stock, 55 gns. each.  
—Lamb's, 151, High St., Walthamstow, and 50, High  
Rd., Wood Green. Tels.: Walthamstow 169, and Horn-  
sey 1956. [5668]

ENFIELD, 1916, 3h.p., 2-speed, specification as list,  
used 50 miles only, and as new; cost 55 gns., accept  
£48, or nearest offer; owner, through wounded leg, finds  
it impossible to use motor cycle.—Layton's Garage,  
Bicester, Oxon. [X2690]

1917 Enfield Model 8h.p. Combination, hood, screen,  
Lucas dynamo set, spring handle-bars, horn,  
mirror, new October, splendid outfit; ill-health cause  
of sale; cost £125, accept 93 gns., lowest.—Coniston,  
Cliffe Av., Margate. [X2542]

ENFIELD Combinations, new models in stock; 6h.p.,  
2-speed, £94/10; your present machine can be  
taken as part payment. We supply on the best cash  
exchange, or easy payment terms.—Elce and Co., 15-  
16, Bishopsgate Av., Camomile St., E.C. [0597]

BIRMINGHAM Enfield Agent, P. J. Evans, 37-91,  
John Bright St.—Immediate delivery all 1917  
models, including lighting set combination, special 8h.p.  
with hood and screen, and standard 6h.p. combination,  
also 3h.p. standard and sporting models, and 2½h.p. 2-  
stroke; prices from 42 gns. [X2592]

ENFIELD 8h.p. Colonial Outfit, £96/12; also 1917  
6h.p. standard combination Enfield, hood and  
screen, £100; good prices allowed on any-to-date motor  
cycles in exchange; deferred terms entertained.—Lamb's,  
151, High St., Walthamstow and 50, High Rd., Wood  
Green. Tels.: Walthamstow 169, and Hornsey 1956.  
[5664]

#### Excelsior.

EXCELSIOR, 8h.p., and racing sidecar, 1914: £50.—  
W. and H. Motor Co., Ltd., 287, Deansgate, Man-  
chester. [5343]

EXCELSIOR 8h.p. Twin, 2-speed, racing sidecar;  
£50.—W. and H. Motor Co., Ltd., 287, Deansgate,  
Manchester. [5307]

EXCELSIOR, 1916, 7h.p., 3-speed, and coach side-  
car, both new: £77/10 cash, bargain.—Motor Ex-  
change, Horton St., Halifax. [5472]

7-9h.p. 1916 Excelsior Combination, 3-speed, kick  
starter, electric light, all accessories, only done  
1,700 miles, just like new; bargain, £80, or nearest;  
must sell.—63, Caerleon Rd., Newport, Mon. [X2496]

EXCELSIOR, 4½h.p. Coventry, 1912 (Easter), Ful-  
ford family sidecar, wicker, Sturmer-Archer 3-  
speed hub, 650x65 Palmers, tools, sound condition,  
little used last 3 years; 35 gns.—8, Perry Rise, Forest  
Hill, S.E. [5657]

#### F.N.

F.N., 5-6h.p., good condition; sell or exchange light-  
weight, Lewis or J.A.P. preferred.—Cooke, Nun-  
cargate, Notts. [X2646]

F.N., 1911, 5-6h.p., 2-speed, clutch, B. and B., wants  
overhauling, good tyres, wicker sidecar; £12.—  
E.H.S., 42, Norton Rd., Letchworth. [X2573]

#### Grandex.

GRANDEX-PRECISION, 3½h.p., T.T., new, 1916  
model; bargain to clear, £33.

GRANDEX-VILLIERS 2-stroke Lightweight, new  
1917 model, just come from works; £38/10; in-  
spection invited.

GRANDEX-ABINGDON, 4h.p., 2-speed and free en-  
gine, new 1916 model, bargain to clear, £47/10.—  
Grandex Motors, 349, Euston Rd., London, N.W. [5659]

#### Harley-Davidson.

1915 Harley-Davidson Combination; £65.—Ross, 86,  
High Rd., Lee. [5785]

RIDER-TROWARD, 78, High St., Hampstead.—  
1915 11½ Harley-Davidson combination; 59 gns.  
[5371]

HARLEY-DAVIDSON Combination, 7-9h.p., 1915,  
speedometer, accessories, perfect; offers.—X., 64,  
Wellgate, Rotherham. [X2141]

HARLEY-DAVIDSON 1915 Combination, fully  
equipped with lamps, tools, etc.; £65.—Hayes,  
344, Euston Rd., N.W. [X2709]

HARLEY-DAVIDSON, 8h.p., 1915, twin, with Mills-  
Fulford coachbuilt car, lamps, speedometer, etc.,  
£70.—Cheale and Sons, Chelmsford. [5626]

HARLEY-DAVIDSON 1916 Models delivered from  
stock on the best terms for cash exchange or  
easy payments; sidecars in stock to fit.—Below.

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, acces-  
sories; £50.—Elce and Co., 15-16, Bishopsgate  
Av., Camomile St., E.C. [0552]

COLMORE Depot, Birmingham, Manchester, Liver-  
pool, Leicester, for immediate delivery of all  
models of Harley-Davidsons and spare parts. [0802]

LATE 1915 Harley-Davidson Combination, fully  
equipped, excellent condition; £80; cash or easy  
terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

7-9h.p. Harley-Davidson, late 1915 model, electric  
lighting set, Millford coachbuilt sidecar, fine con-  
dition; genuine bargain, £52/10.—Crow Bros., Guildford.  
[5597]

HARLEY-DAVIDSON, 7-9h.p., late 1915, 11½,  
dynamo lighting, guaranteed perfect condition;  
£55.—Balwick, St. Albans Terrace, Sherwood St., Not-  
tingham. [X2515]

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**COMBINED  
OVERSHOE  
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Absolutely Waterproof.

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**ABESTOL GLOVES,**  
No. 6139, tan or black, large  
gauntlets, with in-  
side knitted wrist-  
lets, lined fleece,  
as illustrated (state  
size of glove worn).  
Price 12/9.

No. 3105.—Horse-  
hide or Cape grain  
Asbestol, lined  
fleece, sliding strap  
fastener at wrist,  
tan or black.  
Price 11/6.

No. 3103.—Asbestol  
Tan Reindeer  
Horsehide expand-  
ing Gauntlets with  
fasteners, lined  
fleece. Price 12/9.

Black or tan Sheepskin, lined fleece (special  
value), short gauntlets. Price 5/9.

Grey Horsehide, fleece lined, knitted wristlet.

Special line. Price 7/6.

Tan Horsehide, fleece lined. Gauntlet cuffs.

Price 8/3.

Write for our complete Glove List.

#### SPECIAL SALE LINE IN LEATHER WAISTCOATS.

Chamois Sleeve Waistcoats, all leather, unlined,  
button close to throat, 2 large pockets, tan  
colour. All sizes. Price 32/6.

Ditto, lined, 4 pockets. Price 35/6.

Oilskins.—Black or yellow, double-breasted  
Coat, half lined oilskin, 36" to 40" long.  
Price 12/6

Ditto, 48" to 52" long, 16/9

State chest measurement.

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#### ELECTRIC FLASH TORCHES.

Standard, with domed lens. Price 2/6

Baby round, 5½ x 1½, No. 5. Price 3/3

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Spare batteries. Price 9d., 1/1, 1/3, and 1/6

Spare bulbs, clear. Price 4d.

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Postage paid over 5/-.

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We carry a good assorted stock of Valves and  
Piston Rings, Crank and Gudgeon Pins, etc., of  
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London."



## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

1915 Harley-Davidson, model 11J, electrically equipped, excellent condition, speedometer, and spares, mileage 2,700, new tyre on back wheel; £60, or near offer.—A. H. Ellis, Wivenhoe, Essex. [5733]

HARLEY-DAVIDSONS delivered from stock with or without their latest sidecar; liberal exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Horsaey 1956. [5669]

HARLEY-DAVIDSON 1916½ Combination, electric lighting set and horn, Stewart speedometer, special 221 H.D. sidecar, with Walbro wind screen and apron, in perfect condition; cost £113, lowest price £95; can be seen by appointment.—39, Sefton Park Rd., St. Andrews, Bristol. [X2563]

## Henderson.

HENDERSON, 4-cyl., 2-speed, chain drive; £46/10, or exchange.—Motor Exchange, Horton St., Halifax. [5473]

1914 Henderson, all accessories, splendid running order, tyres as new; £45, or exchange lightweight.—Henly, 7, Woburn Place, London. [5839]

## Hobart.

HOBART, 1915, 2½h.p., 2-speed, lamps, horn, complete, perfect condition; bargain, £20.—441, Brighton Rd., Croydon. [5739]

## Humber.

3½h.p. Humber, in going order; a trial given; £8.—22, Gilmore Rd., Lea. [5790]

HUMBER, 2-speed, free, perfect; £23.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5805]

1914 3½h.p. 3-speed Humber, lamp, etc.; £35; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0863]

3½h.p. 2-speed Humber, with sidecar, good condition; £27.—Frank Chadgay, Sandwich Rd., Eyrthorne, Dover. [5777]

3½h.p. Humber, Amac, new tank, re-enamelled, good tyres, etc.; requires battery; £4.—27, Wilbury Av., Hove. [5775]

1917 3½h.p. Horizontal Twin Humber, 3-speed, and clutch, actually in stock; £75.—Wilkin and Co., Hunters Bar, Sheffield. [X2629]

1917 6hp. Horizontal Twin Humber, 3-speed, and clutch; delivery from stock; £89/5.—Wilkin and Co., Hunters Bar, Sheffield. [X2628]

HUMBER Combination, 3½h.p., 2-speed, free, mag., B. and E. inst. in fine order and condition; £22.—Head, 31, Hamthorpe Rd., West Norwood. [0870]

HUMBER, 1915, 3½h.p., 3-speed, nearly new; special price, £57/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

FIRST Cheque £5/10 secures (no offers) Humber, 2-speed, free engine, 3½h.p., Triumph carburetter; owner called np.—Chivers, 1, King Edward Rd., Rugby. [X2577]

HUMBER Combination, 3½h.p., free engine, speedometer, tyre, splendid condition; price £30, or exchange; no dealers.—Pates, 62, High Rd., Wood Green, N. [X2671]

LIGHTWEIGHT Bargain.—2hp. Humber, perfect running order, 3 speeds, ready for instant service; £18 secures, worth £30; owner in army.—Millard, Chesterfield. [X2582]

## Indian.

INDIAN, 1915, 7-9h.p., T.T. clutch model, as new; £43.—159, Leytstone Rd., E. [5625]

INDIAN, latest model, 5h.p., 3-speed, scarcely used; £50.—Hayes, 344, Euston Rd., N.W. [X2702]

1916 5h.p. Indian Combination, condition new; must sell; offers.—Gray, Tailor, Coalville. [X2569]

INDIAN 1914 Combination, beautifully fitted, perfect order; called up, must sell.—1, Kensington Park Rd., W. [5660]

INDIAN, 1916, 5h.p. T.T., guaranteed, Phoenix double sidecar; £63, or exchange.—Bishop, Brynmoor, Wednesfield. [X2607]

INDIAN Combination, 1913, 7h.p., 2-speed, spring frame, good condition; £35.—63, Cambridge Rd., Anerley, S.E. [5815]

RIDER TROWARD, 78, High St., Hampstead.—1915 Indian, 5-6h.p., 3-speed, underslung coach sidecar; 52 gns. [5862]

INDIAN, 1915, 5h.p., 3-speed, with Mills-Fulford coachbuilt sidecar all accessories, splendid condition; £60.—Below. [5852]

INDIAN, 1915, 7-9h.p., road racing model, lamps, speedometer, etc., good condition; £43.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0598]

1914 7-9h.p. Electrically-equipped Indian, 2-speed, clutch, expensive Indian sidecar; £45.—20, Whitley St., Reading. [5852]

INDIAN, 5-6h.p., fixed gear, enamelled red; bargain, £35, or exchange.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5340]

INDIAN, 1915, 5h.p., 3 speeds, clutch, and kick starter, usual accessories; £52.—P. J. Evans, John Bright St., Birmingham. [X2596]

INDIAN 1915 7-9h.p. Combination, complete, and in guaranteed condition; £60, genuine bargain.—Layton's Garage, Bicester, Oxon. [X2682]



## ACTUALLY IN STOCK.

4½ h.p. B.S.A., 1917, Mod. K, with genuine B.S.A. No. 2 Sidecar	£86 15
4½ h.p. B.S.A., 1917, chain drive (5 models in stock)	£66 0
4½ h.p. B.S.A., 1917, belt-cum-chain (4 models in stock)	£64 0
2½ h.p. ROYAL RUBY, 1917, 2-speed, just arrived	£40 0
2½ h.p. ROYAL RUBY, 1917, single-speed	£32 10
2½ h.p. ENFIELD, 1917, 2-speed, 2-stroke	£44 2
3 h.p. ENFIELD, 1917, kick start (4 touring models in stock)	£57 15
8 h.p. ENFIELD 1917 Combination	£96 12
3 h.p. ENFIELD, 1917, T.T. model (3 in stock)	£57 15
8 h.p. ENFIELD 1917 Combin, 2-seater, Sidecar, hood and screen	£105 2
8 h.p. ENFIELD 1917 Colonial model	£96 12
7-9h.p. HARLEY-DAVIDSON, Model 16F, and Sidecar	£102 9
7-9h.p. HARLEY-DAVIDSON, Model 16F, T.T., Swan torpedo Sidecar	£110 0
2½ h.p. NEW HUDSON, 2-sp., 1917, Mod. C	£38 0
2½ h.p. LEVIS, Popular	£32 0
2½ h.p. LEVIS, Model E, 2-speed Enfield gear, rustless rims (3 in stock)	£39 18

## SECOND-HANDS.

6 h.p. ENFIELD 1916 Combin'n, 3 lamps, speedometer	£79 10
2½ h.p. CONNAUGHT, 1916, only shop-soiled, lamp, horn	£29 10
7 h.p. MATCHLESS, late 1914, Model 8R, new Canelet Sidecar	£73 10
2½ h.p. RADCO, 1914, single-speed	£15 15
6 h.p. MATCHLESS 1912 Combination, coach Sidecar, fine condition	£29 10
2½ h.p. DOUGLAS, 1913, 2-speed, clutch, good tyres, all accessories	£36 10
3½ h.p. DOUGLAS (Dec., 1914) 2-speed Combination	—
3½ h.p. RUDGE Multi 1914, all access., splendid trim	£36 10
2½ h.p. RUDGE, 1912, 2-speed, and cane Sidecar, all accessories	£25 10
2½ h.p. JAMES, 1915, 2-speed, new tyres, and accessories	£31 10
4½ h.p. JAMES 1915 3-sp. Com., standard outfit, access., Stewart speedometer	£63 0
6 h.p. ENFIELD 1916 Com., ridden 800 miles, not in use for last 6 months	£84 0
4 h.p. TRIUMPH, 1914, 3-sp., and Swan Sidecar, heap of accessories	£49 10
3½ h.p. HUMBER, 1913-14, 2-speed, and coach Sidecar, all accessories	£30 0
3½ h.p. P. & M. 2-speed Com. Good valve	£25 10
2½ h.p. LEVIS, 1914, 2-speed	£25 10
2½ h.p. ALLDAYS ALLO, clutch, 2-speed model, all accessories	£36 10
2½ h.p. ALLDAYS MATCHLESS, single-sp.	£14 10
2½ h.p. NEW HUDSON, late 1914, 2-speed	£23 10

## CARS.

HUMBERETTE, 1913, air-cooled, 3 speeds and reverse, hood, screen, lamps	£52 10
SAXON, 11 h.p., 1915, 2-seater, Stepney, speedometer, lamps	£112 10
FORD, 1915, 2 wind screens, 4 shock absorbers; cost £170 12 months ago; used fine weather only	£110 0

DEFERRED PAYMENTS if desired. Terms: quarter down and balance not exceeding 12 monthly instalments. Substantial discounts in 1, 3, and 6 months.

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Also at 50, HIGH RD., WOOD GREEN, N.  
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Walthamstow 169.  
5 minutes Hoe St. (G.E.R.)

## MOTOR CYCLES FOR SALE.

## Indian.

1916 Indian, 5b.p., 3-speed, lamps, and accessories, condition as new; £47.—48, Nelson St., St. Peter St., Hackney Rd., N.E. [5593]

1916 7h.p. Powerplus Indian Coachbuilt Combination, new condition, 3-speed, very fast; bargain, £75.—Oliva, 131, White Hart Lane, Barnes. [5591]

INDIAN, 7-9h.p., 1915 T.T. model, run 1,500 miles, perfectly kept, Lucas lamps and horn; £45.—Waterkeyn, 24, Harborne Rd., Birmingham. [X2643]

INDIAN, 1913, 7-9h.p., 2-speed, beautiful condition throughout; sacrifice £50, or with sidecar £35; deposit system.—Bell, 88, Broadway, Northampton. [5724]

RIDER TROWARD, 78, High St., Hampstead.—1915 (new 1916) T.T. Indian, 5-6h.p., 3-speed, clutch, kick-start, mileage 2,300, and as new; 48 gns. [5873]

INDIANS, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X2591]

INDIAN Combination, 7-9h.p., 1915½, electric light, speedometer, etc., with 20 gn. sidecar, absolutely as new; £75; seen by appointment.—Orton, Oakleigh, Graham Rd., Hendon. [5623]

1915 Indian Combination, 7h.p., 3-speed, spring frame, Lucas lighting set, just overhauled by manufacturers; trial run by appointment; price £58 cash.—Tompsett, Moors, Marden, Kent. [5620]

1916 Indian, 5h.p., 3-speed model, clutch, kick start, fitted with coachbuilt sidecar, lamps, and all accessories, very little used, equal to new; price £60.—R. Bamler and Co., Ltd., Birkdale, Lancs. Tel.: 44. [4956]

INDIAN Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, with lamps and horn, £78.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X2590]

INDIAN 1915½ 7h.p. Combination, electrically equipped, speedometer, perfect mechanical condition, cancelling, plating, and tyres as new, not done 1,000 miles; on trial; £75.—Particulars, Box L2,670, c/o The Motor Cycle. [5614]

P. J. EVANS, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery; 7h.p. T.T. Powerplus, £75; 7h.p. 3-speed spring frame, and electric light, £78; special de luxe 7h.p. spring frame, £78; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X2588]

LATE 1916 Dynamo-magneto Powerplus Indian Model de Luxe, the most luxurious sidecar outfit on the road, with double-seated (back seat locks up) sidecar, extra sidecar electric light, ditto with push-in switch, with long flexible cable, cycle fitted with detachable leg shields, etc.; a bargain, £95, cost £115; guaranteed in perfect condition throughout.—Indian Agent, Horsaey, 103, Brook St., Chester. [5630]

## Invicta.

1916 2½h.p. Invicta, 2-speed, absolutely as new; £33.—Wilkin, Hunters Bar, Sheffield. [X2636]

## Ivy.

RIDER TROWARD, 78, High St., Hampstead.—1915 Ivy Sidecar, 2-speed, cost £48, 28 gns.; separate, 24 gns., Watsonian £4/10. [5867]

## James.

COLMORE Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

JAMES 1914 4½h.p. Coach Combination, counter-shaft gear, and accessories; £44/10.—Motor Exchange, Horton St., Halifax. [5474]

JAMES.—P. J. Evans, John Bright St., Birmingham.—Immediate delivery all models, including 2-stroke 3½h.p. twin and 4½h.p. big single. [X2595]

SIDECAR Bargain: owner called np.—1914 James combination, splendid order and condition; quick sale £37/10; ready for instant service; 3-speed, chain drive, kick start, Canelet sidecar.—Millard, Chesterfield. [X2581]

JAMES, 1915, 2½h.p., 2-speed, first-class condition, only ridden 2,000 miles, as owner joined the army, rear drive speedometer and mirror fixed, tools; price £28.—Apply by letter, H. Young, 38, Leicester Sq., Bayswater, W. [5818]

B. H. DAVIES has for disposal 1917 model James 2-stroke, 2-speed gear, equal to new in all respects, Hellenes Dry battery head and tail lamps; cost about £45, accept £35, or close cash offer; approval, deposit.—St. Wenn, Bodmin. [X2697]

1915½ James 4½h.p. Combination, in splendid condition, screen, apron, Stewart speedometer, all accessories, many spares, including inner tube and cover, insurance transferable; seen any time; bargain, £57/10.—Myers, 99, Kentish Town Rd., N.W. [5680]

## J.A.P.

1916 3½h.p. Twin J.A.P. Chater-Lea frame and fittings, Dunlops, Dunlops, 1915, Amac speedometer, Abingdon clutch, spring seat-pillar, Lucas lamp, horn, and spares; £35; all new condition.—Box L2,680, c/o The Motor Cycle. [5676]

## J.E.S.

J.E.S. 1hp. Auxiliary Lightweight Motor Cycle, in excellent condition, with accessories; price £12, offers.—J.C., 13, Cambrian Grove, Gravesend, Kent. [5618]



## MOTOR CYCLES FOR SALE.

## Kerry

1914 Kerry-Abingdon, 3 1/2 h.p., 3-speed, T.T. roadster; £34.—22, Gilmore Rd., Lee. [5788]

1912 3 1/2 h.p. Kerry, Bosch, B.B., variable jet, spring forks, N.S.U., 2 speeds, F.E., just been thoroughly overhauled, fast and reliable.—S, Hillcrest Rd., Acton. [5637]

## Lea-Francis.

LEA-FRANCIS, 1914, 3 1/2 h.p. twin, 2-speed, lamps, horn, £41.—with coachbuilt sidecar £45, lowest.—Irons, 17, Janefield Place, Dundee. [X2644]

LEA-FRANCIS, 1916, 3 1/2 h.p. twin, 3 speeds, clutch kick starter, enclosed chain drive, luxurions mount; £57; part exchange older machine.—124, Walton Rd., Hampton Court. [X2660]

## Levis.

1915 Levis, 2 1/2 h.p. Popular model; £19.—22, Gilmore Rd., Lee. [5789]

LEVIS, latest, brand new, single and 2-speed model in stock.—Moss, Wem. [X2615]

RIDER TROWARD, 78, High St., Hampstead.—1915 Levis, 2 1/2 h.p.; 20 gns. [5866]

LEVIS, 1916, 2 1/2 h.p. mag., 2 speeds, as new; £33/10.—1, Ebner St., Wandsworth. [5841]

1916-1917 Popular and Model E Levises; delivered from stock.—Wilkin and Co., Hunters Bar, Sheffield. [X2631]

COLMORE Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0800]

1915 2 1/2 h.p. 2-speed Levis, splendid condition, just overhauled; £22.—Wilkin, Hunters Bar, Sheffield. [X2632]

LEVIS, Popular model, £32, or by easy purchase terms, deposit £8, and 12 monthly payments of £2/4/5.

LEVIS Model de Luxe, Royal Enfield 2-speed gear £247/10, or on easy purchase terms, deposit £11/17/6, and 12 monthly payments of £3/1; both models actually in stock.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5642]

LEVIS, 2 1/2 h.p., perfect running condition; £18.—W and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5342]

LEVIS Popular, 2 1/2 h.p., 1915, splendid condition £18; all accessories.—Rutherford, 19, Stanton Rd. Wimbeldon. [5302]

LEVIS Popular, 1915, good condition, Dunlop heavy P. Pedley belt; £20.—R. Strangleman, Gt. Bircham King's Lynn, Norfolk. [X2600]

LEVIS (late 1914), 2 1/2 h.p., single speed, good condition £18.—Elee and Co., 15-16, Bishopsgate Av., Canonville St., E.C. [0481]

LEVIS, Popular, shop-soiled, delivered Nov., 1915 £22/10; lamps and accessories given in.—Buntings (Motor Dept.), Harrow. [5772]

LEVIS Popular, 2 1/2 h.p., 1915, bought last June lamps, tan saddle, accessories, everything in perfect condition; cash and no reducible price; £21.—Box L2,687, c/o The Motor Cycle. (D) [5856]

LEVIS, both models, £32 and £47/10, actually in stock; exchanges, deferred payments.—Lamb's, 151 High St., Walthamstow, and 50, High Rd., Wood Green Tels.: Walthamstow 169, and Hornsey 1956. [5676]

## Liberty.

3 1/2 h.p. Liberty Combination, perfect condition through 32 out; £24/10; called up—26, Puleyns Av., East Ham. [5656]

## Lincoln-Elk.

RIDER TROWARD, 78, High St., Hampstead.—Lincoln-Elk, 1915, 4 1/2 h.p., 2-speed countershaft gear, clutch, kick-start, powerful sidecar or solo machine, tyres and engine as new; 34 gns. [5875]

3 1/2 h.p. Lincoln-Elk and Sidecar, 2-speed, free engine £32 kick start, recently overhauled, new tyres and belt; any trial; £30, or part exchange; seen by appointment only.—North, 214, Empress Rd., Southampton ton. [5621]

## Matchless

1915 Matchless Combination, 8 h.p., like new; £72.—Ross, 86, High Rd., Lee. [5787]

MATCHLESS, late 1914, 8 h.p., excellent condition £40.—Borough, Chetwynd, Newport, Salop. [X2521]

MATCHLESS 6 h.p. 2-speed Coach Combination £42/10, or exchange.—Motor Exchange, Horton St., Halifax. [5475]

MATCHLESS 8 h.p. Combination, new 1915, perfect; 47 gns.; cheaper machine and cash.—245, Hammersmith Rd., London, W. [5718]

MATCHLESS Combination, 1913, 8 h.p., 2-speed speedometer, spares, luggage grid, competition winner; £38.—29, High St., Hampstead. [X2651]

MATCHLESS, 1913, 3 1/2 h.p. J.A.P., Bosch, splendid condition; £19/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [5842]

MATCHLESS 8R 1915 Combination, F.R.S. head, P. and H. tail and side, horn, coachbuilt sidecar, new condition, spares; £80.—H. Rodwell, Brewery, Tring, Herts. [5776]

MATCHLESS Coachbuilt Combination, 2 speeds, free engine, pedal starter, accessories, good running order and condition; accept £32 cash.—"Bramley," Chorlton Rd., Shepperton-on-Thames. [5798]

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## Minerva.

2 1/2 h.p. Minerva, Bosch, Druids; £10, or near offer.—24, 248, Beasley Rd., Doncaster. [X2678]

2 1/2 h.p. Minerva, in running order; £6; another, £8.—22 Wood, 7, Alexandra Buildings, Luke St., Shore-ditch. [5703]

MINERVA, 3 1/2 h.p., perfect order, fast machine; first cheque £10 secures, bargain.—Wilson, Kings, Weston, Bristol. [X2599]

## Moto-Reve.

MOTO-REVE, 2 h.p., mag., all h.b.c., good climber; £8/10.—Butlin, The Bungalow, Galleywood, Chelmsford. [X2502]

## Motosacoche.

MOTOSACOCHE, 1909, mag., Druids, Whittle, complete, but wants attention; £2.—Palmer, Dairy, Cwm St., Aberllynny. [X2520]

1913 2 1/2 h.p. Motosacoche, variable gear, and free engine, used very little; £22.—Williams, 19, Portland St., Cheltenham. [X2547]

## New Hudson.

RIDER TROWARD, 78, High St., Hampstead.—1913-14 New Hudson, 3 1/2 h.p., 3-speed, new sidecar; 29 gns. [5870]

1913-14 New Hudson Coachbuilt Combination, 3-speed and clutch; £34.—T. Dale, 118, Old Rd., Brampton, Chesterfield. [X2307]

NEW Hudson, 2 1/2 h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

NEW Hudson, 1914, 2 1/2 h.p., 2-stroke, Lucas lamp, good tyres, in fine condition; £16.—McGrady, The Rose Gardens, Hitchin. [5800]

1914 6 h.p. New Hudson Combination, cost £100, as new, complete with lamps, speedometer, and spares amounting to over £10, price £55.—103, Derby St., Bolton. [X2316]

NEW Hudson, 1914, 3 1/2 h.p., 3-speed, clutch, and kick starter, with lamps, horn, and nearly new Phoenix racing coachbuilt sidecar; no rubish offered; £45.—Barber, 440, Fore St., Edmonton. [5601]

NEW Hudson 6 h.p., 1914 Combination, fitted with 1916 Jardine 4-speed countershaft gear, complete horn, speedometer, lamps, etc.; any trial; £55, or near offer.—Mason, Motors, Letchworth, Herts. [5727]

LATE 1914 6 h.p. New Hudson Combination, hood, screen, lamps, speedometer, other accessories, very powerful and fast; £53, or offers; would consider small screw-cutting lathe part exchange.—Hartley, Draper, Dalton-in-Furness. [X2544]

## New Imperial.

NEW Imperial, latest 2 1/2 h.p. and 6 h.p. models in stock.—Crow Bros., Guildford. [4961]

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1915 New Imperial-Jap, 2 1/2 h.p., 2-speed, good condition; no exchanges; £24.—Manby, Kirkcaldy, Wakefield. [X2445]

NEW Imperial, 6 h.p., 2-speed gear, handle starting, suitable for sidecar work, good condition throughout; accept £35.—Hayes, 344, Enston Rd., N.W. [X2703]

1915 New Imperial-Jap, 2 1/2 h.p., 2 speeds, fully equipped, little used, selling through heart trouble; sacrifice £24/10.—Box L2,689, c/o The Motor Cycle. [5848]

1915 Model (bought new February, 1916) New Imperial-Jap, 2 1/2 h.p., 2-speed, new Dunlop tyres, P. and H. front lamp, generator, horn, pump, tools; £28/10.—Hitchins, Birtton, Aylesbury. [X2296]

P. J. EVANS, Birmingham Agent.—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shoe-soled model £35.—87-91, John Bright St., Birmingham. [X2587]

## Norton

1914 Norton, Brooklands T.T., Philipson pulley; £37.—Ross, 86, High Rd., Lee. [5786]

1916 T.T. Norton, front and rear, lighting set, complete, Philipson pulley; £52/10.—Plastow, Grimsby. [X2612]

NORTON 1915 Big Four Combination, chain drive, all accessories, splendid condition; £65.—Allan, 16, Norrington Rd., Leicester. [5801]

RIDER TROWARD, 78, High St., Hampstead.—1916 (July), T.T. Norton, Brooklands special model, 70 m.p.h., guaranteed, Philipson pulley, mileage 1,500, and unscratched; 48 gns. [5872]

## N.S.U.

N.S.U., 1914, 3 h.p. twin, mag., 2 speeds; gift, £25.—1, Ebner St., Wandsworth. [5843]

N.S.U., 3 h.p., 2-speed, £14/10; 3 1/2 h.p., 2-speed, £17/10; bargain prices.—Motor Exchange, Horton St., Halifax. [5476]



## MOTOR CYCLES FOR SALE.

## N.S.U.

FOR Sale or exchange for lightweight, 3½ h.p. N.S.U., with 2-speed gear, good condition.—King, South View, Holmwood. [5816]

N.S.U., 1912 (late), 3½ h.p., 2-speed, free engine, good condition, spares; approval; £24.—A. Willoughby, Gipsy Lane, Wokingham, Berks. [X2503]

N.S.U., 1914 model, spring frame and forks, 2 speeds, kick-start, and free engine, fitted with a coachbuilt sidecar, hood and screen, including all accessories; £35; guaranteed.—Wanchope's, 9, Shoe Lane, London. [5829]

SECURE This Special Bargain.—3½ h.p. twin N.S.U., 2-speed, 1913 model, spring frame, new heavy Dunlop tyres and belt, large Lucas lamp set, guaranteed in tip-top condition; first cheque or P.O. for £16 gets it.—Amber House, Gloucester Rd., Chesterfield. [X2571]

## O.K.

O.K., 1916, 4-stroke, 2-speed, countershaft, elaborate accessories, spares, and tools, as new; £28.—Head, 31, Hainthorpe Rd., West Norwood. [0867]

O.K. Junior, 2½ h.p., perfect, new September, will do 125 m.p.g.; exchange for higher power; no rubbish offered or wanted.—Letters, 91, Albany Rd., Camberwell. [5615]

## P. and M.

1912 P. and M., and sidecar, lamps, horn, and speedometer; £32.—Wilkin, Hunters Bar, Sheffield. [X2637]

SALE, P. and M. combination, late 1913; £45, exceptional bargain.—Edwards, 642, Holloway Rd., N. [5624]

P. and M. (1914), new Milford sidecar, all accessories, scarcely used; £50.—Buntings (Motor Dept.), Harrow. [5779]

P. and M., 1913, 3½ h.p. coachbuilt combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4916]

P. and M., late 1913 (£38/10), and wicker sidecar (£43), new tyres, Stewart speedometer, splendid condition.—Gray, Fiona, Bromley Rd., Shortlands Station. [5714]

## Peco.

NEAR Offer.—1915 (late) 2-speed Peco 2-stroke, 800; £25; approval.

1915 (Dec.) 2-speed Peco 2-stroke, 3,000; £23; approval.—Newman, "Minorities," Newcastle-on-Tyne. [5880]

## Peugeot.

2½ h.p. Peugeot, Bosch, spring forks, sound machine; £7/10.—248, Bentley Rd., Doncaster. [X2677]

## Premier.

PREMIER, 1912, 3½ h.p., 2-speed, £23/10; or with sidecar, £27/10.—Motor Exchange, Horton St., Halifax. [5477]

PREMIER, 1913, 2½ h.p., splendid condition; trial, all accessories; £16/10.—Green, Rectory Gate, Petworth. [5764]

1914 3½ h.p. Premier, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0823]

1914 Premier, Mark VII, 3-speed, clutch, kick, sidecar, good order; £38, or offers.—Peach, Albany St., South Elmsall, Yorks. [5736]

PREMIER, 2½ h.p., recent model, a very fine and economical lightweight; £22, or your reasonable offer.—Layton's Garage, Bicester, Oxon. [X2686]

RIDER TROWARD, 78, High St., Hampstead.—1914 Premier, 3½ h.p., countershaft gears, clutch, kick-start, good order and appearance; 27 gns. [5869]

1913½ Premier, 3½ h.p., 2-speed countershaft, free engine, coachbuilt Gloria sidecar, mechanical horn, speedometer, lamps; £32/10.—W. 36, Elmfield Rd., Balham. [5822]

3½ h.p. Premier, Druids, B.B., 3 speeds, F.E., Bosch watertight mag., Cowey speedometer, auxiliary tank and connections, new tyres, excellent condition; £24.—5, Hillcrest Rd., Acton. [5636]

3½ h.p. Premier, 90° twin, exceptionally fast, excellent condition throughout, semi T.T. bars, tools, bag, spring forks; ordered to France; must sell; £16/10.—No. 2, 679, c/o The Motor Cycle. [5675]

PREMIER, 1914, 3½ h.p., 3-speed countershaft gear, with all cane sidecar with panniers, tyres new, speedometer, lamps, and all sundries; £40.—Freeth, 5, Cornwall Parade, Church End, Finchley. [5652]

## Puch.

PUCH, 1914, T.T., fast, reliable, new Dunlop belt and tyre, heavy Kempshall back, adjustable pulley; £18.—Mitchell, 12, Lancaster Rd., Wimbledon. [5654]

## Quadrant.

QUADRANT, 3½ h.p., spring forks, mag., good tyres and belt, good order, and fast; £12.—14, Dodbrooke Rd., West Norwood. [0872]

QUADRANT, 1912, 4 h.p., 2-speed, and sidecar, £29/10; 1913 7½ h.p., countershaft gear, chain drive, coach sidecar, £45/10.—Motor Exchange, Horton St., Halifax. [5479]

## Radco.

RADCO, 1916, 2-stroke, lightweight, full accessories, scarcely used, better than new; accept 25 gns.; appointment.—136, Dalnally Rd., Croydon. [5706]

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1911 SCOTT Combination, 2-speed .....	£37 0
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1913 3½ h.p. F.E. RUDGE, complete .....	£25 0
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## MOTOR CYCLES FOR SALE.

## Rex.

1913 Rex, 4 h.p., 2-speed, free engine, and sidecar; £35, or offers.—194, Shrewsbury Rd., East Ham, E. [5702]

1910 3½ h.p. Rex, Bosch, spring forks, dropped frame, new Clinchers; £12/10.—248, Bentley Rd., Doncaster. [X2679]

REX 1912 6 h.p. Combination, 2 speeds, free engine, handle starting, good order; £25.—Pinstow, Grimsby. [X2611]

REX, 6 h.p., and sidecar, 2-speed, accessories, perfect order; £23, or exchange.—80, Palatine Rd., Stoke Newington. [5729]

REX 5-6 h.p. Twin, clutch model, tyres and Service belt new, in fine order; £17.—14, Dodbrooke Rd., West Norwood. [0873]

REX, 3½ h.p., mag., spring forks, re-enamelled, good tyres, in good order; £10.—Head, 51, Hainthorpe Rd., West Norwood. [0869]

REX, 3½ h.p., enamel and plate as new, good tyres, Bosch, Senospray, all accessories, must sell, £12; also sidecar, 50/—1, Boswell St., Radford, Nottingham. [5735]

4 h.p. Rex, 1912 model, and sidecar, N.S.U. gears, clutch, Jones speedometer, ready to ride away; owner joining up; £25/10, or near offer.—Alcock, 103, Rosebery Av. [5679]

REX 7 h.p. Twin, handle starting, £23/10; 1913 6 h.p. 2-speed Rex Sidette, £36/10; 3½ h.p. magnet model, £14/10; 5½ h.p. twin, £13/10.—Motor Exchange, Horton St., Halifax. [5480]

REX, 1912, 6 h.p. twin, 2 speeds, C.B. sidecar, B. and B. carburettor, Bosch mag., 3 lamps, complete with accessories, spare inner tubes; £40.—5, Wigan Rd., Skelmersdale, Ormskirk. Photo, any trial. [5612]

5-6 h.p. Twin Rex, Bosch mag., free engine, variable pulley, excellent condition, carefully used, recently overhauled by expert, new rings, valves, springs, bearings, Avon tyres; £30, or nearest offer; exchanges entertained.—Discharged, Glen-Garth, Grove Rd., Fishponds, Bristol. [X2652]

## Rover.

ROVER, 1917 models in stock.—Lambert's, Thetford. [5825]

ROVER, new 1917 latest combinations, solo, and T.T. models in stock.—Moss, Wem. [X2614]

1917 3½ h.p. 3-speed Countershaft Rover; £69.—Wilkin and Co., Hunters Bar, Sheffield. [X2630]

1915 Rover Combination, 3-speed gear, excellent condition throughout; £47/10.—Hayes, 344, Easton Rd., N.W. [X2704]

ROVER, T.T., 1915 model, Philipson, pulley; price 40 gns.; smart, fast, and guaranteed mechanically sound, fully equipped.—Wanchope's, 9, Shoe Lane, London. [5833]

1917 Rover Combination, brand new latest model, with all latest improvements; £89/9; willingly entertain Douglas in exchange.—Robinson's Garage, Green St., Cambridge. [5809]

ROVER Combination, 1914, excellent condition; will dismantle for inspection by arrangement, and will give buyer an afternoon with same; what offers? must sell.—98, Kinveachy Gardens, Charlton, S.E. [5613]

P. J. EVANS, sole Birmingham Rover agent.—Immediate delivery 1917 T.T. semi-T.T. models, with or without Philipson, also latest countershaft models.—87-91, John Bright St., Birmingham. [X2589]

## Royal Ruby.

1914 Ruby 2-stroke, guaranteed perfect; £14.—20, Whitely St., Reading. [5851]

RIDER TROWARD, 78, High St., Hampstead.—1915 Royal Ruby, 2-speed, 2-stroke; 21 gns. [5877]

1914 2½ h.p. Royal Ruby, 2-stroke, perfect; £17, or very near offer.—248, Bentley Rd., Doncaster. [X2675]

ROYAL Ruby, 1917 model, just arrived, single speed, £32/10, 2-speed £40; deferred payments and exchanges. See our name on outside cover of this issue.—Lamb's 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5666]

## Rudge.

1915 6 h.p. Rudge Multi, sound order; cheap.—Lambert's, Thetford. [5827]

3½ h.p. Rudge Multi; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0864]

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

1912 3½ h.p. Rudge, clutch model, splendid condition; £22.—Wilkin, Hunters Bar, Sheffield. [X2635]

3½ h.p. Rudge Multi, 1914, lamps, Stewart horn, good condition; £32.—Milton, 1, Sandbeck Place, Endcliffe, Sheffield. [5653]

1913 Rudge, fitted with N.S.U. 2-speed, in perfect condition, except belt; £28/10.—Horswill, 103, Brook St., Chester. [5632]

1913 3½ h.p. Rudge Multi and coachbuilt sidecar, lamps, horn, and speedometer; £35.—Wilkin, Hunters Bar, Sheffield. [X2634]

RUDGE Multi, 1913, 2 new tyres, 2 new belts, lamps, etc.; £29; Watsonian sidecar to fit, £2/10.—Box 530, c/o The Motor Cycle. [5722]



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## The Question of Exports.

**A**N Italian correspondent, in a letter published in the present issue, takes up the important question of British trade Overseas. It will be recalled that the Wulfruna Engineering Co., Ltd., following upon the recent manufacturing prohibition Order, complained to the Ministry of Munitions that, unless it were possible to obtain permits to manufacture motor cycles freely, it would mean losing important British trade in foreign markets, to the direct benefit of neutrals. The company rightly considers the matter of vital importance, inasmuch as an established trade in which British manufacturers held supremacy is at stake. Though the matter is one concerning the trade in particular, it is no new subject to our readers. In the early part of the year we collected the experiences and opinions of manufacturers on this subject of Overseas trade, and submitted to the Board of Trade a list of the difficulties and obstacles in the way of maintaining exports. The outcome was an official foreshadowing of improved conditions for export. Things move quickly, however, in war time, and it is impossible for anyone to anticipate what may be the state of affairs more than a few months ahead. We are in the hands of the authorities, and so long as it is realised how our motor industry is being jeopardised by insurmountable obstacles, there seems nothing to be done. It is extremely galling to British manufacturers who are in a position to assemble motor cycles without hindering the output of munitions to be unable to devote their energies to Overseas trade owing to the three-fold difficulties of obtaining licences to export, transport to the docks, and the scarcity of shipping space available. Great Britain's grip is being gradually lost in markets where we have hitherto held sway, and it is obvious that, once other countries get established in our markets, it will take many years for us to regain our old position. In support of our Italian correspondent's remarks, we quote the following cable

published broadcast in the daily press last week:

During the last three years Australian trade with America has increased by 500%, or in money value by £9,004,000. The balance of trade between the two countries has been reduced from 59% to 4% in favour of America.

## The Motor Cycle as an Alternative to the Train.

**T**HREE separate appeals have now been issued by the Board of Trade to avoid in every case possible unnecessary journeys by train. As to whether "unnecessary" journeys are made nowadays the Government probably know best, and such would be indefensible, but the recommendation calls to mind a point we have advanced on several occasions during the war, and that is that travelling by motor cycle is cheaper, healthier if the weather be good, and often more convenient than journeying in a train.

Motor cyclists would readily resort to their machines for necessary journeys in preference to travelling by rail if that alternative were made easier. It is regrettable, however, that petrol supplies are not only exceedingly expensive, but difficult to obtain, except in small quantities, and the position, therefore, becomes difficult whichever course one may decide to adopt. It is mentioned in the Order that "the Government would be reluctant to take any steps in the direction of a general interference with railway travel, and the possibility of any such action may be made more remote if members of the public will individually bear in mind that every journey not of genuine necessity should be avoided in the interests of the country." The inference of the Government announcement is that we should adopt other forms of conveyance, and we appeal on behalf of motorists—particularly motor cyclists, who use the most economical form of motor vehicle—to render the change easier. For a start, petrol should be readily forthcoming, and at a figure which approximates more to the pre-war level.



## An Italian Motor Cycle Hospital.

A Military Workshop for Disabled Mounts.

Repair workshops—where every part of a motor cycle can be replaced—are situated relatively close to the firing line, thus enabling motor cycles which are only slightly damaged to be put into commission again with a minimum loss of time. The Italian equipment enables even accessories to be rejuvenated.

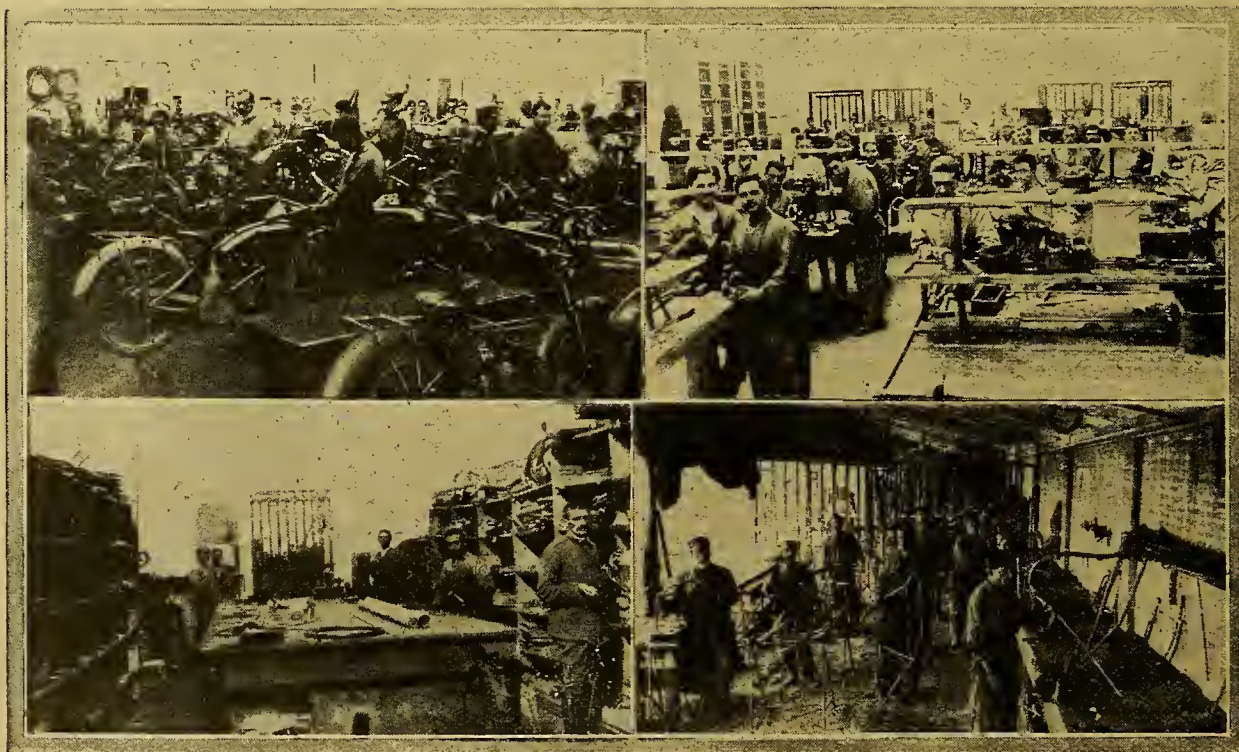
**M**OTOR cycles play an important role in the prosecution of the war on the Italian front, as they do in all the zones of war, and the photographs we reproduce show the central repair depot, where more than 300 men are employed in renovating or dismantling motor cycles that have received a temporary quietus, maybe by a shell or skid, or through an unruly lorry, but seldom by ordinary wear and tear.

At this depot almost any kind of repair is undertaken when it is found that the machine is worth it. Everything that it is possible to renovate is renovated. Even lamps and horns are repaired, besides sparking plugs and magnetos. The whole workshop is fitted up on most modern lines, and quite complete and independent. There are a foundry, vulcanising plant for tyres, plating, and enamelling

departments, as well as the special magneto and sparking plug repairing shop. If a machine is found to be unserviceable it is entirely dismantled, and all parts that can be of any further use put on one side for repairs to other machines of the same make.

Older and miscellaneous models of machines that were requisitioned at the beginning of the war, however, are gradually eliminated when badly damaged. All machines that leave these workshops after being repaired are completely enamelled the grey-green shade which is the official colour for all vehicles in the Italian Army.

At these stores there is usually a big stock of new machines—Triumph, Sunbeam, Douglas, Bianchi, Stucchi, Frera, and Excelsior motor cycles are among the models represented.



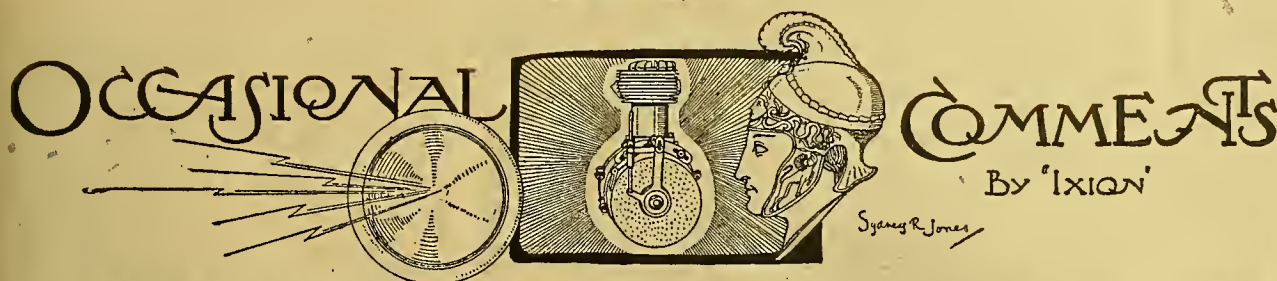
(1) The erection shop. An Italian Bianchi and an American Excelsior motor cycle are in the foreground.

(3) Store room for spare parts.

(2) A workshop of electricians, where magneto overhauls and repairs are effected.

(4) Frame building and repairs department.





### Engine Balance of Two-strokes.

One of the factors which classifies baby two-strokes as good, bad, and indifferent is engine balance. Some of these machines vibrate almost as badly as a reaping machine, despite their even torque; others run almost as smoothly as a steam engine or a good flat twin. It is a little difficult to be sure whether the vibration emanates from the engine or from the road, as some of them have very whippy frames of crude design; but the point can always be determined by testing the machine on a bit of first-class surface. These lightweighters are peculiarly sensitive to tyre pressures; an uncomfortable machine can be transformed by running the back tyre just less than board hard, and the front tyre so soppy that the rims just do not indent the tube, though this latter pressure is, of course, too low to get a very long life out of the front tube and cover. Riders accustomed to heavyweights usually pump up the back tyre until they are tired, and the front tyre until it just yields a trifle to knuckle pressure; these inflations are excessive for baby mounts. In any case it is folly to purchase lightweighters without a trial; they vary excessively in merit, and no factors differ more upon baby two-strokes than engine balance and frame rigidity.

### From the Front.

My postbag from "somewhere in France" continues to bring assortments of interesting letters. Bernard Siffken, who owes his motor enthusiasm to catching sight of our "pretty blue cover" on a bookstall in 1904, pleads for a new type of D.R. machine. He thinks the D.R. work demands a light, handy machine on  $2\frac{3}{4}$  h.p. Douglas lines, but that the ideal mount won't be with us until light machines can be built much more substantially than is at present possible. Riders prefer the lightweight for short-distance military work on convoy-crowded and shell-shattered mud tracks, because it is so manageable. On the other hand, it wags its tail more than the heavyweights, because its frame is less rigid; and it is apt to give trouble on long fast runs in France, because the roads produce so much vibration. This is largely a question of metallurgy. The gear boxes of prehistoric cars were fitted with colossal pinions; as time went on, the weight of these pinions was quartered, and their strength was quadrupled. Some day we shall get 100 lb. lightweighters as sturdy and as powerful as a 250 lb.  $3\frac{1}{2}$  h.p. machine of to-day; but we must wait till the steel chemists have made a little more progress. Capt. Lindsay is still pegging away at the plug question, and is rather surprised to find that he can "dry up" his W.D. Triumph in less than two miles of speed with an aeroplane plug installed. It is surely obvious that an aeroplane plug works under tolerably favourable conditions; the minimum speed of the plane may be 45 m.p.h., or even more, so that a

terrific cooling draught is assured. I should guess that pains are taken to produce super-plugs for aeroplanes rather because the consequences of failure are so disastrous than because the working conditions make for overheating. The plug surely has a much worse time on a W.D. Triumph scrapping on the flat with a top gear of  $5\frac{1}{2}$  to 1?

### Three Mounts Compared.

Last week I had occasion to make an eighty-mile run thrice over in cold, frosty weather, the route including the crossing of a very bleak exposed moor. I chanced to use three separate motors for the three trips, viz., a 10 h.p. racing light car, a  $3\frac{1}{2}$  h.p. flat twin, and a baby two-stroke. The latter provided the most comfortable journey, partly because it proved to be the handiest vehicle on the congealed grease, partly because its pace did not create draughts capable of piercing my thick winter clothing. The light car, much to my surprise, caused me the maximum of discomfort; its narrow windscreen diverted a piercing draught on to my right hand, which nearly got frost-bitten; and this one cold spot in my anatomy raised profound sympathy with the feeling of a standard petrol engine, having a hot spot down one side owing to the presence of its exhaust valve. The flat twin was more comfortable than the light car, because I was evenly cold all over, and so was not distracted by one acutely chilly spot in my body; incidentally, it was very easily the fastest over the route. There was no reason why I should not have throttled it down to the average of the baby two-stroke, but I was mentally incapable of averaging 18 m.p.h. on a machine capable of averaging 40 m.p.h. I wore the same clothing on all three runs, and I now take out the baby two-stroke for all solo work in very bleak weather.

### Flat Twins Don't Gum.

I am middle-aged and lazy. My horizontal twin must weigh about 3 cwt. Yet it is the simplest matter in the world to paddle it off from stone cold on a gear of  $9\frac{1}{2}$  to 1—so simple that I had just as soon start it this way as by the kick-starter. What about gumming? will be the natural enquiry of every owner of a vertical single or a V twin. The owners of flat twins will all have noticed how free from gumming this type of engine is; and the facts suggest that what most of us call "gumming" and are accustomed to remedy by petrol injections (did not our makers fit little leaky tank spouts for the express purpose to the vertical and V engines which we last rode?) was really metal friction, due to the lubricant having drained down off the cylinder walls whilst the machine was standing? I must get hold of a vertical single, and see whether injecting a charge of oil and revolving the engine a dozen times does not free it quite as efficiently as a petrol injection.



## A THREE-PURPOSE SIDECAR.

IT is no new thing to use a sidecar for the purpose of transporting the sick and wounded; many such outfits have been designed during the last few years and have proved themselves to be very serviceable. Nor is it unusual to use a sidecar on a camping trip, for it lends itself well to carrying the necessary apparatus. However, a sidecar specially designed so as to be suitable for both these purposes as well as for ordinary driving and touring has not, we believe, previously been constructed.

The T.M. combination, which we illustrate and describe on this page, combines the necessary requisites for these various functions in a very ingenious manner. The sidecar body, which is very roomy, is divided into three compartments.

### The Portmanteau.

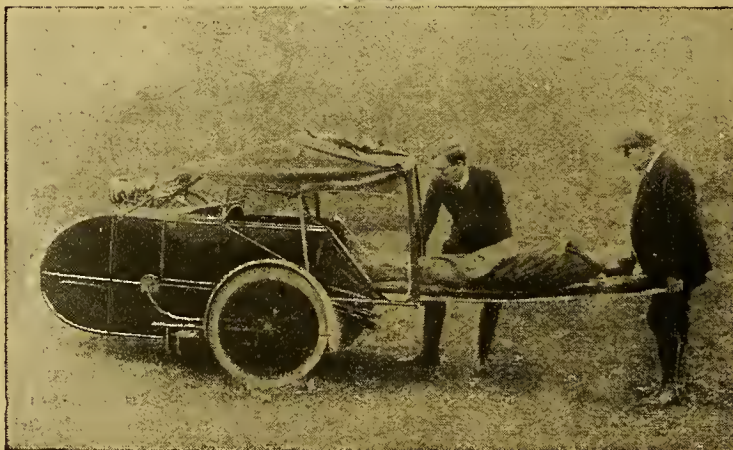
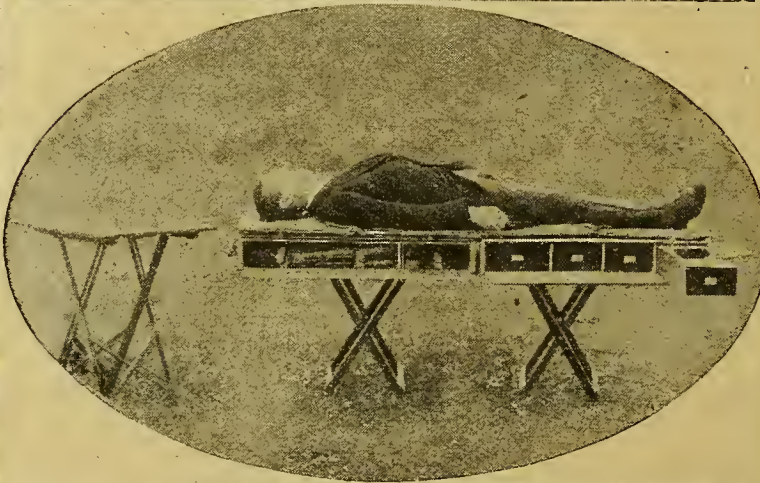
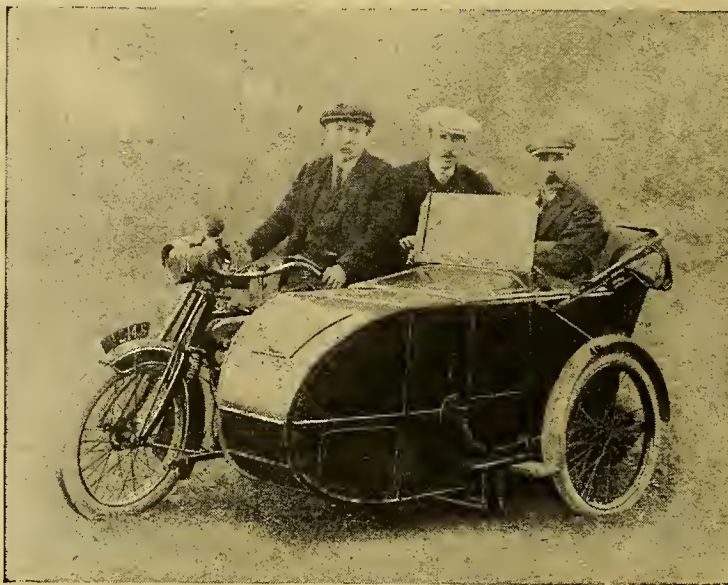
The underneath compartment, or boot, is designed to receive the portmanteau, which consists of a case made in two parts and hinged together so that when opened out it can form a bed or an operating table. The drawers in the one portion can then be opened from the side or the whole lid turned back. The other portions may contain blankets, clothes, or other articles. In the toe are two lockers, of which the bottom one is intended to carry two Primus stoves, tools, paraffin, etc., while the upper locker is for food.

The hood is constructed to be used in different positions, so as to cover any person riding or sleeping in the sidecar, or, when used as an ambulance, to shelter the patient from the elements. When the portmanteau is not in position, part of the floor can be taken out to form a table top. A second seat can be fitted.

The back of the body can be let down into any position that may be convenient.

### The Stretcher.

A folding stretcher is provided which, when folded, fits into the body of the sidecar. This is furnished with wheels, which also fold up under the stretcher, and when not employed in its ostensible purpose can be used as a bed for a camper, second and third beds being provided by the portmanteau and the sidecar itself. Thus none of the three



The T.M. combination as it appears on the road.  
The portmanteau unfolded and used as an operating table.  
Placing a wounded man into the sidecar on the stretcher.



## A COMMODIOUS OUTFIT DESIGNED FOR CAMPING, AMBULANCE WORK, OR TOURING.

passengers need sleep on the ground itself. Three mattresses are also part of the equipment.

### The Sidecar.

The sidecar body is so arranged that a child as well as an adult passenger can be carried comfortably. The outfit can thus accommodate no fewer than four passengers. Also several cans of petrol can be placed in the boot without opening the door at the back. It will be seen, therefore, that the T.M. combination will make an admirable family vehicle suitable for every purpose to which such a conveyance is usually put. Room is found also for the usual paraphernalia of a camping tour.

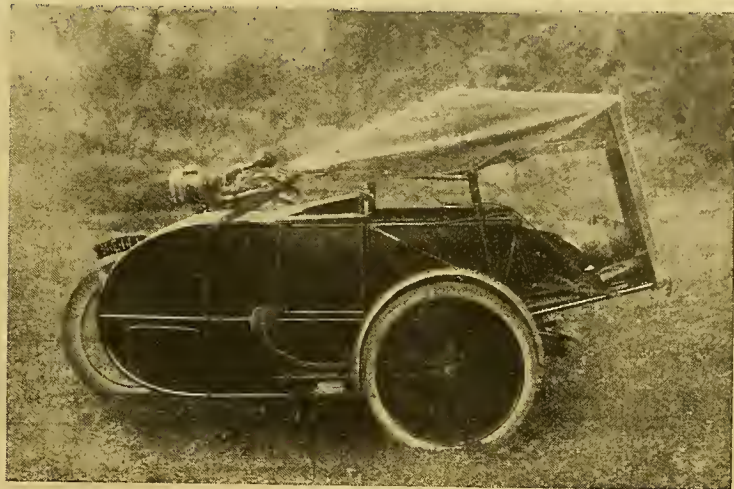
### The Tent.

The tent, when erected, is composed of two compartments, separated by a curtain, and is large enough to contain the bicycle and sidecar as well as the rider and passengers. The entrance is closed by flaps, not shown in the photograph. The telescopic tubes on which the tent is erected were first carried in rectangular form around the sidecar, but this arrangement has now been improved upon by so constructing them that they can be placed in a bundle between the sidecar and cycle. Although the whole forms a combination, the parts have been patented separately by W. A. Mercer and A. Timpé, since they can be used independently of each other.

### Ambulance Sidecars.

While on the subject of sidecar ambulances it may be mentioned that, while many are privately employed in this country, the British Red Cross Society does not employ them, nor are they used by the War Department. They are, however, used with success by the French authorities, and a certain number are in use on the Italian Front, where they are quickly proving their value as an expeditious method of carrying a wounded man.

Apart from the use of the sidecar and tent for ambulance work, their use for touring purposes would be fully appreciated, especially by the family man. When a small child is taken the length and flatness of the sidecar enables it to be laid flat at the bottom of the car instead of always being carried on the passenger's knees.



Asleep in the sidecar.  
The tent, front view, showing portmanteau and extras.  
Side view of the tent.



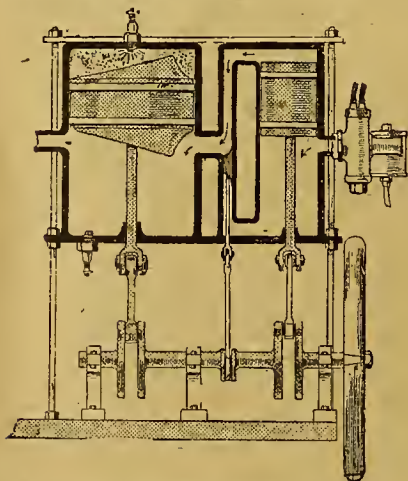
# The Double Acting Two-stroke Engine.

A Design sometimes known as a One-stroke.

THE announcement in a recent issue of this journal that a reader had designed a one-stroke engine has apparently caused interest among inventors, for since then we have received several suggested designs which are intended to be included under this heading. The designs are interesting, and in some cases ingenious, but the question arises whether the title, "One-stroke Engine," is really applicable to any of them. "Double acting two-strokes" would seem to be the term which describes them better. "One-stroke" seems no more applicable to these designs than to the four-cylinder engine, or two-cylinder two-stroke, for, although an impulse is transmitted to the crankshaft every half revolution or stroke, a double-ended cylinder is necessary in every instance, which, of course, occupies a considerable length, and might reasonably be compared with a two-cylinder horizontal twin. Then, again, in every instance a pump of some description is required, and as in all the designs, but one, this is in the form of a pump cylinder, the numbers of moving and reciprocating parts are no less, and in some cases rather greater, than in the two-cylinder two-stroke already known; whilst the efficiency of the so-called "one-stroke" is likely to be considerably lower than in the two separate cylinder two-stroke type.

## Some Working Difficulties.

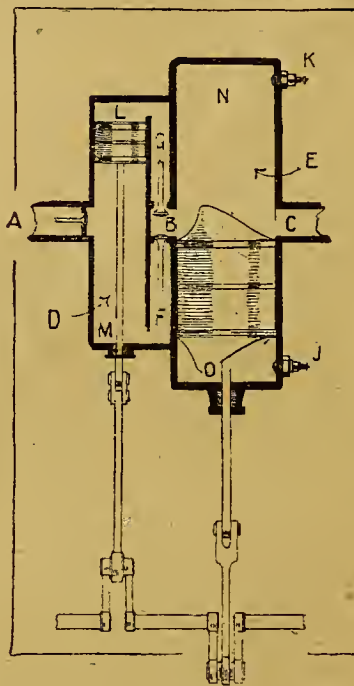
Interesting though these designs are, a number of points crop up which would prevent their practical use. The greatest of these is overheating, which would most certainly occur, and which would necessitate water-cooling.



A "one-stroke" engine designed by "Dixie" (referred to in the article).

## An Overseas Design.

Among the numerous designs submitted, probably the most practical is that sent by Mr. G. B. Martin, jun., of Pretoria, South Africa. This engine is very similar to the double acting two-stroke design which appeared in our issue of March 30th in its general outlay,



Design for a double-acting two-stroke engine by G. B. Martin.

but, whereas in that design two exhaust ports, two inlet ports, and two transfer ports were required, Mr. Martin's has common ports for both ends of the cylinder.

The working is briefly as follows: D is a light pump made of thin material attached to the cylinder E, A is the induction pipe from carburetter, B is the inlet port to cylinder and serving both N and O, F and G are automatic valves in transfer ports from pump, C is exhaust port common to N and O, and K and J are sparking plugs. The cycle of operations is as follows: The piston in pump D has ascended to L, thereby causing a partial vacuum until the automatic valve in A is uncovered, when a sudden charge of gas is drawn into M; at the same time an explosion occurs at O, caused by the ignition of gas drawn in on a previous cycle. The double-ended piston is now forced up to N, thereby causing piston in pump to

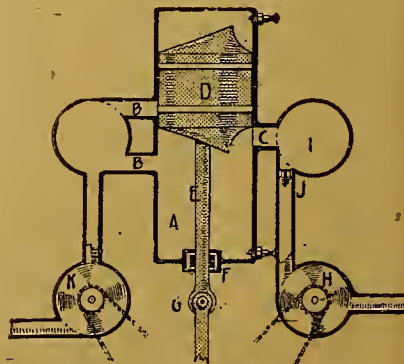
descend to M, at the same time compressing gas (which now closes valve in A) until the port B is uncovered by the piston on its travel to N, when the gas passing through the valve F in a compressed state is deflected by the shape of the piston to O, and forces out the exhaust gas through C.

A very similar design to Mr. Martin's is submitted under the pseudonym "Dixie." In this the transfer valves are of the slide valve variety, and operated by an eccentric similar to a steam engine; otherwise, as will be seen from the sketch, the working is identical with Mr. Martin's, common ports also being used.

## Rotary Pumps.

In a design submitted by Mr. G. S. Moores, an enthusiastic nineteen years old Bristol motor cyclist, the common port principle is again adopted, but no valves are used, the piston acting as a slide valve, as in the usual two-stroke. This design utilises two rotary pumps, one for scavenging and one for forcing the fresh charge into the cylinder. The working of this design is as follows:

A is a common cylinder with both ends closed, whilst two exhaust ports B and an inlet port C are uncovered, as in usual two-stroke design. The piston D is also closed at either end and connected with a shaft E, which slides up and down in a packed gland F. The mixture is drawn from the carburetter by the rotary pump H and pushed into an auxiliary cylinder I fitted with a non-return valve J. Thus while the inlet is closed, the pump still compressing the mixture, the gas immediately enters the combustion chamber on the opening of the inlet port C, followed by compression and explosion, and is finally drawn out by the vacuum caused in the exhaust system by the working of the rotary pump K.



A double-acting two-stroke engine designed by Mr. G. S. Moores.





## WINTER HINTS.

### HOW TO PREPARE A MOTOR CYCLE FOR USE IN BAD WEATHER.

By H. MORTIMER BATTEN

**A**N afternoon spent in preparing one's machine for the rainy winter months cannot be regarded as idle time, for with a little preparation for the mud and slush a fair sum can be saved in the way of depreciation. The great thing to remember during the wet weather is that one has a cycle to look after in addition to a motor. The cycle parts of the machine are far more susceptible to wet and mud than is the engine, and unless something in the way of preparation be made for winter riding one must expect rapid deterioration—wear of controls, wheel bearings, spring forks, and general lack of lustre.

As regards the wheel bearings, steering head, and spring forks, one cannot do better than buy a grease gun (preferably with screw-down plunger), and use Price's hub lubricant. Both the gun and the lubricant can be purchased from an accessory dealer in almost any town. Fill the hubs till the lubricant squelches out from the cups on either side, as this overflow forms a more or less waterproof pad which prevents foreign matter working into the hubs. Repeat the dose perhaps once a fortnight, allowing the grease to squelch out each time, as by doing so it carries with it any fine grit that may be in the act of entering the bearing. Do not clean the hubs during the winter; it is not worth while, and by so doing you are likely to force grit into the crevices. More hubs give out through over cleaning than by neglect.

#### Leg Shields.

A winter mount that does not possess leg shields is like a retired uncle without funds. It is an iniquity. I think the time is drawing near when every rider will demand, with his new mount, a set of shields for winter riding. Personally I make a point of writing for these whether or not the makers supply them, and I think that the characteristically thorough and thoughtful British manufacturer will in due course follow the example of the few firms that have already fallen into line.

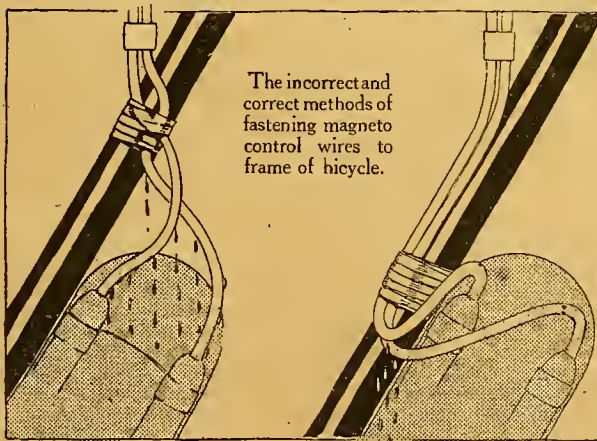
#### Ever-useful Insulating Tape.

If I were asked which I would rather forego for the winter months, my muffler or my insulating tape, I think I should toss for it. Three articles reside side by side in my motor house as the indispensable necessities of winter—a

force-feed oilcan, a grease gun, and a large roll of insulation tape. And when the creeper on the wall begins to shed its leaves I start off with the insulation tape by binding the h.t. wires to the frame in such a way that they will collect as little moisture as possible. Trouble is very often caused by the wires becoming saturated, or by water streaming down them and draining on to the plug or into the magneto. Inconvenience in this direction can be avoided by thoughtful use of the tape, and, if possible, arrange the wires so that the drip they accumulate would have to run uphill half an inch or so before it could reach the magneto.

#### Take Care of Bowden Controls.

Now to turn one's attention to the Bowden wires, which require very special attention. Neglect of these and one will experience, next spring, the annoyance of broken strands, which prevent the



controls from working, and which draw blood from one's thumb when one attempts to persuade them into the right and narrow way.

We must economise, and if given proper attention the Bowden controls should last indefinitely. A single winter of neglect, however, means their ruin. If the wires are of the preferable waterproof cover type, mix a half and half solution of petrol and vaseline in a small oilcan, and, holding the end of the wire vertical, work the solution through the casing by injecting it drop by drop. This should not, of course, be necessary with the waterproof controls, but I have found it pays, because the waterproof cover invariably becomes damaged at certain points. The petrol evaporates and leaves

only the heavy grease in the casing, thus preventing rust. One dose of lubricant is sufficient for the winter.

Make sure the outer case is sound. Probably it has been trapped at one or two points and the waterproof cover damaged. Bind the wire with insulation tape at all such parts—not only to the frame, so that it cannot be trapped again, but also in a way that will prevent water working in at the wound.

It is as well, while at it, to secure the wire tightly to any point at which it passes over a sharp edge, as this will prevent movement of the outer casing, and thus eliminate wear caused by friction against the edge.

#### Handle-bars.

I think it a very good plan to bind one's handle-bars from end to end for the winter—more insulation tape, please! By binding the bars from end to end with tape we not only preserve their virgin lustre, but also we protect the cable controls at the point where they are most exposed. Bind the cables securely to the bars, and, instead of slopping down and trapping themselves in the forks, they will stick straight out forward, and thus assume a natural downward curve out of harm's way.

If the wires are of the alleged internal variety, without waterproofing, deluge the casings with oil, as only this will save the inner cable from rust at the points where the wires are inevitably exposed to the atmosphere.

#### Sparkling Plugs.

Some sparking plugs are likely to give trouble after a machine has been left standing in the rain. I think those with fat insulations are the best for winter use, but it is very difficult to stop a wet plug from short circuiting. After trying various home devised overcoats for the plugs I have come to the conclusion that a handy duster, for wiping the plugs and the wires, is the simplest method.

#### Carburation.

We may hopefully anticipate starting difficulties during the coming winter. I think I shall resort to the baby two-stroke, and see that the kettle is on the kitchen bars ten minutes before starting. It is to be hoped, however, that culinary equipment will not always be necessary.

Fit a hot air intake, and look out for air leaks! Run the engine, and go over

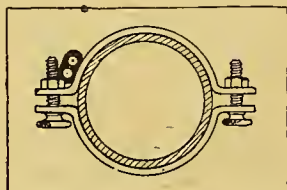


**Winter Hints.—**

all the joints with an oilcan. If there is the faintest suggestion of a leak, drop seccotine over the suspected joint while the engine is ticking over. The vacuum in the induction pipe will draw the seccotine well into the joint, and when next a test is made probably no leakage will show.

**Multiple-jet Carburettors.**

A hint here as regards starting with carburettors of the above type—such as the Binks. It is of no use flooding the carburettor with the handle-bar lever at the usual starting point, as in this position only the pilot is uncovered. Thrust the throttle lever fully open and then flood, whereupon all three jets will spurt petrol—sufficient to flood the whole induction pipe with gas. Then close the



Showing where the Bowden wires should be protected by a binding of insulating tape to prevent wear on a rough edge.

throttle, so as to shut off the automatic air supply, and start in the usual way at pilot opening.

**Belts.**

As regards wet weather use, many chain-cum-belt machines exhibit a sur-

prising degree of thoughtlessness on the part of their designers. Very often the back mudguard is cut to admit the belt at a point which intercepts the whole flow of drip from the guard, which is thus concentrated upon the belt. On some machines the back guard might have been designed with a view primarily to keeping the belt well watered, and the only course is to make the best of things or buy a new guard, after pouring one's vitriol wrath upon the makers. By judiciously shaping the guard with a pair of square-nosed pliers, the iniquitous flood can sometimes be diverted in such a way as to postpone the period of belt slip.

**Plated Parts.**

Plated parts are not half so bad as we sometimes like to suppose, but they savour more of summer plumage than of winter usefulness. Stove enamel, thinned down with petrol, is a useful and not unsightly winter black, which can easily be rubbed off next spring with a cloth soaked in paraffin. It dries almost instantly, and a tin of it kept handy and applied with a thin brush where a spot of rust appears preserves appearances wonderfully.

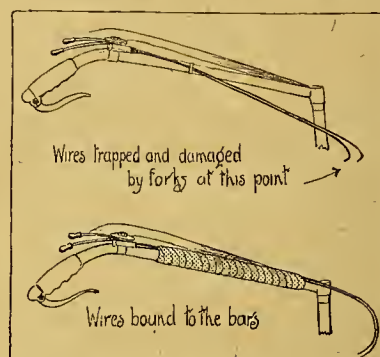
**Lamps.**

Drain your generator with the valve turned full on every time you remove the lower portion to refill with carbide. Keep your tube lengths as short and neat as possible, and bind the joints with a twist or two of tape to prevent perishing and cracking. As regards the tail lamp, arrange the tube so that there are no low points in which water can accumulate. Do not try to revive an

exhausted generator by turning the water fully on, or you may experience trouble next time.

**Clothing.**

Really good, well-lined overalls, made of some soft material, and worn under a long tarpaulin coat, make the best motor covering. Suits are rather costly, and by wearing a tarpaulin over them



Bowden wires made to assume a natural curve out of the way of the forks.

one not only keeps warm and dry, but saves the suit from those periodical drenchings which ultimately spoil its shape and wearing qualities.

There is nothing to beat the strong tarpaulin coats such as seamen wear.

The slip-on tarpaulin leggings are exceedingly useful, and if these garments prove a shade stiff when new, they relax immediately if held before the fire previous to donning.

## THE CHEAP MOTOR CYCLE.

### A Reader's Ideas on Quantity Production.

AN interesting question relating to the production of cheap motor cycles is raised by a correspondent, whose letter we give in full on this page. We have tentatively touched on the subject once or twice recently, and although it is impossible that capital could be obtained for such a venture for many a long month to come, there is at the same time a distinct possibility that "quantity" production will be a necessity in the future, especially if our manufacturers intend competing for the world trade.

"Sir,—Two paragraphs in your issue of October 19th open a field for interesting discussion. The first is that in 'Ixion's' 'Occasional Comments,' on page 331, under the heading 'Mutatis Mutandis'; the second, that on page 342, entitled 'More Cheap Cars,' in which the opinion is expressed that 'we do not think cheaply manufactured motor cycles would benefit motor cycling in England, though it might for a period popularise it.'

"In connection with the latter paragraph, it is only right to demand what standard should be taken as a criterion of cheapness. We are told by 'Ixion' that America's best 7 h.p. sells at £55 in the States—a price some pounds below that asked for a first-class British single-cylinder machine.

"There is surely some fault in British

organisation, even if we accept either the British or American standard of cheapness in our comparison, and allowing for differences on account of the extra attention paid to finish in this country.

"One factor of considerable moment would seem, in my opinion, to be ascribable to lack of specialisation in repetition work, and desire to secure big dividends at the expense of the rider. The British rider prefers to trust to a machine that has gained a reputation for workmanship and appearance, forgetting, as 'Ixion' points out, that this fetish is not a factor of prime importance. A machine gets a reputation for these qualities, and the buyer will have it at any price, much to the satisfaction of the profit-maker, who pockets large dividends and gains a reputation based on judgments that are dictated by fancy rather than sound reasoning.

"If motor cycling can be popularised by cheapening machines, by all means let us have cheap machines, provided reasonable attention is paid to workmanship and efficiency of vital parts, and less to appearance. It is only the finicky rider that sets undue store on the finish of his machine. The man who wants a motor cycle for the purpose for which it is created is content if balance is observed in the constructional features and finish.

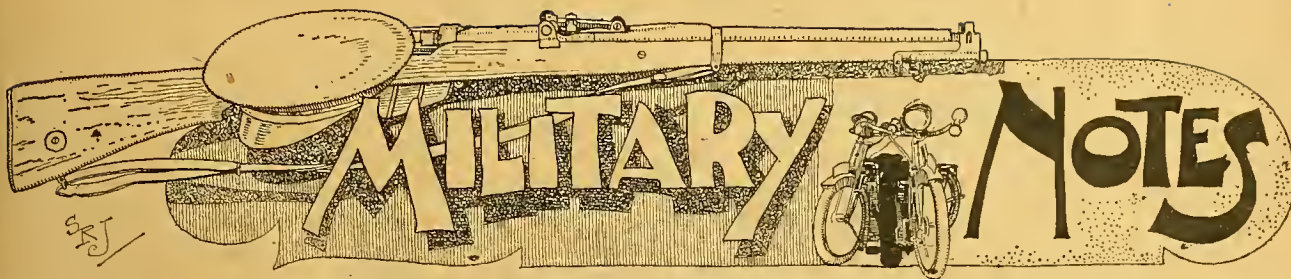
"It is both amusing and irritating to find how the maker who is obsessed with the 'appearance' mania neglects many of the minor points which make for the comfort and pleasure of the rider. Although an improvement is becoming manifest, it is annoying to find many small parts fixed by miserable little grub screws and nuts which no standard spanner will fit. Why cannot some system of standardisation be adopted? And what does such a body as the Engineering Standards Committee exist for? Of course, it is to the advantage of the maker to have his own special spanners and other tools, which the cheerful rider purchases from him.

"I am a keen motor cyclist, and will continue to be so in spite of the drawbacks I have mentioned; and, provided the public can purchase a machine of reasonable excellence at a moderate price, there should be a big future for this utilitarian pastime. But if the British manufacturer is to hold his own in the favour of the British public and in the Colonial and foreign markets the facts I have set forth will have to be faced.

"One great factor to be remembered is this—that it is possible to produce a motor cycle which will be cheap when judged by the standard above mentioned.

"EDWARD S. HODGSON."





A FEATURE COMMENCED IN "THE MOTOR CYCLE" OF MARCH 21st, 1910.

#### ANOTHER NEW PILOT.

WE hear that T. West, the well-known Cheltenham motorist, who has been in the A.S.C. for a very considerable period, has lately taken his pilot's certificate at Hendon.

#### MOTOR CYCLISTS FOR THE R.F.C.

FURTHER to the paragraph which appeared in last week's issue, we have received the following information from Maj. H. Stuart Ebber, Special Recruiting Officer, R.F.C. The R.F.C. is now open to practically all trades, but there are numerous restrictions, the chief of which are (a) that no man who has already received a notice calling him to the Colours is eligible unless allotted to the R.F.C. by his Area Commander; (b) motor cyclists and gunner observers are the only classes of men who may be accepted if fit for general service.

#### A GATHERING OF THE CLANS.

IT is strange how well-known motor cyclists are by mere chance billeted together or get together somehow over in France. Our photograph is of five well-known riders, among them J. Cocker, the Brooklands record holder, formerly with the Singer and Triumph companies; W. Westwood, of Westmorland, a notable competitor in Six Days Trials; Ernest Smith, formerly proprietor of Regal Motors; Artificer-Sergeant Howard Newman, son of Mr. S. A. Newman, maker of the Ivy motor cycle; and R. Bow-nass, the North-country Matchless and N.U.T. rider. Newman is attached to the Royal Engineers; the others are A.S.C. men, formerly attached to the Motor Machine Gun Service. The picture can correctly be described as a gathering of a clan, for five more successful riders it would be almost impossible to gather together, and certainly not in the Forces. Their fine physique and fitness will be apparent from the photograph.

It is a curious fact that the same morning the picture reproduced on this page reached the Editor, our old friend, Capt. G. I.

Francis, A.S.C., M.T., called to see us. Capt. Francis is officer-in-charge of the motor cycle section of the workshops in which some of these men are employed, and was interested to see the photograph of the men, whose services he values so highly. After a very long spell abroad, Capt. Francis is now enjoying a few days' leave.

#### P. AND M.'s AT THE FRONT.

WE learn that Mr. Richard Moore, director of Messrs. Phelon and Moore, Ltd., and formerly a frequent competitor in A.C.U. six days trials, left on Friday last for G.H.Q. in France under War Office instructions to give expert advice and assistance in the organisation of depots for P. and M. motor cycles with the British Expeditionary Force. His visit is expected to occupy about ten days.

#### DESPATCH RIDERS HARD AT IT.

CPL. A. W. CLOSE, R.E. despatch rider, and one of the Editor's recruits, writing from France, mentions how busy he is being kept, and is constantly out and about on his machine—a Douglas. The machine he has is not the first with which he was supplied, and he emphasises what other despatch riders have brought out, viz., the severe testing all despatch riders' machines receive. The weather lately has been very rough at the Front, which has not lessened the D.R.'s difficulty. He mentions, finally, that the Artificer-Sergeant of his battalion is the Ivy expert, Howard Newman, and remarks that he is a general favourite and a friend to all D.R.'s.

#### MOTOR CYCLIST VOLUNTEERS.

IT appears that motor cycle sections are not covered by the scheme of recognition of volunteers which we referred to last week. The infantry and other attached units are fully recognised, and their officers have been granted commissions.

#### FROM INFANTRY TO R.F.C.

CAPT. CHARLES HIGHAM, a motor cyclist and car owner well known in the Manchester district, and a valued contributor to the pages of *The Motor Cycle* in peace time, formerly



Capt. Chas. Higham.

O.C., A.C. 8th Battalion Manchester Regiment, was some months ago transferred to the Royal Flying Corps, and is now an Equipment Officer.

Capt. Higham was one of the founders of the North-Western Automobile Association, which body has nearly two thousand motor cyclists and car drivers on its competition register.

#### A MOTORIST'S WAR BOOK.

MR. FREDERIC COLEMAN'S book "With Cavalry in 1915," just recently published, contains only one reference to despatch riders, but it is such a splendid testimony that it is well worthy of reproduction here.

"Once during the afternoon my work took me to Ypres, but not beyond it. A fresh attack was on, and the Boches were sweeping the Menin Bridge and the road beyond with shrapnel.

"Even Macfarlane's intrepid motor cyclists could no longer go over it with their signal corps messages, but were compelled to dismount, leave their motor bicycles in Ypres, and proceed on foot to Potijze by a roundabout route through the fields. These cyclists generally used a road long after it had been given up as impassable by everyone else, and when they at last abandoned it as too dangerous for use it was indeed time, in their parlance, to 'give it a miss.'"

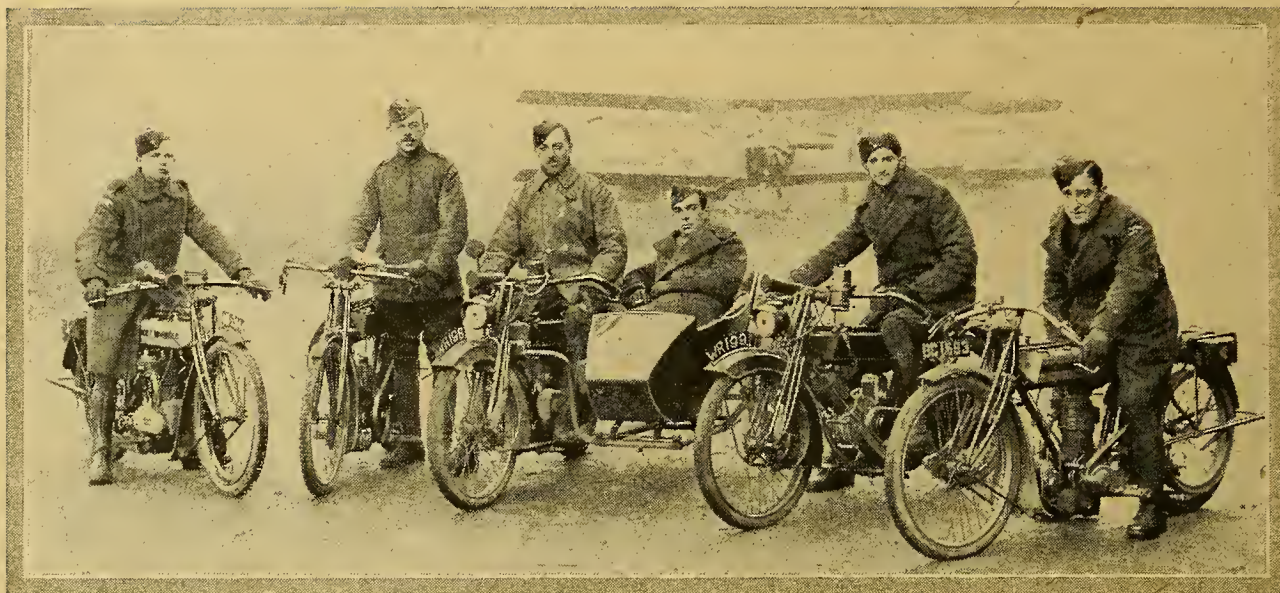


A GATHERING OF THE CLANS

A group of well-known men in the motor cycle world. (See paragraph on this page.)



## MOTOR CYCLISTS IN THE AIR SERVICE.



Motor cyclists attached to the 41st Reserve Squadron, Royal Flying Corps. Their machines, it will be noticed, are P. and M.'s and Triumphs, though there is a privately-owned two-stroke lightweight among the group.

## HIGH PRAISE FOR ARMY MOTOR CYCLES.

**A** LANCE-CORPORAL artificer writing from Egypt says: "You should see the work our poor little 'Duggies' have to do, ploughing through sand for miles and miles, running day in and day out. They were just as satisfactory in the broiling sun with oil as thin as water. I am certain that there is no motor cycle of foreign origin that can hold a candle to this wonderful example of British workmanship and material.

"The same applies to the Triumphs here. They also do not know the meaning of the word 'trouble.'"

## STIFF QUESTIONS FOR A.S.C., M.T., COMMISSION ASPIRANTS.

**J**UDGING by stories which are going the round among experienced motorists, some of the questions that candidates for commissions in the A.S.C., M.T., and R.F.C. have been asked can be described as "the limit." We cannot say how true the statements are, but, at any rate, we give a few questions which we have heard at different times which candidates have been plied with:

1. What do you know about a gear box?

2. You are in charge of a unit, and receive intimation that your lorries will be inspected in two days' time. What steps would you take?

3. The sparking plug of your Triumph cycle becomes unserviceable; you have no spare. How would you carry on?

4. Mention any four parts of a lorry, indicating their position.

The above were taken from the September issue of *On Service*. Here are a few more:

5. You are descending a hill at 27 m.p.h. on a Crossley car; your brakes refuse to act; likewise the switch is out of commission, the petrol tap is too far away to turn off. What would you do?

6. How many nuts are there on a Ford car?

One really sensible question we heard the other day was as follows:

7. You are driving a lorry, and the gear box is damaged to the extent that a new box must be fitted. How would you prove, after fitting the box on the road, that the shafts were in line?

## AVERAGE PRICES.

**W**E give below the average prices of second-hand models offered for sale in *The Motor Cycle*, where it is possible to obtain a sufficient number of each model.

Make.	Year.	H.P.	Average for last week.	Latest average week obtainable.
A.J.S. ....	1915 6	3-sp. sidecar ..	—	£80
" .....	1916 6	3-sp. sidecar ..	—	£90
" .....	1916 2½	3-speed .....	£55	—
Alldays ....	1915 2	2-stroke, 2-sp. ...	£30	—
" .....	1914 6	3-sp. sidecar ..	£60	—
Ariel .....	1916 5	3-sp. sidecar ..	—	£80
B.S.A. ....	1916 4½	3-sp. sidecar ..	£65	—
" .....	1916 4½	3-speed .....	—	£58
" .....	1915 4½	3-sp. sidecar ..	£59	—
Calthorpe ..	1915 2½	2-speed .....	£23	—
" .....	1916 2½	2-speed .....	—	£31
Clyno .....	1914 6	3-sp. sidecar ..	—	£33
Connaught ..	1915 2-sp. 2-stroke ...	£23	—	—
Douglas ...	1916 2½	2-speed .....	£52	—
" .....	1914 2½	2-speed .....	—	£45
" .....	1913 2½	2-speed .....	£36	—
" .....	1913 2½	2-speed .....	£32	—
Enfield ....	1916 6	2-sp. sidecar ..	£78	—
" .....	1915 6	2-sp. sidecar ..	—	£78
" .....	1914 6	2-sp. sidecar ..	£54	—
" .....	1914 3	2-speed .....	£37	—
" .....	1916 3	2-speed .....	£57	—
H.-Davidson ..	1915 7-9	3-sp. sidecar ..	£65	—
Henderson .	1915 4 cyl.	2-sp. sidecar ..	—	£70

Make.	Year.	H.P.	Average for last week.	Latest average week obtainable.
Indian .....	1916	Powerplus sidecar ..	—	£85
" .....	1915 7	3-sp. sidecar ..	£62	—
" .....	1914 7	2-speed .....	—	£50
" .....	1915 5	3-speed .....	£52	—
James .....	1914 4½	3-sp. sidecar ..	£42	—
" .....	1916 4½	3-sp. sidecar ..	—	£70
Levis .....	1915 2½	2-stroke .....	£21	—
" .....	1916 2½	2-stroke .....	—	£24
Matchless ..	1915 8	3-sp. sidecar ..	—	£65
" .....	1914 6	3-sp. sidecar ..	—	£53
New Hudson ..	1915 4	3-sp. sidecar ..	—	£54
" .....	1914 4½	3-sp. sidecar ..	£52	—
New Imperial ..	1916 2½	2-speed .....	—	£30
" .....	1914 2½	2-speed .....	£23	—
Norton .....	1916 4	T.F. ....	£50	—
P. & M. ....	1914 3½	2-sp. sidecar ..	—	£40
" .....	1913 3½	2-sp. sidecar ..	£39	—
Premier .....	1914 3½	3-sp. sidecar ..	£39	—
Rex .....	1914 6	2-sp. sidecar ..	—	£35
Rover .....	1914 3½	3-sp. sidecar ..	—	£42
" .....	1915 3½	3-sp. sidecar ..	—	£55
Rudge .....	1915 3½	Multi sidecar ..	—	£45
Scott .....	1914 3½	2-sp. sidecar ..	—	£40
" .....	1916 3½	2-sp. sidecar ..	—	£58
Sunbeam .....	1914 3½	3-sp. sidecar ..	£58	—
" .....	1915 3½	3-sp. sidecar ..	£72	—
Triumph .....	1914 4	3-sp. sidecar ..	£45	—
" .....	1914 4	3-speed .....	£40	—
" .....	1915 2½	2-sp. 2-stroke ..	—	£34
" .....	1913 3½	3-sp. sidecar ..	£34	—
Williamson ..	1914 8	2-sp. sidecar ..	£59	—
Zenith .....	1914 6	Gradua sidecar ..	—	£44

## NEW ZEALAND RACING.

**T**HE Pioneer Motor and Sports Club opened the season on October 21st at New Brighton beach with a meeting of two races only. The beach was very heavy owing to the tide having recently receded, and the entrants were further handicapped by a strong wind. The attendance was small, the cold weather being a deterrent. Results:

## FIVE MILES MAIDEN HANDICAP (SOLO).

1. O. H. Green (7 Indian), 25 sec.
2. H. S. Curtis (7 Indian), 25 sec.
3. R. L. Kennett (7 Harley-Davidson), scratch.

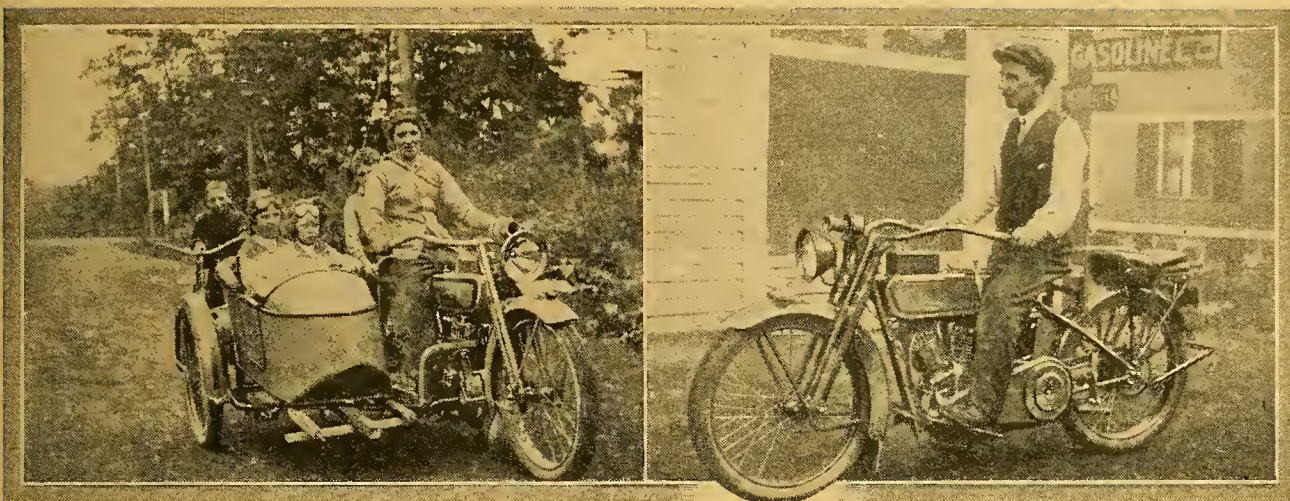
## TWENTY-FIVE MILES HANDICAP (SOLO).

1. G. Moffett (4 Triumph), 3 min.
2. H. S. Curtis (7 Indian), 2 min. 30 sec.
3. F. Haworth (4½ B.S.A.), 5 mins.

Time 25 min. 3½ sec.



## A FAMILY SIDECAR AND A 1917 AMERICAN MODEL



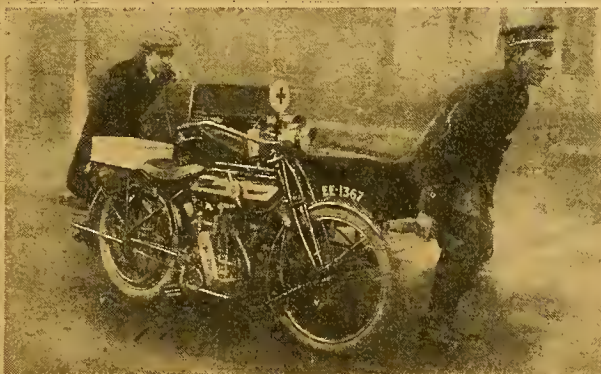
The above photographs were sent us by Mrs. J. Lang, of Waterbury Conn., U.S.A., and show—(1) her family sidecar outfit, and (2) her husband, J. Lang, astride a 1917 model Harley-Davidson with military drab finish. Mr. Lang will be known to many of our readers, as he raced at the Celtic Park, Glasgow, thirteen years ago, and competed in 1909, 1910, and 1911 in the Tourist Trophy Races on an N.S.U. and two Matchless respectively.

## A SIDECAR AMBULANCE.

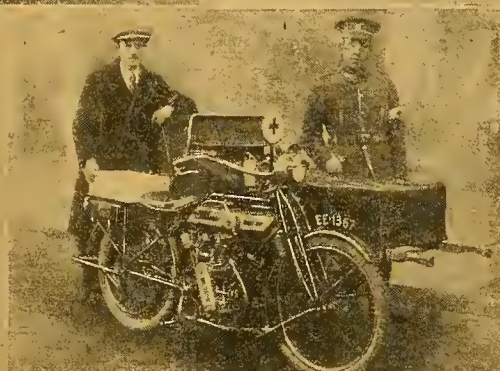
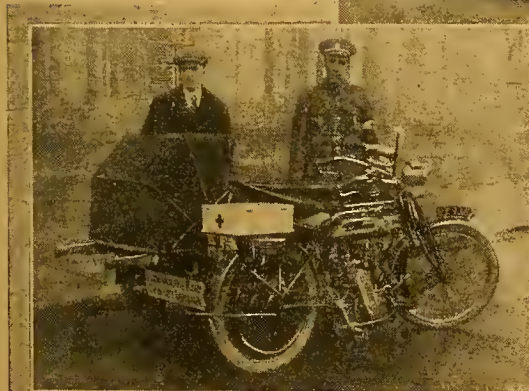
**W**E have received details of a Rover sidecar outfit which Mr. D. E. Fountain, Rose Branch, Scartho, Grimsby, has adapted as an ambulance for the use of the St. John Ambulance Brigade (Grimsby Division), and the owner's action may be an incentive to others. The springs of the ambulance have been fitted under the frame, instead of at the top, to give a lower position, and four U-shaped clips are attached to the upper part of the springs, into which the frame of the ambulance drops. The sidecar wheel

is half enclosed in zinc to prevent mud being thrown underneath the carrier, and a box containing the first aid outfit has been fitted to the chassis. Mr. Fountain will be pleased to send further details to

readers who may be desirous of pressing their sidecar outfits into this useful service. With a little ingenuity we think the chassis could be so made to take both the ambulance and the sidecar. To render them interchangeable should not present any difficulties, and a very useful double purpose vehicle would be the result.



A  
CONVERSION  
WITH A  
WORTHY  
OBJECT.



A reader has placed at the disposal of the St. John Ambulance Brigade, Grimsby Division, his Rover motor cycle combination, the sidecar chassis of which is arranged to carry an easily detached stretcher. The idea is good, and we congratulate Mr. Fountain on turning his outfit to such a useful purpose





### TIMES TO LIGHT LAMPS.

#### GREENWICH TIME.

Dec. 14th	...	...	4.19 p.m.
" 16th	...	...	4.20 "
" 18th	...	...	4.20 "
" 20th	...	...	4.21 "

### Trapping by Eligible Policemen.

When summoned at Brentford recently for exceeding the speed limit, Mr. Rowland Williams stated that he considered it a national scandal that three able-bodied men, excellent material for the Army, should be kept at home to undertake work of this character.

### A Hobby which Paid.

A motor cyclist of Norwich, Conn., U.S.A., who has been unflinching in his promptness in attending fires with a motor cycle and sidecar, has now been placed on the permanent fire staff, and in future will be paid for his services. It was his habit for three years to answer practically every fire call, stopping for the Deputy Fire Chief, and taking him to the scene of the conflagration in his sidecar. In three years he has answered more than 200 fire calls.

### A Chief Constable's Purchase.

Among recent well-known purchasers of Harley-Davidson combinations is the Chief Constable of Monmouthshire, Victor Bosanquet.

### A Car Number Wanted.

A correspondent has asked for our assistance in tracing the car which he alleges ran into his sidecar on the Portsmouth Road, near Putney Heath, shortly after four o'clock on the afternoon of December 3rd. The sidecar was driven violently against a pony and trap, and the occupants thrown out. The driver of the car slowed up momentarily, but then dashed off. If any of our readers witnessed the occurrence, perhaps they will send us the number of the car.

### The Rear Car.

We have the sidecar and the cycle car, but the Americans go one better and have a rear car. This is a trailer attachment clamped to a motor bicycle, turning it into a four-wheeled vehicle, solitary examples of which were produced in this country in 1904. The most luxurious models are fitted with a limousine body, which is luxuriously upholstered and equipped. We hardly think that this type of attachment would become popular in England. The driver is quite isolated, and has not the pleasure of having his passenger beside him, and the vehicle, being a four-wheeler, would, if used over here, be liable to a car tax.

### American Two-stroke Exit.

It would be interesting to know why the Hendee Manufacturing Co. dropped the two-stroke single-cylinder lightweight which was included in their 1915 programme, and replaced it by the 2½ h.p. flat twin which was described and illustrated in our issue of October 5th.

### England Pays—America Pockets.

Twelve months before the outbreak of war the Sunbeam Motor Car Co., Ltd., established many world's records on a twelve-cylinder machine. This was the first car in the world of such a type, and would have been marketed but for the war. An American firm has now copied the engine and standardised the twelve-cylinder car from the Sunbeam Co.'s machine so successfully that the company has been able to pay a dividend of 50% on a capital which had to be increased twofold to meet the great demand.

### More Money for Technical Schools.

The Government has made an important declaration with regard to further financial assistance in aid of scientific research work as applied to industry. The State is to discuss with the local authorities concerned and the governors of schools certain new draft regulations which will simplify administration and stiffen up the instruction. "It is desired," says Lord Crewe, "to make the road easy for those sons and daughters of Britain who see the beacons of science shining ahead of them on a high hill which it was their life's work to climb."

### SPECIAL FEATURES.

#### A THREE PURPOSE SIDECAR

(Illustrated).

#### THE DOUBLE-ACTING TWO-STROKE.

### The R.A.F. Hill Climb.

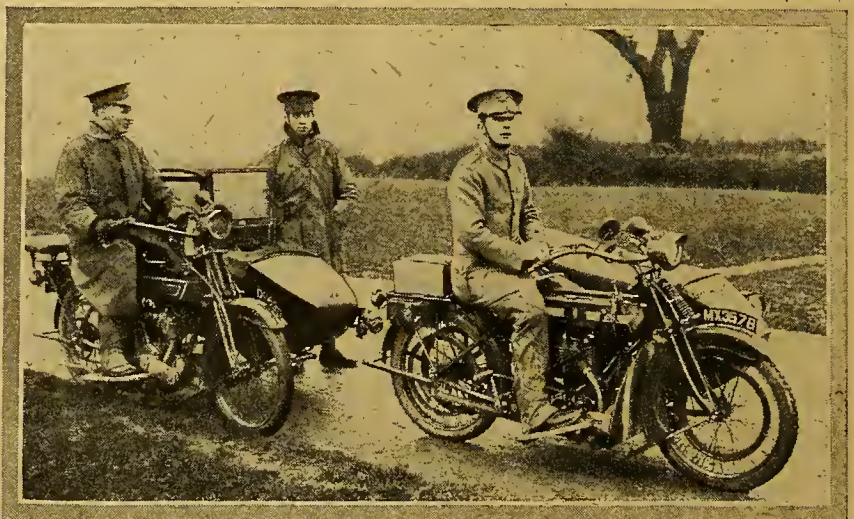
On the occasion of the last R.A.F. hill-climb W. F. Guiver (Ariel) was awarded the special prize for the best performance of the day.

### "Joining Up."

Last week there was a certain revival of applications for particulars from motor cyclists desirous of joining the Services. Of the twenty-one enquiries received the majority required information respecting the Heavy Section, Machine Gun Corps (Tanks), the Motor Machine Gun Service, and the R.F.C.

### A 2,700 Mile Trip.

Two American motor cyclists have planned a 2,700 mile trip, carrying a full field equipment (with the exception of the rifles), weighing 110 lb. The primary idea is to impress the United States Army officials still further with the importance of the motor cycle as an adjunct to the military organisation of the country. A message will be carried from a major of the New York National Guard to Governor Whitman, of New York, under strict military field conditions, and the riders will use a Harley-Davidson combination.



Motor cyclists of the London Section (D Squadron) of the National Motor Volunteers, snapped during their week-end manoeuvres. The sidecar outfits are an Enfield and B.S.A.



**Our Christmas Number.**

The next issue of *The Motor Cycle* being our Christmas Number, we shall follow our usual custom and publish one or two articles in a lighter style and applicable to the season—we wish we could say the festive season.

**Palmer Tyre, Ltd., Report.**

The accounts of the Palmer Tyre, Ltd., for the twelve months ending September 30th, 1916, show a profit of £10,687.

**Lights on Pedal Cycles.**

Motor cyclists have had to conform to all the Lighting Orders for some time past, and it is rare now to see an acetylene or electric head lamp on a motor bicycle which does not conform to the regulations with respect to dimming. Pedal cyclists in many districts are not so blameless, and it is not at all uncommon—in fact, it is common—to see undimmed acetylene head lights of comparative brilliancy on "push bicycles."

**A Wrong Interpretation.**

We tackled a push cyclist about this the other day, and he expressed the opinion that the Order does not apply to his machine, and on going further into it we found that in many instances the authorities imagine that they can only proceed against cyclists if the light be too brilliant.

**The Correct Exposition.**

Now that is a wrong interpretation of the Order, and our legal adviser says that "The word 'vehicle' is the expression generally used in the Order, and the interpretation clause shows that it includes any bicycle, tricycle, or velocipede, so that the whole of the Order really affects push cycles." Pedal cycles fitted with acetylene or electric lights which are undimmed should therefore be proceeded against, otherwise motorists cannot be expected rigorously to comply with the law.

**Mr. Wells back in England.**

We are glad to learn that Mr. W. H. Wells, the London manager of the Hendee Manufacturing Co., has arrived safely from the United States, where he has been for some months. He was to have been accompanied by Mr. Russell Coes, a well-known American exponent of the Indian motor bicycle, whose brilliant riding in several trials during 1913 will no doubt be recalled. At the last moment this rider was prevented from sailing with Mr. Wells on the ss. *Philadelphia*.

**Treacherous Roads.**

In certain districts during the week-end the roads were in the most treacherous condition. In Berkshire, for example, it snowed, then rained, and then froze during the night, with the result that the roads were a sheet of glass the next morning. On one particular hill two cars turned completely round within the space of five minutes, and a motor cyclist who came to see if he could be of any assistance had his machine slip from under him while attempting to restart. Immediately afterwards a pedal cyclist came a cropper after he had been warned to dismount. The main Bath Road was treated with gravel, but for some unknown reason the road to Henley was totally neglected.

**Death of A.C.U. Helmet Inventor.**

The death took place on Friday of last week of Mr. Frederic S. Hess, the inventor of the helmet made obligatory by the A.C.U. for the last Tourist Trophy Race in the Isle of Man. This helmet was undoubtedly the means of saving the lives of a number of competitors, and has proved to be as useful in racing as the shrapnel helmet in warfare.

**Imports and Exports.**

The number of motor cycles imported during November was thirty-seven, and the value £1,474. When the value of parts is added, the total amounts to £5,520. These are evidently commercial vehicles, as ordinary imports have been prohibited since March. In October last no motor cycles were imported, but the value of imported parts was £3,669.

The export figures are naturally far in excess of the imports, the November exports being as follows:

1914.	1915.	1916.
1,375	1,690	1,612

motor cycles, and the value of these machines, including parts, was:

1914.	1915.	1916.
£95,233	£124,543	£106,883

The total for the past month is £1,473 more than for October. The total for the year is £879,616 at present, but it is not likely to exceed one million pounds, as it did in 1914.

**Huge Petrol Imports.**

No less than 18,004,011 gallons of motor spirit were imported during the past month, and the total for the year exceeds 157 million gallons. In October the total was 16,399,255 gallons, and in November, 1915, 10,254,496 gallons.

**The National War Funds.**

At the week-end the principal war funds stood as follow:

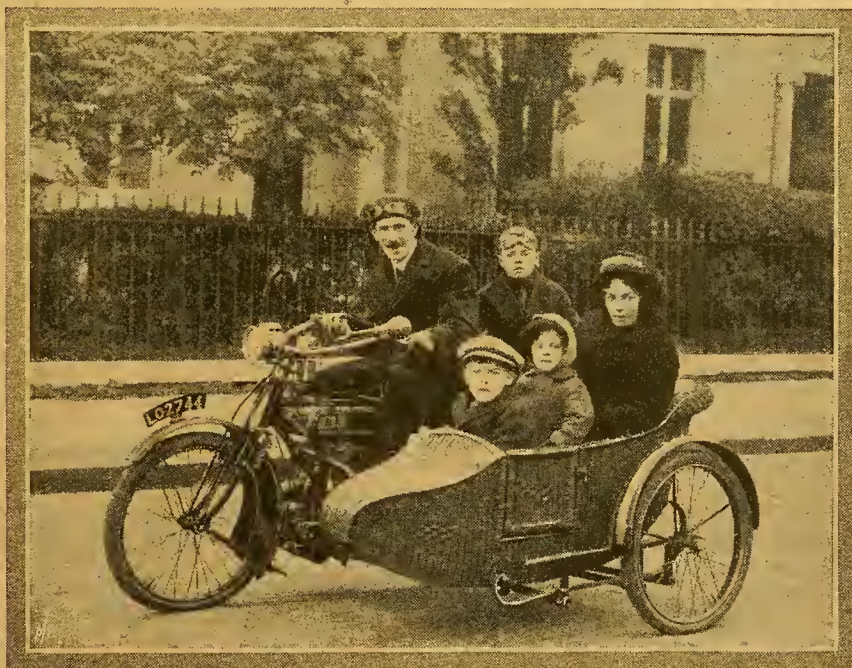
The Prince of Wales's Fund (distributed £3,509,475) .. ..	£6,012,734	0	0
British Red Cross Fund .. ..	5,380,627	0	0
Tobacco Fund .. ..	121,233	0	0

**A Description of the Zeppelin Engines.**

The December number of *The Automobile Engineer* contains a full detailed description of the 200 h.p. six-cylinder engines fitted to the Schutte Lanz and Zeppelin airships. Our contemporary is enabled to do this by permission of the British naval and military authorities. *The Autocar* of December 16th also contains a full description of the same engine, and our readers may be more interested in this, as it is written for the benefit of the average reader of a motor paper. Each engine has six cylinders 150×190 mm. bore and stroke, and many most interesting and novel features that are described in simple language and illustrated by detail sketches.

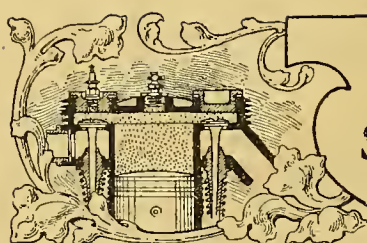
**Still Another Missing Motor Cycle.**

With reference to our paragraph on page 458 (November 23rd), a correspondent tells us that he has had a very similar experience. A man in uniform wearing badges of the 17th Lancers, but with shoulder letters of the 7th Lancers (which regiment does not exist), appeared in answer to an advertisement. He explained that he came from the Major commanding the depot, and asked if he could fetch the machine from Salisbury, where it was being overhauled. Permission was given, and neither man nor machine has been seen since. The machine is a 1913 3½ h.p. Triumph, with free engine and standard bars bent out and down.

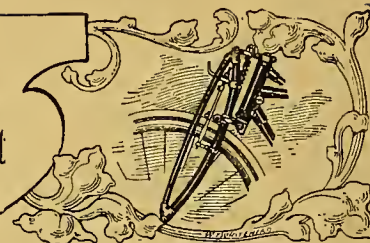
**THE FAMILY SIDECAR.**

The sidecar is becoming more and more popular as a general service vehicle. Our illustration shows Mr. H. Gorrings and family on their Bradbury outfit, which has served them well for a year.





## The Future of the Single-cylinder Mount



By CAPT. A. LINDSAY, R.A.M.C.

**M**AY I be allowed to enter an appeal, on behalf of the 500 c.c. single, against the verdict pronounced by "Road Rider" in the issue of September 28th last and the subsequent support?

His judgment, carefully analysed, centres on the following conditional clause: "Should it therefore prove that an increasing percentage of the riders who lead opinion and demand have done for ever with the 500 c.c. single-cylinder." "Road Rider" takes the proof for granted. It is against this veiled assumption that I am appealing. There has been no remarkable demand for the summary execution of our most dominant type of motor cycle. Thanks to *The Motor Cycle* spring frame campaign, there has been a demand for marked improvement in its comfort. There is undoubtedly a prejudice against the single in some quarters—a *perfectly justifiable prejudice* when one ceases to generalise and begins to mention names. The culprits are well-known, and unless radical alterations are made to certain single-cylinder mounts they alone are going to be the victims of "Road Rider's" judgment.

### Absence of Vibration.

He complains of the "thumpiness" of the big single. I am afraid he has been unfortunate in his choice of big singles. Perhaps he has had "some" of these hastily designed "catch-penny" big singles which had a mushroom-like growth a year or two ago, in which case he is deserving of sympathy, not abuse. The elimination of road vibration is going to be the crux of the question. "Road Rider" opines that the raising of the standard of comfort by spring frames will make us intolerant of anything but an even impulse, vibrationless engine, and as a result the single will gradually die out. I deny that absolutely, and, assuming the prophet's mantle, dogmatise thusly: "The adoption of spring frames particularly, and the improvement of springing generally, is going to mean a new lease of life for the 500 c.c. single."

"Road Rider" also complains of engine vibration. Engine vibration in the higher class singles is practically unnoticeable whether the engine is pulling slowly or "revving." This is against all theory, but the fact remains that the running of three or four singles I have in mind thoroughly deserves the adjectives "effortless" and "vibrationless." Watch a  $3\frac{1}{2}$  h.p. Blackburne turning over in neutral! Sit on a  $3\frac{1}{2}$  h.p. or 4 h.p. Norton chain drive at 8-10 m.p.h. on top gear in traffic, or a  $3\frac{1}{2}$  h.p. Sunbeam or Rover at 30 m.p.h. in the open! Picture one of these engines in a fore and aft insulated frame, and you have my  $3\frac{1}{2}$  h.p. single of the future.

### V Twin Engines.

A comparison of present day manufacturing practice will strengthen the case for the single materially.

The single engine lends itself best of all to simple, strong frame construction, and allows of most consideration being given to such vital factors as weight distribution, engine accessibility, cooling problems, lubrication, and protection of working parts from the ravages of weather, dust, and mud.

Most of these remarks are equally applicable to the V twin of moderate power. Here our designers are up against some constructional problems peculiar to this type of engine alone. Cylinder angles, cooling, lubrication, big end bearing, design, engine balance, and firing periods.

Ignition timing in this type of engine is still merely a compromise even after a considerable number of years of experimental work. Considering everything, V twin design is in a very unsettled state by comparison with its one-lunged brother, and I am afraid the manufacturer who proposes to supplant the single with a V twin combining all the constructional excellences of the despised and rejected has a long row to hoe yet. We had a mild sort of boom in 500 c.c. V twins recently—1914, I think—but the heather was not set on fire. The number of factories relying entirely on a 500 c.c. twin machine for their livelihood is still very small.

### Flat Twins.

The horizontal twin engine also has its worries. On its credit side we have its wonderful balance and consequent revving capabilities, all factors making it an undoubted treat to ride. On the debit side there are several serious problems to be faced.

It is an awkward engine to build into a motor cycle frame without making the wheelbase too long for solo riding. Special frames have to be built to avoid this lengthening of the wheelbase, and as a result we have had some weird efforts. Usually it meant some vital portion of the cylinder and valve gear being carried low down outside the frame, where it was exposed to dirt and the liability of severe damage.

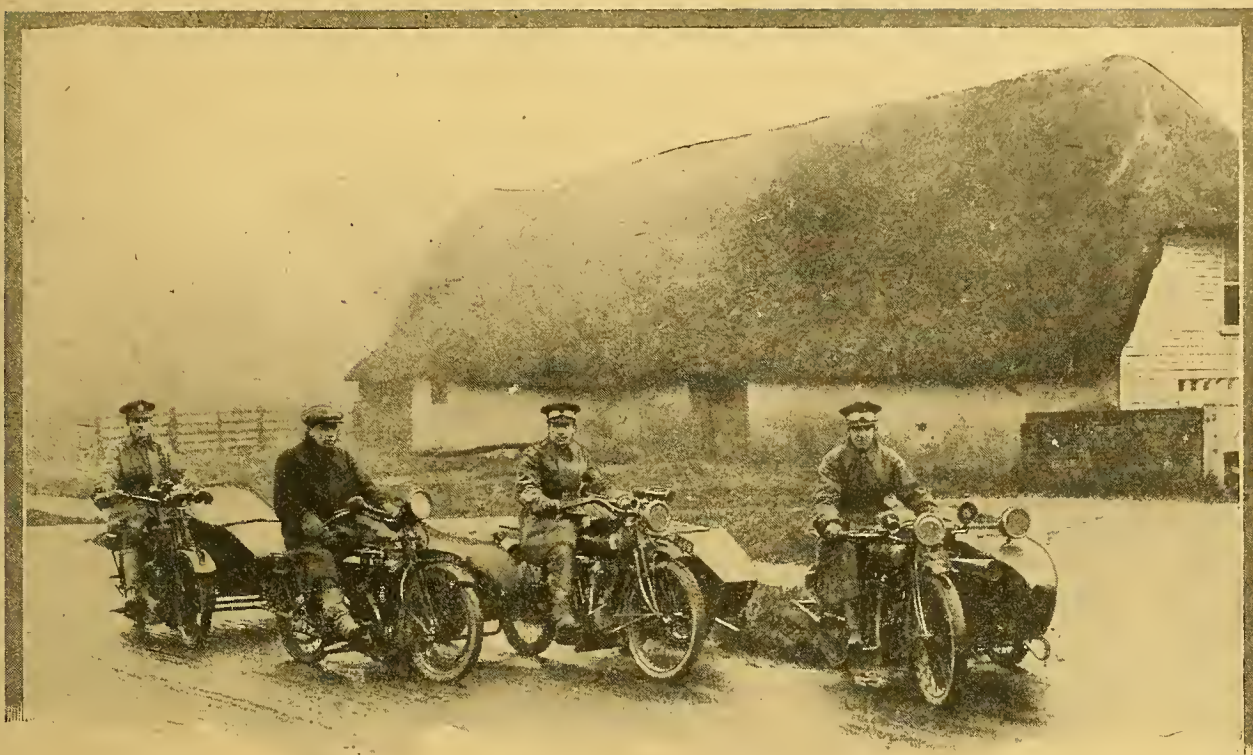
Engine inaccessibility has been quite a marked feature. Cooling of the rear cylinder has never been satisfactory. Inherent with the cooling problem is the problem of lubricating both cylinders equally.

The necessarily long induction pipe is not an aid to good carburation,\* and possibly helps to account for the slightly disappointing petrol consumption of this type of engine.

The four-cylinder engine has only a very small footing at present, and I do not look on it as a serious competitor just now. When we start building our engines almost entirely from some aluminium alloy, possibly then the *en bloc* four-cylinder engine may come into its own. Presumably, then, "Road Rider" will write a "Plea for the six-cylinder."

\*Mr. Granville E. Bradshaw, the designer of the A.B.C., in the issue for Dec. 7th, refutes the assertion that a long induction pipe is a drawback.—Ed.





Wintry conditions do not damp the enthusiasm of the National Motor Volunteers. The photograph shows members of the D (London) Squadron during the operations arranged for last week end.

A comparison of the performance of the four types of engines—single, V twin, flat twin, four-cylinder—substantiates Mr. Norton's claim that the single is "mechanically and thermally the most efficient engine we have."

In speed, power, economy, reliability, and value for money the single has it every time, if the buyer is careful and does not rush in and take whatever the loquacious agent offers him.

#### The Trend of Public Opinion.

"Road Rider" and I differ in our interpretation of the trend of public opinion just now. The last three years have seen a boom in lightweight two and four-stroke machines. Particularly has this been marked since the war began. The principal result has been the "graduation" of large numbers of motor cyclists, who but for the crisis might still be entirely ignorant of the joys of the sport. This rapid graduation implies simplicity and solidity of design for some years to come, and here is where the 500 c.c. single manufacturer is going to reap his reward. He is in a position to supply the demand that will arise after the war, whilst his "comfort seeking" brother

manufacturers are learning their job. For some time to come their experimental departments will be working out their own special problems.

To summarise, my opinion is that the  $3\frac{1}{2}$  h.p. single will, by the adoption of efficient front and rear springing and careful attention to engine balance and transmission, easily keep its dominant position in our trade, a position it has won by sheer superlative merit. The  $3\frac{1}{2}$  h.p. single engine balance problem is going to upset some people, I am afraid, because intimately bound up with the success of the single of the future is the success of the long stroke engine with its light reciprocating parts and excellent balance, coming as near to theoretical correctness as is possible in a single-cylinder engine.

To conclude, I am willing to risk this further prophecy: The  $3\frac{1}{2}$  h.p. single of the future will be a  $3\frac{1}{2}$  h.p. long stroke engine, unit construction, engine, magneto, dynamo, housing, and gear box cast *en bloc*. Semi-open frame. It will have front and rear springing, as well as forced lubrication and automatic carburation. Electric lighting would be a standard feature.

#### MANUFACTURERS CONSIDERING THE FUTURE.

Last week a meeting of motor cycle manufacturers was held at the Grand Hotel, Birmingham, at which Mr. Humphries, of Humphries and Dawes, Ltd., makers of the O.K. motor cycle, proposed, and Mr. Downs, of New Imperial Cycles, Ltd., seconded, and it was carried *nem. con.*:

"That this meeting favours co-operative action by British motor cycle manufacturers, through some organisation from which foreign manufacturers' influence must be completely absent, with a view to complete co-operation with other British industries and the preservation of the British motor cycle industry in future."



## OXY-ACETYLENE WELDING.

Broken Castings and Damaged Keyways built up and made as good as New by a Welding Process.

**W**E spent a most interesting morning recently watching repairs to motor cycle cylinders, crank cases, and crankshafts by means of the oxy-acetylene welding process, carried out by Messrs. Barimar, Ltd., 10, Poland Street, W. The company's workshops are at 13, Lamb's Conduit Street, W.C. Outside the building is a large acetylene generator, while inside are oxygen cylinders. The two gases are mixed and issue in correct proportions through a special torch. The first job we saw was one very similar to the accompanying photograph, in which the flange had been broken off the base of the cylinder. Only one original corner of the flange was left, and the remaining three pieces were welded on, and also the spigot.

### Protecting the Eyes from Glare.

Watching the repair through darkened spectacles, one saw the workman with a stick of cast iron in one hand and a torch in the other sealing up the joints of this cylinder casting, filling up the holes, and finally building up the spigot which projects into the crank case. As soon as the repair is completed, the cylinder is taken into the adjoining workshop, and all roughnesses are carefully ground down, most ingenious appliances being used for this operation. The emery wheel is on a flexible shaft, so that it may be moved about in any position.

In the case of the repair we were watching, the holes for the holding-down bolts were all filled up, and after the repair had been completed new holes, of course, would be drilled. One of the greatest advantages of the Barimar workshops is that the finishing off is done on their own premises, and any defects which may occur in the welding can be discovered before the cylinder is sent away. It is extraordinary what excellent work is done by this firm.

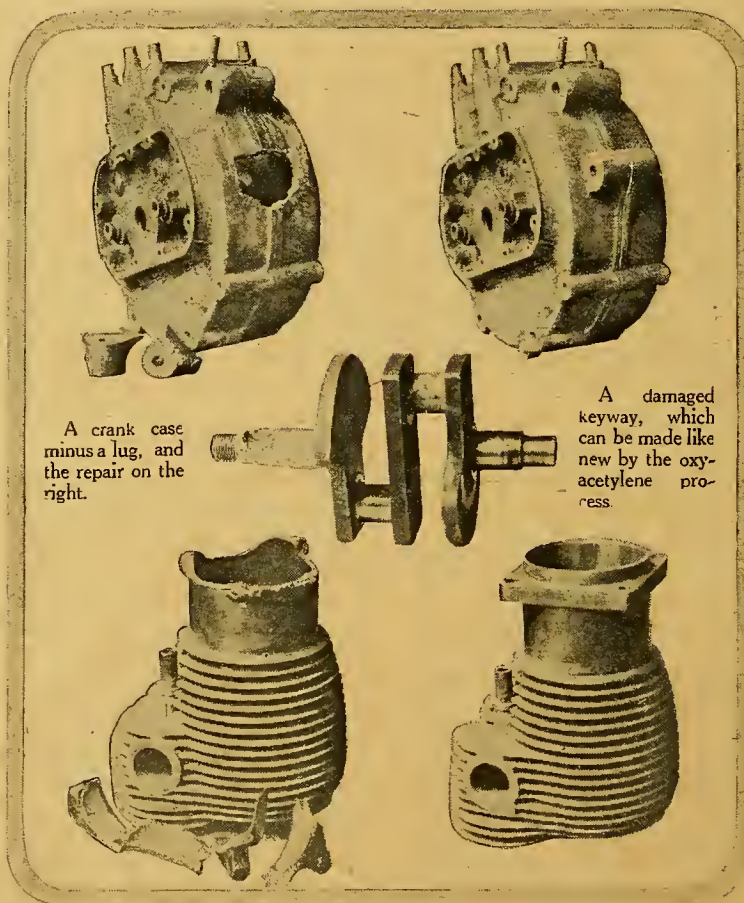
Owing to careless fitting sometimes a flywheel keyway in the solid crankshaft of a horizontal twin or a two-stroke is damaged. In a case of this kind the gap is filled up with steel and then ground so that the repair is hardly visible. Afterwards a fresh keyway is cut and the repaired crankshaft is as good as new.

We saw many examples of broken aluminium crank cases due to a broken connecting rod smashing its way through the ends or side. When this happens the broken part is neatly welded in position, and, as will be seen in the accompanying photograph, the patch is practically invisible after it has been finally dealt with. We saw other parts undergoing repair, e.g., a broken boss which held the bush for one of the timing gear bearings. A valve had been sent in two pieces so that the stem might be welded up and made as good as new, and numerous crank cases had also been received in which the main bearing bosses had been cracked and allowed the bearings to come adrift. Nearly all makes of motor cycles were represented in the firm's workshops.

One of the most interesting repairs shown to us in

operation was the welding of a new tooth on to a broken gear wheel, and this is a repair which might often be required by motor cyclists, for over-hardened gear wheels or timing wheels are liable to give trouble in this respect.

At the present time, when spares are difficult to obtain, this work is of extreme importance, and many motor cyclists who would otherwise scrap broken parts of their machines will be glad to know where they can be effectually and skilfully repaired. A separate department has been allotted to the repair of radiators and lamps. We noticed a Scott radiator being treated, while lamps, however battered their condition, may be restored to look almost like new.



A crank case minus a lug, and the repair on the right.

A damaged keyway, which can be made like new by the oxy-acetylene process.

SOME TYPICAL BARIMAR REPAIRS BY THE OXY-ACETYLENE WELDING PROCESS.

The lower views show that even the base of a broken cylinder can be rebuilt.



## ALUMINIUM ALLOY AND STEEL COMBINED.

**A**LUMINIUM alloy is every day becoming more and more popular for use in the construction of internal combustion engines—in the first place, undoubtedly on account of its extreme lightness, while its propensity for rapid heat conduction is also a point greatly in its favour, especially for air-cooled engines. Practically the only point not in its favour is the fact that its somewhat soft nature does not lend itself to any great strain, such as, in the case of a piston, the carrying of the gudgeon pin. This difficulty has been overcome in the piston herewith illustrated by fitting a steel liner over the lower portion of the piston, so forming the skirt and providing a strong bearing to carry the gudgeon pin, thus enabling strength, lightness, and good heat conducting powers to be combined.

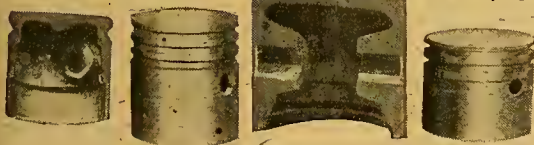
We understand this type of piston has proved satisfactory, though, without actual experience, one might be doubtful of the result of the combination of the two metals, owing to the different expansions under heat of the steel and aluminium alloy.

## ALUMINIUM PISTONS.

**A**FIRM which long since devoted itself to the manufacture of aluminium alloy pistons is known as the Aero-lite Piston Co., Hanover Court Garage, Hanover Court, Hanover Square, W. At the present time the pistons are used in aeroplane engines, in which they work under extremely difficult conditions, and the manufacturers assume that since they are behaving so well in aeroplane motors they are likely to be equally successful in motor cycle engines.

The pistons are made in sizes from 60 mm. bore to 150 mm., in various patterns, but most of these have the

Aerolite pistons for motor cycle use.



interior of the top rather heavily webbed, not so much for the sake of strengthening the metal, as to provide additional metal to radiate the heat from the hottest part of the piston. The Aerolite pistons are very carefully fitted into the cylinder, and are lapped in with rouge.

## WASHING SIDECARS.

**V**ERY frequently the appearance of the coachwork of a new sidecar is spoilt on the first washing. If once the polished surface is roughened, no amount of furniture polish will revive it. Never give dirt a chance to dry hard on, and never rub the dirt off; sop it off with a hose or wringing wet sponge. Finally, dry the superfluous moisture off with a wash-leather, and polish with special car polish.

## BURNT VALVES.

**O**CASIONALLY a valve becomes so badly burnt and pitted that ordinary fine emery powder fails to grind the face smooth again. A quick method of grinding in, if a lathe or special valve-truing tool is not available on which to touch up the valve face, is to cut a piece of fine emery cloth and fit it over the valve stem, the cutting side towards the valve, and twirling the screw-driver vigorously for a minute or two. Except in extreme cases, however, this method should not be used, as it gets through the carbon glaze rapidly, and if continued too long will score the metal too deeply. Thus the remedy may be worse than the disease.

## BRITISH-MADE MAGNETOS

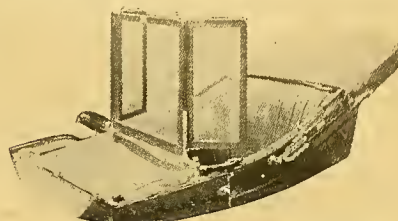
**A**VISIT we paid recently to the E.I.C. Co. went a long way to confirm our opinion that after the war there will be no need to go abroad for magnetos. The workmanship of the E.I.C. is in every way equal to the pre-war enemy-made article, and as a proof that the firm have the utmost confidence in their work, it will interest readers to know that they issue a very complete guarantee; in fact, although this covers the use of the magneto for twelve months only, its makers are always prepared and willing to replace any defective part, or do anything that is necessary to a faulty magneto for a considerable time after that period has expired.

They impress upon users of their magneto that in all cases the machines should be sent direct to them at Sampson Road North, Birmingham, without being taken to pieces or interfered with in any way. The type A is the most popular model—in fact, the only one now being made; and with an extended armature shaft and raised centres by means of an adapter plate the same model is used for  $3\frac{1}{2}$  h.p. 500 c.c. single-cylinder machines, where the Bosch DA2 was previously employed. Many people are under the impression that a big engine necessitates a big magneto, but the type A has been successfully used on a number of 500 c.c. machines, such as the B.S.A. and others.

We were told that plans have been passed for a new factory to permit of the manufacture of 2,000 magnetos a week. The company is at present almost wholly employed on Government orders. We spent an instructive hour in the works, and left convinced that the utmost care is taken to ensure accuracy of manufacture.

## ORTO WINDSCREEN.

**S**INCE we last described the patent Orto windscreen, made by Messrs. A. Atkinson and Co., 24, Arminger Road, Shepherd's Bush, W., it has been improved by the fitting of adjustable side wings, which greatly add to

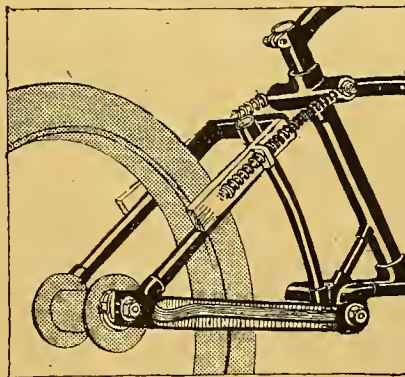


Orto windscreen with adjustable side wings.

the comfort of the passenger. It may be mentioned that the most interesting feature of this screen is the fact that it swings back as the door opens, allowing easy access to the seat. The adjustable side screens provide adequate protection against side eddies of air. It is certainly one of the most practical forms of sidecar windscreen we have seen. The sidecar, it will be noticed, is fitted with a hood protected by means of a hood cover, which is a very useful adjunct, as it keeps the hood clean when it is not in use.

## INTERNAL LEAF SPRINGS.

**T**O design a spring frame which shall be entirely different from all its predecessors would seem, seeing that so many designs have been put for-



A spring frame with enclosed leaf springs

ward, a practical impossibility, but while the design by Mr. W. V. Pagett, Dudley, which we illustrate, resembles others in general appearance, it has several new features in design. A triangular rear frame is pivoted behind the bottom bracket and supported beneath the saddle by coil springs such as we have described more than once in recent issues. The lower stays, however, are rectangular in section, and contain leaf springs, which are anchored to a bracket at one end. The specification also provides for these springs to be placed outside the frame and bear upon it, in which case some means of checking lateral movement would be provided.

The enclosing of the leaf springs should enhance the appearance and render lubrication an easy matter.





The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Herford Street, Coventry, and must be accompanied by the writer's name and address.

#### The Hammond "Motor Scooter."

Sir,—I have seen in your issue of November 23rd a humorous description of what you are pleased to call my "motor scooter." The invention, up to the present, exists only on paper, but, as a matter of fact, it is intended to be a tiny car on two wheels, or, in other words, a two-wheeled cycle car. The engine and footboards are actually to be enclosed in a small car-like body, composed of three-ply birch or ash, which, together with ample mudguards of the same material, in addition to the forward vertical shields (as shown in your sketch), gives greater protection from the weather than any motor cycle yet produced. Also the machine is to be fitted with a mahogany dash carrying speedometer, clock, switches for engine and lights, etc., and surmounted by a glass windscreen.

The actual machine, as designed for practical purposes, affords not only ample room for a man of large proportions, but, in addition, the actual comfort of a small car, by reason of being provided with a comfortably upholstered bucket seat and easy wheel steering.

I intend placing this machine upon the market at a future date.

E. V. HAMMOND, M.E.

#### Motor Cyclist Guides.

Sir,—The letters published in your last issue are interesting. Surely able and willing motor cyclists of any age could be utilised and organised to be of national help at the present time. I have been trying to find some such opening, and I know others who have done the same, but so far with no success. One reads occasionally of V.T.C. who want motor cyclists, for some non-apparent use, but, generally speaking, the H.Q. are at a considerable distance and the field of operations probably in quite a strange locality. To take my own case, I live ten miles out in Essex, and I fail to see the use of joining up with a City corps, with assembly not nearer than the City and operations only too likely in South London. If my services and the free use of my machine cannot be usefully employed in the locality in which I live, then it seems to me that we are not required. Or is it that we have not been thought about yet?

A.H.G.

London, E.C.

#### Motor Machine Guns for Cadets.

Sir,—My attention has been called to a statement in *The Motor Cycle* to the effect that the War Office has approved of the formation of motor machine gun sections as part of the cadet training for the Warwickshire Cadet Infantry Brigade.

In explanation, let me say that a machine gun detachment has been in existence in my brigade for more than a year prior to my taking over the command on November 1st last, and is highly efficient both with the Lewis and Vickers Maxim machine guns.

The proposal was made by some of the officers to expand the detachment into a brigade motor machine gun company, and it is hoped by the loyal co-operation and generosity of motor manufacturers and others to be able to do so, in order that cadets may be taught this most important branch of the Service. But it has not yet been submitted to me for my approval, or to the Territorial Force Association for Warwickshire.

The only concession that has been made by the War Office is to permit of the purchase of a number of dummy machine guns for instructional purposes from the D.G.R.A. The impression that the War Office has in any way formally ap-

proved of any general scheme of machine gun training for cadets is not correct, although it is hoped that every encouragement will be given if it be proved to be successful.

It must be pointed out, however, that no part of the capital outlay necessary is chargeable to the public funds, and that the success of the scheme must depend on private efforts.

The guns that will be mounted will be dummy ones for drill purposes only.

WALTER R. LUDLOW, Colonel,  
County Commandant of Cadets for Warwickshire.

#### Export of Motor Cycles.

Sir,—I have just read in *The Motor Cycle* of November 30th a complaint of the Wulfruna Engineering Co. re the prohibition of exports and manufacture now prevailing in England, where it is mentioned that the British Overseas trade in that line will certainly not benefit by such a procedure.

I am entirely of this opinion, and, living abroad as I do, I am able to see both sides of the question, and form even a better opinion of the case as it stands at present. American manufacturers are grasping this golden opportunity and doing their best to capture the European motor cycle market, whilst the English manufacturers are kept out of the way by their own Government.

To mention only one fact, I can inform you that the Hendee Manufacturing Co. have just sent over to Europe the head of their export department, with instructions to study the conditions and requirements of the different allied and neutral countries, and fix up contracts for the coming season, and I can also add that the said representative has started off very well by fixing up a contract of 600 machines with their new Italian agent for the coming year. No doubt there are many more similar cases, and bit by bit the Americans will capture the whole trade, and British manufacturers, when they are again in a position to deliver, will have to start right from the beginning, because in the meantime the Yanks, after having studied European requirements, will endeavour to conform to the requirements of the countries on this side of the Atlantic, and supply machines adapted to the different conditions, and entirely satisfactory.

I therefore think that you should certainly take some very energetic steps to see that the British motor cycle trade does not completely lose its Overseas market after having obtained, by means of much perseverance, superior workmanship, and design, the premier position the whole world over.

Milan, Italy.

G. F. HEAD.

[We again refer to this subject editorially this week.—Ed.]

#### Bearing Pressures.

Sir,—I intended my letter, published on November 23rd, to have been my last on this subject, but "A.A.S." asks me a question to which, although he has not answered mine, I should like to reply. I am not in any way interested in the manufacture of any engine, but if I had been concerned in the manufacture of long-stroke engines I should certainly not have written my letters without revealing the fact. I wrote simply in the interests of fair play, which, I think, the long-stroke engine has not had at "A.A.S.'s" hands. I have already pointed out several instances: here is one more. If the long-stroke is to be denied the advantage of its superior torque, and not be allowed to "rev" at a slower rate, because the extra torque is only the result of its larger capacity, why should it be saddled with the greater weight of moving parts which



appertain to this larger capacity? "A.A.S." is still trying to have it both ways.

Capt. Lindsay's interesting letter disposes entirely of the lubrication question.

With regard to section 2, this was a question of bearing friction with reference to movement between the surfaces, and had nothing to do with the pressure. "A.A.S." has here taken the trouble to prove what was never denied. With reference to the movement in question, if "A.A.S." measures this by the path of the crank pin, all I have to say is that this movement has no more to do with the case than the colour of the tank, and it is only another proof of my assertion that the long-stroke has not been fairly treated.

Lastly (under section 5), we find two statements: (a) "It is so self-evident that the larger  $r$  is the smaller  $F$  will be"; and (b) "it becomes evident that the smaller  $r$  is the smaller  $F$  will be." The meaning is attainable when another constant has been dragged in, but the statements are unfortunate and confusing; in fact, the whole paragraph is very obscure, and, I think, bears out my statement.

In conclusion, may I thank "A.A.S." for explaining several points which were already perfectly clear, and you, sir, for the space you have allowed me?

JOHN BONYTHON.

### The Flat Twin at the Bar.

Sir,—I have read Mr. Granville E. Bradshaw's article in the last issue of *The Motor Cycle* entitled "The Flat Twin at the Bar," as well as many other of his writings on his engine, and I feel I would like to say something on the matter.

Mr. Bradshaw seems to find it a very easy matter to talk and criticise other people's designs; he also finds it quite easy to fill in parts of other designs with a little shading and call it a "hot" side—he also shows his drawing but fails to fill in any shading. I might mention it would be quite easy for me to fill in some shading on his combustion chamber and call it a "hot" top, and I would be quite justified in doing so, for it is no doubt a very "hot" top. I would myself prefer a "hot" side to a "hot" top, as with the former the piston and the oil which it brings up can conduct the heat away, whilst the "hot" top causes self ignition and destroys as many plugs as can be put in, which is well known to Mr. Bradshaw I have no doubt.

Well designed engines like the M.A.G., "hot side" or no "hot side," do not blacken their rings or scorch the oil or cause the plug electrodes to drop into the cylinder, and I can only conclude that Mr. Bradshaw has had experience with a poor assortment of engines, if that is what he has found. The M.A.G. engine, if it is as hot as it can get, has as good, if not better (not worse), compression as when cold, which is very easily tried. The cylinders when they expand are circular, and the rings of course go with them. I have known cylinders that expand in all directions, and, judging from his remarks, Mr. Bradshaw has had a similar experience.

Probably by the time Mr. Bradshaw has made and sold his 5,000th motor cycle engine he will change his views about the duties of a designer. There is no secret in making an engine that will run at 70 m.p.h. when new. After the first few "blinds," its owner looks in vain for the electrodes of the plugs (as the writer witnessed on certain machines in the 1914 T.T.), and finds with very great regret that his bearings have been thumped loose and that the 70 m.p.h. is no longer obtainable.

As regards "pitiable sketches," which Mr. Bradshaw so freely writes about, I should like to know what he thinks now of the so-called wonderful drawings and the marvellous flat twin that came from them, and which was to astonish the world by its Brooklands performances in the "happy days," and what its clever designer thought when it merely lapped at 48 m.p.h. instead of, according to drawings, about 80 m.p.h.

I call a clever designer a man who designs engines like the M.A.G., that can be used by any firm, in a sensible frame, fitted with any type of speed gear, and any plug. The M.A.G. Co., who have made about 50,000 engines, do not appeal only to the speed man, who generally wants his machine and repairs free of charge, or as near to this figure as possible. Several people have burnt their fingers in

supplying racing engines as commercial engines, and Mr. Bradshaw may find himself in the same boat, in my opinion.

I cannot see at all why such a wonderful and powerful engine as the A.B.C. is supposed to be, that will pull from 4 to 70 m.p.h. on the top, requires a four-speed gear box, which increases the cost of an already expensive machine, and in which after a few months' use, when wear takes place in the actuating rods, etc., only three, or, in some cases, two speeds are obtainable. Perhaps the four-speed box is to allow a very low gear to enable this flat twin to pull at low speeds. This is sometimes necessary on certain engines.

After there are a number of these racing engines, which we have heard so much about, fitted to touring machines and with sidecars, in the hands of the public, I am confident it will be Mr. Bradshaw's best guide, and I am equally confident that he will be ready to eat his own words.

The M.A.G. Engine Co. have made a few racing engines for speed men, but have not found it necessary to shout in newspapers about providing "rude shocks" and such nonsense. They depend upon performances (which are not imaginary ones) for their excellent reputation, at home and on the Continent. Their engine has been designed by "some designer," who is a practical man as well as being theoretical.

If engines are made to a good design by the very best materials obtainable on the very best tools obtainable, by mechanics, they will give good results in the hands of the general public. If the iron is of the right composition, our works have found that it gives far better results than steel for cylinders, and it is also necessary that the piston rings be made of the right material. I have seen rings which I should be very sorry to see in a M.A.G. engine, but perhaps Mr. Bradshaw when he used iron was unfortunate enough to have used that which would be more suitable for mangles and bedsteads and such type of ironmongery.

I do not want to be considered as unduly criticising Mr. Bradshaw's machine or his good self. I have no doubt that his engine is quite good, and perhaps he knows much more about the subject than I do; but I do know one thing—he is looking for trouble which he will undoubtedly find.

Many makers have tried to combine high compression, quick lift, steel cylinders, light pistons, and other light parts, etc., and sell them as commercial engines, but those people who once did it do not do it now, for very obvious reasons.

OSBORNE DE LISSA,

THE M.A.G. ENGINE CO., LTD.

### Will the Multi-cylinder Survive?

Sir,—My first two motor cycles were multi-cylinder machines—twin two-strokes—which are, of course, practically equivalent to four-cylinder four-stroke machines as far as even torque is concerned. My present mount is a long-stroke "big single" (Norton), and for pleasure of riding there is simply no comparison, the single being far ahead. There is absolutely no unpleasant vibration or "racketing," and the steady pull of the long-stroke engine is infinitely pleasanter than the hum and racket of a twin or four-cylinder. Every horse-rider knows the sensation of the long steady strides of a powerful horse "at speed" or up hill—a car or train running on lines may get there just as quickly, or more so, but for sheer exhilaration the horse is a long way ahead.

It is this feeling of "life" in the engine which is the making of the single—especially the long-stroke "big single." It is shared by no other type of machine, and if machines were only obtainable fitted with electric motors or petrol turbines giving an infinitely even torque, I, for one, would give up riding as a pleasure, and would merely use the machine as a means of travel when train or tram was not available. Every rider who has tried the two types knows that there is no sensation of power when riding a twin as compared with a single. The twin may get there just as soon, but the little patter-patter strokes and feeble explosions in the small cylinders do not give the feeling of "life" which a single possesses.

The flat twin, for which there is such a craze just now, is, in my mind, out of the running as a practical mount wherever economy is of account. Every engineer knows that, even in a slow-moving steam engine, a horizontal piston soon wears the cylinder to an oval, as all the weight of the piston rests on the lower part of the cylinder only. In a high-speed petrol motor it is much worse, and that is the reason why a



horizontally-opposed twin has "a short life and a merry one." If it were possible to carry it in the frame, a vertically-opposed twin would be a much more practical proposition. To a certain class of riders who can afford to buy a new machine every few months, this question of wear and tear may not appeal, but where economy is considered the flat twin is out of it. But there is no doubt that until comparatively lately the single has not had a fair show.

Then as to gear. Manufacturers, either through ignorance of mechanical laws, or in order to please customers with a craze for utmost possible speed down hill or on a dead-level road, in almost every case insist in sending out singles geared much too highly for sidecar work, with the inevitable result, a jerky and uncertain drive, especially at low or moderate speeds.

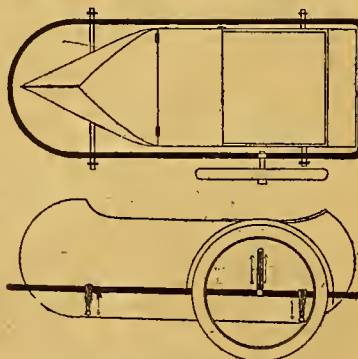
Numerous experiments with singles have proved to me that the best all-round gear for sidecar work, to give best average speed and efficiency, should not be a fraction higher than 6 to 1 for top gear of a  $3\frac{1}{2}$  h.p. single. A larger engine like the 5 h.p. "big single" will, of course, stand a higher gear, but best results are obtained with a  $5\frac{1}{2}$  or  $5\frac{3}{4}$  to 1 gear. Such a gear will give far smoother running—no "tugging"—and better average speed, and also better petrol consumption, than a higher one, as the middle or low gears are much less often engaged.

As to reliability on the road, argument is unnecessary to prove the great superiority of the single. The twin (not to mention the four-cylinder), having far more moving parts, must be more liable to breakdown—equality of material and workmanship being the same in both machines. The single, therefore, I consider, has by no means "had its day"—it is rather just coming into its own—and I believe that, after the war, when economy will have to be practised by many riders who now buy a new machine every season, there will be more demand than ever for the chain-driven single.

NICHELMORE HITCHCOCK.

#### Sidecar Suspension.

Sir,—I am sending you herewith two drawings of a sidecar which I hope will prove of interest to you, inasmuch as the suspension is by shock absorber rubber cord, obtainable from all dealers in aeroplane fittings, etc. As will be seen in the drawings, two suspensions each side take the weight and other downward stresses, while the rebound is taken by one suspension each side. All the rubber should be fitted under slight tension to keep everything taut. The drawings are not to scale.



Sidecar suspension referred to in A. H. Jenkins's letter.

ALEC. H. JENKINS.

#### The All-weather Motor Cycle.

Sir,—We ask for space to reply to some of Dr. René Camus's assertions in his article on mudguarding in your issue of November 23rd. We will take them in order:

He says: "Where air passes during running, mud and dust also pass." This is true as to dust, but our patent front wheel mud-shield permits the air to pass but no mud or splashes, as proved by many thousands of miles running in the worst of weather. This is brought about by placing a flange close up to its work, so constructed as to intercept the blown back spray and conduct it to the ground. This flange creates a vacuum behind it, the air rushes in, impinges on the cheeks of the mud-shield, and is swept direct on to the engine. This is proved by the cheeks being always free of dust, swept clean by the current of air.

Now as to the protection of the rider. Dr. René Camus says: "We must know the manner in which the mud is thrown." This, of course, is the base of all experimenting. And he gives data to work to, viz., "There is the mud which is splashed up under the front and back tyres to right

and left." We agree, and say this is the source of nine-tenths of the trouble, and we are surprised that Dr. René Camus, as a medical man, and knowing how mud and filth carry disease germs, did not suggest a design to prevent the mud rising from this danger spot and conduct it back to the road at once. Dr. René Camus's design, shown in fig. 4, is useless for this purpose. The mud splashed up by the tyre rises, according to the pace, outwards and upwards to about 2ft., and is then blown in by the wind in the form of spray all over the engine and rider. The second trouble is that the centrifugal force of the wheel carries the liquid mud along the centre of the mudguard to the fore-end, where it drops, and the wind blows it back over the upper part of the machine and rider. This centrifugal force, however, is beneficial to the mudguarding of the back wheel if the mudguard—front and back—is constructed to drop perpendicularly to the ground from the horizontal diameter. The mud thrown off the tyre at the back at a tangent is trapped, carried forward between the valances, and deposited on the road at the fore-end. Valances, we find, contrary to Dr. René Camus's statement, act an essential part. Without them the air pressure from the centrifugal force forces the mud outwards to drop from the edge into the belt rim; but with them the air pressure is increased within the mudguard, and the mud is thereby carried forward within a channel to the ground. Perhaps Dr. René Camus referred simply to valances put on at places to intercept splash. In that case, we agree with him, they are useless. The perfect back mudguard must be at least 7in. wide at the back and top to overhang the belt, then taper gently to pass between the stays, and continue below the belt to keep it clear of mud.

It is almost impossible to convey an adequate idea without drawings, but the principle we have worked to and found to answer is to go to the seat of the trouble. It is far easier to catch 6in. of mud than 3ft. of spray.

COMFORT MOTOR CYCLE AND ACCESSORIES CO.,  
F. WAIGH.

#### An After-the-War Ideal.

Sir,—Much as one hesitates to disagree with such experts as "Ixon" and "Road Rider," I think their prophecies that the single  $3\frac{1}{2}$  h.p. machine is doomed to an early death will be falsified. Very many motor cyclists are not mechanics and hate "fiddling round" with their machines, and this class anyhow will always remain faithful to the single, which; however much the twin may be improved, must still remain the more simple engine.

There is one point about the price of machines that I could never quite fathom, and that is a single is generally sold for much about the same price as a twin of the same power, whereas one would have thought that the former must be considerably less costly to build.

I hope after the war more makers will adopt a grey finish as standard: not only is it far smarter, in my opinion, than the more usual black, but it shows dust and dirt less. That is, I think, one point where the Yankee makers secure many an order, for there is no denying that the Indian red and Harley grey finish are very attractive, whilst of English machines there are none to beat, and few to equal, the grey finish of the Bat. My *après la guerre* machine is going to be a Norton—if I can get the grey finish—although I rather hanker after the long belt drive of the Zenith: a feature I wonder more firms do not adopt.

In some ways motor cycle manufacturers must be a hide-bound lot, although there are exceptions. Take mudguards for instance: 90% of makers go on fitting year after year the same old totally inefficient guards with side wings, which hide the tyre and do not catch the mud, following on like sheep in the same old groove, season after season, in spite of the every-day vision of the unfortunate riders of their products covered from head to foot with mud and water because of mudguards (?) which do not guard.

I have had your paper posted to me regularly every week since I left England sixteen months ago, and I do not think a single copy has failed to arrive.

B.E.F., Salonika.

G. K. DAWSON (Capt.).

#### SUMMARY OF CORRESPONDENCE.

"A.A.S." (Bournebrook) writes that he made an omission in his last letter, and that the 4 h.p. Norton has a piece taken out of its flywheel rim.



# QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## Condenser Trouble.

**?** I have a 1908 magneto. I cannot run above 500 yards before my platinum points become burnt, and, of course, the engine misses fire very badly and soon stops. Would you tell me what the trouble is? I have a new armature in, and new points.—R.T.W.

Burnt platinum points are nearly always due either to a broken down condenser or to the points not being made of pure platinum. If the points prove upon being tested with acid to be of platinum, the only thing to be done is to have the magneto overhauled by a reliable magneto repairer.

## A Broken Chain Stay.

**?** I have cracked the stay, which runs from the bottom bracket to hub of back wheel, of my  $2\frac{3}{4}$  h.p. 1914 model twin. Can this be repaired by oxy-acetylene or other welding or brazing process? If so, would the member be as strong as before? (It occasionally carries a light sidecar.) The broken back stay is in one jointless piece with its fellow stay, the back forks and the lower portion of the frame.—F.H.

We should say that the stay in question could be welded, but, personally, we should prefer to have it replaced by a new one, or a new rear portion to the frame. This would be much safer, especially as a sidecar is used.

## The Liability of the Driver.

**?** A few weeks back I read in *The Motor Cycle* that if one takes a friend out in the sidecar and meets with an accident and the friend gets hurt he or she can claim damages, which seems rather hard, but I suppose it is the law. Now, since trade has not been so brisk, I have been taking people out at a charge of 3½d. per mile and extra for waiting; do you think it enough or too much? What I want to know in particular is—I have not got my machine insured against accident—if I get my customers to sign a paper to the effect that should I meet with an accident they would not claim on me, would this meet the case?—R.O.

The sum of 3½d. a mile is quite enough to charge, and at this figure we should say that you could afford to insure your machine against accidents and third party risks, which you certainly ought to do. The signature of a paper absolving you from responsibility would, we think, render you immune from claims, and

even if no paper were signed a passenger could only claim damages if he could show you were driving negligently.

## Broken Gearshaft.

**?** I have a 1912 Scott motor cycle, and of late have had the gear main spindle snap twice after only doing a few hundred miles. The fracture looks as though the balls had broken first and had then worn the spindle through close up to the cone till it broke. Could you make any suggestion as to why this should happen? I have fitted the new spindle myself, and wonder if I have omitted to perform some necessary operation.—G.H.

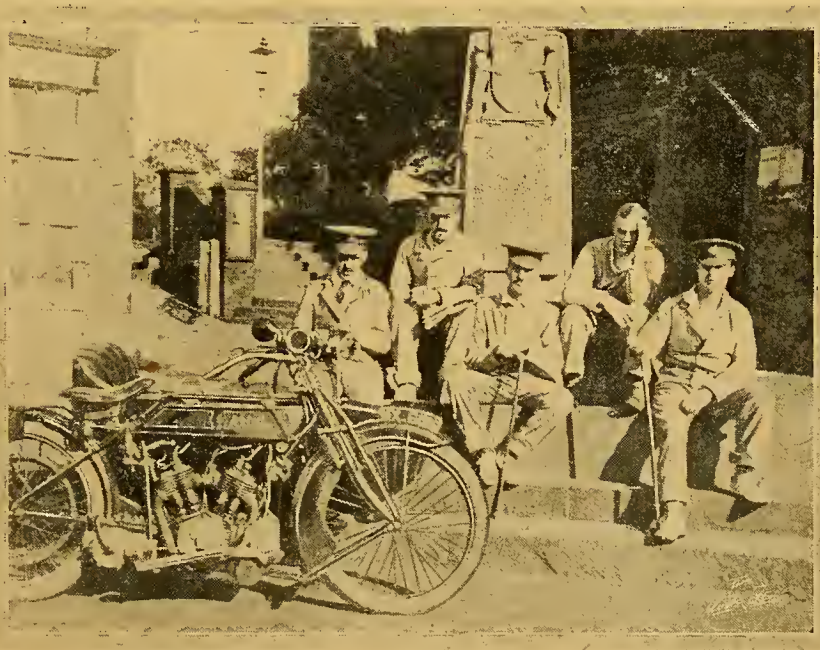
Undoubtedly the cause of the fracture is due to the broken balls. This may be due to the balls being faulty or to the cones being badly worn, or to their being insecurely fixed and screwing themselves up, so tightening the bearings that the balls were broken. In fitting the spindle see that the right-hand cone is screwed right home tight against the spindle shoulder. Then, after placing

the balls in their cups packed well with grease, the left-hand cone should be screwed up until the correct adjustment is obtained—that is, free running without play. Then lock this cone in position by means of the lock nut provided. When the gear is assembled in the frame make sure the securing nuts are tightened up well, and that the spindle is quite square with the engine-shaft. If these directions are followed there is no reason why trouble should occur.

## Knocking.

**?** I am running a  $3\frac{1}{2}$  h.p. (1914) three-speed machine fitted with a coachbuilt sidecar. I find that it runs perfectly on second and low gears, but on changing into "top" I cannot prevent knocking, although I shut off air and retard the magneto. The engine is perfectly clean, and the whole mileage does not exceed 2,000. Please suggest the cause and probable remedy.—A.H.M.

A slightly larger jet might cure the trouble, or you might try the effect of lowering the gear a little.



An outing was recently organised by the National Motor Volunteers for the benefit of wounded soldiers. A few of them are seen seated on the steps of the memorial erected to the memory of the first Earl of Cranbrook in the Kent village of that name. A 5-6 h.p. Ariel sidecar owned by one of the volunteers is shown in the foreground.



### Making a Pilot Jet.

**?** I am fitting a pilot jet on the carburetter of my motor cycle, and I shall be much obliged if you will answer the following questions: (1.) What size hole is required in the jet? (2.) Should the top of the jet and the petrol level be the same as the main jet in the carburetter?—W.H.C.

(1.) We should recommend you to start with a hole about .3 mm. or  $\frac{1}{1000}$  of an inch diameter, and enlarge this if you do not get the best results at first. The size depends upon the size of choke used. (2.) The petrol level should be just below the top of both jets.

### Knocking.

**?** My engine is suffering very badly from knocking. If the spark is retarded it runs all right on the stand, but it will not pull unless it is a trifle advanced, when it still knocks even when cold. It is a single-cylinder  $3\frac{1}{2}$  h.p. The bearings are all right. It has an automatic inlet valve, and B. and B. carburetter. Would early or late timing improve matters? The exhaust valve closes on the top of the stroke.—J.H.L.

If all the moving parts are in order and not worn the engine should not knock. This may be due to pre-ignition, caused by the use of an unsuitable plug with too thin electrodes, or electrodes which project too far into the cylinder, or the magneto may be timed too early. Too high a compression causes the engine to knock, but it would hardly be likely to be noticed until warmed up a little. A weak mixture will also cause an engine to knock. The valve timing appears to be correct.

### Acetylene Lighting Troubles.

**?** I have a F.R.S. Junior lamp set on my  $3\frac{1}{2}$  h.p. machine; the lamp will light all right, but when I go over a bump in the road it jerks out. Can you tell me the cause of this?

Also I have a rear light which is worked by the generator in front for the head light, and it is not at all satisfactory, as it will not light very easily, and when it is lit, blows out very quickly. Do you recommend a rear light which is worked by a separate generator or worked by the generator from the front lamp?—J.S.P.

The lamp jerks out because the rubber tube gets nipped somehow. The trouble may also be due to moisture somewhere in the system. Make sure all tubes are quite dry inside, also the burner.

The only objection to using a rear light from the main generator is that the length of tubing is occasionally apt to get nipped. You should use some discretion in installing the tubing; in fact, it is better to use metal tubing with short rubber connections, as nipping is then less likely to occur. When running the tail lamp from the same generator, the size of the head lamp burner may sometimes require reducing, otherwise there may be insufficient pressure to force enough gas through the small tail lamp burner. See that the tail lamp burner is not too large.

### Reducing Explosion Noise.

**?** I have a 7 h.p. twin motor cycle, and the expansion chamber which is in use does not seem to be sufficient to silence the explosions.

Will you be good enough to give me the dimensions of a good silencer which I could make myself (as I am a sheet metal worker), to replace the one already on my machine? The one I use now is a plain tube 8in. long, and  $3\frac{1}{2}$ in. diameter.—H.J.L.

The expansion chamber should be as large as possible. It is no good giving you the dimensions, as they must be governed entirely by the amount of space at your disposal.

Your expansion chamber should be as near the exhaust ports as is convenient, and there should be a fairly long extension pipe through which the gases escape. This may have a flattened end, and there may be saw-cuts in it at intervals. There is no necessity to have any baffle plates in the expansion chamber. We think you will find a simple silencer such as this as efficient as anything, provided it is made of stout material.

### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD

### Warming the Air.

**?** In order to improve the running of my flat twin machine I have been thinking lately of coiling a small copper pipe round the inlet pipe on both sides of the carburetter and connecting up to the silencer, the idea being that portion of the exhaust passing through the copper pipe would heat the inlet pipe and lead to better running. Looking at the illustrations in the article in your issue of November 9th I notice the A.B.C. engine has a pipe connected directly from the exhaust to the air intake of the carburetter. I had thought of doing this with my machine, but decided not to, for fear of causing fire in the carburetter. Evidently there is no fear of this, but I should be glad if you would let me know if I should be quite safe in coupling up a small copper pipe from the rear exhaust pipe to the hot air-intake of the Douglas carburetter, and if you think this would give me as good results as heating the inlet pipe in the manner described above. The latter would be the more troublesome job of the two.—F.W.W.

The idea of coiling a copper pipe round the inlet is quite good. You will find this will heat the portion in which there is great cold, due to the vaporisation of the petrol, and the warming is bound to have an advantageous effect, both as

regards economy and flexibility. You have been deceived as regards the A.B.C. hot air pipe. This is not connected to the exhaust. The pipe has a dead end, but there are holes drilled close up against the exhaust pipe. The air inlet pipe becomes hot through conduction, and the air as it enters these holes is warmed by the hot pipe, and is nicely warm before entering the carburetter. It certainly looks as if the exhaust gases were taken straight into the carburetter, but this is not so. Also, if you take the exhaust gases straight into the carburetter air intake you would upset the mixture badly.

You may connect a pipe from the air intake of your carburetter close up to the radiating fins, and this will also help matters a good deal. We should recommend you to fit whichever device is the simpler for you, or both could be used.

### Flaming Exhaust.

**?** I have recently purchased a 6 h.p. twin outfit. Upon trying to start it I experienced considerable trouble in getting it to go.

Eventually, when started, it did so with a roar, and refused to stop when the throttle was closed. Flames appeared to pass down the exhaust pipes, causing them to become red hot, also the cylinders. Is it right for flames to pass down these pipes and cause them to be red hot? Also why does the engine not respond to the throttle?—T.S.

The exhaust gas is always in the form of a flame, but if the engine is in really good tune it is almost colourless and not very long. It should not cause the pipes to glow. An over-rich mixture will cause the exhaust flames to be of a red colour, instead of an almost invisible blue; this will cause the engine to heat up unduly. If the spark is retarded the flame will extend for a much greater distance down the exhaust pipe, and will cause the engine to overheat. The reason for the engine refusing to answer the throttle is probably due to grit having caused the throttle piston to jam. Remove the carburetter slides, and see that they are quite clean and working freely.

### RECOMMENDED ROUTES.

#### LEICESTER TO CHESTER.—M.S.

Leicester, Ashby-de-la-Zouch, Burton, Uttoxeter, Stone, Pipe Gate, Nantwich, Tarporley, Chester.

#### LLANDUDNO TO BIRMINGHAM.—C.W.C.

Llandudno, Abergele, St. Asaph, Mold, Wrexham, Whitechurch, Newport, Weston, Gailey, Brownhills, Erdington, Birmingham.

#### IBSTOCK TO BEDFORD.—C.S.H.

Ibstock, Hincley, Smockington, Lutetworth, Thornby, Northampton, Olney, Turvey, Bedford. The distance is approximately 69 miles.

#### FOLKESTONE TO IPSWICH.—A.W.P.

Folkestone, Sandgate, Hythe, Ashford, Charing, Maidstone, Wrotham Heath, Meopham, Gravesend, by ferry to Tilbury, Billericay, Chelmsford, Witham, Colchester, Ipswich. Approximately 116 miles.



**T**HE Sturmey-Archer Countershaft Gear is something quite unique. It has been tried and proved. It has been and is in regular use in the war on all fronts.

It differs radically from ordinary variable gears—just as much as the Sturmey-Archer has always differed, in being something a little better made, a little better in theory, a little better in practice, and a great deal better in results.

Until after the war it must remain a prerogative of the fighting men. You won't begrudge that. They must come first.

But after the war the Sturmey-Archer will be ready for everyone and it will be everyone's choice. This is no vain boast. Ask the men at the front. They KNOW. Their lives have often depended upon it.

Meanwhile, just note the address: Sturmey-Archer Gears, Ltd., Nottingham.

You'll want it when the war's over.

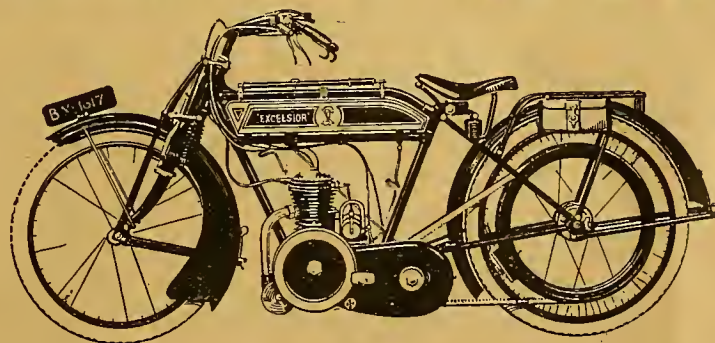
**STURMEY ARCHER**  
COUNTERSHAFT GEAR

The British

# EXCELSIOR

## The Ideal Machine for Town or Country

**T**HE Ideal Machine for either Town or Country is the thoroughly British "Excelsior" Two-stroke  $2\frac{3}{4}$  h.p. It is simple in construction and very easy to control. Solidly built, and as reliable as it is possible for a Lightweight to be. Above all, it is very inexpensive to run.



**Price,** Two-speed Model,  $2\frac{3}{4}$  h.p. (as illustrated) - - £44:2:0  
Single Speed,  $2\frac{1}{4}$  h.p. - - - - - £32:10:0  
Two-speed, Two-stroke,  $2\frac{1}{4}$  h.p. (no Clutch) £39: 5:0

**Bayliss, Thomas & Co.,** Excelsior Works, Founded 1874. **Coventry.**

Sole London Agents: H. Taylor & Co., Ltd., Store Street, W.C.

*In answering these advertisements it is desirable to mention "The Motor Cycle."*



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

ADVERTISEMENTS in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **LILFE & SONS Ltd.**, and crossed **& Co.**

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Lilfe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S. 1912 6h.p. Twin Combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4915]

A.J.S. 1916, 2½h.p., 2-speed countershaft, clutch, kick starter, accessories, beautiful condition; £42; exchange considered.—Malbrooke, Wolsey Rd., E. Molesey, Surrey. [5960]

A.J.S. 1914, 2½h.p., 2-speed, kick start, hand clutch, all chain drive, accessories; £38/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5956]

1916 2½h.p. A.J.S. Sporting Model, used 580 miles only, and complete with Lucas head lamp, tail lamp, Lucas horn, spare sprockets, spare valve, speedometer with maximum hand, etc., cost £70, condition as new; accept £56, or very near offer.—Layton's Garage, Bicester, Oxon. [X3085]

### Alldays.

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0796]

RIDER TROWARD, 78, High St., Hampstead.—1915 Alldays 4h.p. coachbuilt combination, clutch, kick start; 29 gns. [6082]

ALLON, 1915½, 2½h.p., 2-speed, 2-stroke, new over-size Danlon back wheel, head lamp, tools; seen by appointment; £27/10.—Box L2735, c/o The Motor Cycle. [6173]

A18 All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

# The Wheels of GODFREY'S ARE FASTER THAN THE WHEELS OF TIME, AND NOT LESS SURE.

Below is a "focus" list of New and Second-hand Machines in stock. If you can call and inspect we shall be only too pleased to show you round, if not convenient to call, a post card will bring you a full and complete list by return.

Easy Terms of Payment if you wish and your old mount taken in part exchange against the price of either a New or Second-hand Machine.

## New Models in Stock comprise:—

Indians, Enfield, Calthorpe, Levis, Zenith, James, Rover, New Imperial, B.S.A., Allon, Coventry Eagle.

## SECOND-HAND MACHINES

Make	Year	PRICES	
		Lowest	Highest
Indians	1913	—	1915
Douglas	—	1914	—
Scott	1912	—	1916
P. & M.	1910	—	—
B.S.A.	—	1914	1915
Zenith	—	—	1915
Harley-Davidson	—	—	1915
Clyno	—	1914	—
Humber	1911	1914	—
Triumph	1906	1914	—
Torpedo	—	1914	—
Calthorpe-Jap	—	—	1916
Velocette	—	—	1915
Royal Enfield	1912	—	—

7 h.p. Road Racer with Accessories.

1916 Model, 7 h.p., 3-speed, spring frame, sidecar combination.

\* These are Sidecar Combinations.

**GODFREY'S LTD.**  
208, Gt. Portland Street,  
LONDON, W.

Phone—7091 Mayfair (2 lines).

## IMPORTANT NOTICE.

Owing to the Christmas Holidays, the issue of "The Motor Cycle" for Dec. 28th must be closed for press earlier than usual. All copy and instructions for Miscellaneous Advertisements in that issue must therefore be in our hands not later than first post on Wednesday, Dec. 20th.

## DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### Alldays.

NEW Allons, 2-speed, 2-stroke, 2½h.p., 1917 models; £42; easy terms 2½ extra, or exchange arranged.—Wauchope's, 9, Shoe Lane, London. [6115]

1914 3½h.p. Alldays Matchless, 2-speed, splendid condition, with 14 gn. Burbury sidecar; only £40.—Parker's Motors, St. Ives, Hunts. [6155]

1915 2½h.p. Allon, 2-speed, 2-stroke, new tyre, mechanical horn, lamps, and generator, in perfect going order; stamp for photo.—Apply, Box 553, c/o The Motor Cycle. [X2985]

ALLON 2-stroke, 2-speed; £42, plus manufacturers' increase of 6%; easy purchase terms arranged; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5929]

ALLON, 1916, 2½h.p., 2-speed, perfect running condition, done about 1,000 miles, fast, and economical; trial or examination invited; owner getting car; £30.—Capt. Salmon, Royal Military College, Sandhurst, Berks. [6171]

ALLONS, all models, 12 in stock, from £37/18 to £47/5; exchanges, easy payments; good prices offered on up-to-date machines; also a 1916 clutch model, kick start, £36/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5940]

### Ariel.

ARIEL, 3½h.p., latest 3-speed model, in stock, with or without sidecar.—Crow Bros., Guildford. [4962]

1917 3½h.p. Ariel, countershaft 3-speed, for immediate delivery; £65/10.—Dan Gay, Weymouth. [6178]

ARIEL, 1913, mag., requires some attention; must sell, joining up; £15, or offer.—18, Wilbury Villas, Hove, Brighton. [X2924]

RIDER TROWARD, 78, High St., Hampstead.—1913 3-speed Ariel, overhauled, re-enamelled, perfect order; 22 gns. [6084]

ARIEL, 3½h.p., semi T.T., with variable pulley gear, fast, most excellent condition; £24, bargain.—Layton's Garage, Bicester, Oxon. [X3086]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidecars. [0797]

1914 5-6h.p. Ariel, countershaft 3-speed, Gloria cane sidecar, almost new Bates tyres, 3 Lucas lamps, spare belt, tube, etc., combination guaranteed perfect; £50.—Box 558, c/o The Motor Cycle. [X3112]

1917 New Ariels in stock, 3-speed countershaft gear, clutch, and kick start; chain-cum-belt drive, £65/10; easy terms 2½ extra, or exchange arranged.—Wauchope's, 9, Shoe Lane, London. [6116]



## MOTOR CYCLES FOR SALE.

## Ariel.

**ARIEL**, 1917, 3½ h.p. model, just arrived; call and see these silky running machines; £65/10; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5944]

**NOV.**, 1914, 5-h.p. Ariel twin coach combination, wind screen, lamps, Cowey speedometer, many spares, new Pedley back, dual fuel tanks; any trial; £55.—Hollinghurst, 115, Empress Av., Ilford, Essex. [6070]

**I CAN** Give immediate delivery of 1917 5-h.p. Ariels, 3½ h.p. Ariels, sole or combinations; also 1916 5-h.p. combination, as new, guaranteed, £80; exchanges or deferred payments.—Jones, Garage, Broadway, Muswell Hill. [5192]

## Auto-Wheels.

**UTO-WHEEL**, just overhauled by makers; £7.—Pearce, Woodmancott, Cirencester. [X3041]

**UTO-WHEEL**, 1915, like new; £11, or exchange.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5806]

**BEST** Auto and new bicycle, all accessories, perfect condition; £12/10, sacrifice.—Woodford, 36, Ashvale Rd., Teetring. [5952]

**UTO-WHEEL**, B.S.A. De Luxe, 1916, run under 20 miles, perfect order; 10 gns.—Friedrichs, Beechcroft, Burham, Bucks. [5886]

## Bat.

**NEW** Bat-Jap's, very latest models in stock, 4-h.p., 2 speeds, £63/5; exchanges or extended payments.—Wanchope's, 9, Shoe Lane, London. [6109]

**BATS**—P. J. Evans, Birmingham agent.—Immediate delivery 4-h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X3054]

**BAT-J.A.P.**, 1912, 3½ h.p., spring frame, enamelled all black, P. and M. gears, B. and B. semi-automatic carburetter, open case sidcar, good order; £25.—Letters, Gill, 25, Cheryne Row, Chelsea. [X2956]

## Bradbury.

**1912** T.T. Bradbury, guaranteed perfect running order; £24, bargain.—Bennetts, Glencoe, Scorrer, Cornwall. [X2976]

**1913** Bradbury, 4-h.p., 2-speed, fast, powerful, good condition; bargain, £25, or offers.—Ellis, Fruiterer, Millhouse, Sheffield. [6067]

## Brough.

**3½ h.p.** Horizontal Twin Brough, 1914, with 1915 engine; bargain, £35.—Crawford, Architect, Bishop Auckland. [X3015]

## Brown.

**BROWN**, 3½ h.p., sound order, good condition, good tyres, and fast; £5.—Head, 31, Hainthorpe Rd., West Norwood. [0868]

**LATE** Brown, 3½ h.p., mag., free engine, kick starter, speedometer, new tyres, lamps, all accessories; bargain for quick sale, £19/10, or nearest.—3, Wastdale Rd., Forest Hill. [5925]

## B.S.A.

**B.S.A.**, brand new 1916 model K, £62.

**B.S.A.**, 1917 model K, just delivered; £64.—Castle Motor Co., Kidderminster. [5983]

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**B.S.A. Model K**, latest model (new); £64.—Clark and Co., Motor Engineers, Doncaster. [5351]

**NEW** B.S.A., chain drive, in stock; £66; exchanges quoted.—Motor Exchange, Horton St., Halifax. [6126]

**B.S.A.**, late 1915, 4½ h.p., 3-speed, coachbuilt sidcar, good condition; £60.—555, London Rd., Westcliff-on-Sea. [X3111]

**B.S.A.**, 1912, genuine 4-h.p., absolutely as new; internal inspection invited; £18.—248, Drakethell Rd., Brockley. [6044]

**B.S.A.**, 1914, 3½ h.p., 2-speed N.S.U. gear, speedometer, accessories, lamps, perfect; £30.—W. H. Cocks, South Ealing. [6172]

**B.S.A.**, 1916, 4½ h.p., 3-speed countershaft model K, run 500 miles, as new; £58.—Dunvegan, Stour Rd., Christchurch, Hants. [6029]

**B.S.A. 1917** Models in stock, H £66, K £64; also genuine B.S.A. No. 1 sidcar, £17/17.—Hucklebridge, 133, Sloane St., London. [X2742]

**RIDER TROWARD**, 78, High St., Hampstead.—1914 (late) B.S.A., all-chain drive, 4½ h.p., 3-speed, perfect, mileage 5,000; 37 gns. [6091]

**1917** B.S.A. in stock. Catalogues free. Spare parts per return. 11n. belts, as fitted by makers, 8/6, post paid.—Albert J. Pitts, Redditch. Tel.: 91. [X0529]

**FOR** Sale, 1915 4½ h.p. B.S.A., 3-speed countershaft, all chain drive, beautiful running order; sacrifice.—Sellers, Motor Cycle and Light Car Works, Dorchester. [5987]

**B.S.A.**, 1915-16, 4½ h.p., 3-speed gear box, kick-start, chain and belt drive, model K, splendid condition throughout; price 40 gns.—Davey, Greenway Rd., Taunton. [6045]

**1917** B.S.A.'s, all models from absolute stock; cash, deferred, or exchanges, Douglas preferred.—Jones, Garage, Broadway, Muswell Hill. Phone: Hornsey 2562. [5836]

**B.S.A. 1916** Model K, 4½ h.p., 3-speed, kick start, original tyres, overize on rear, coach sidcar, and screen; £68/10.—Lamb's, 151, High St., Walthamstow, 60, High Rd., Wood Green. [5942]

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue. A10

## SECOND-HAND BARGAINS

## SIDECAR OUTFITS.

**REX**, 1914, 6 h.p., 2-speed, modele de luxe ..... £35  
**TRIUMPH**, 3½ h.p., 2-speed countershaft, sidcar ..... £32  
**INDIAN**, 1913, 7 h.p., coach-built Sidcar, 2-speed ..... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model ..... £60  
**RUDGE**, 1912, 5-h.p. Multi, with Rudge Sidcar ..... £46  
**ENFIELD**, 1912, 6 h.p., 2-speed, twin, Enfield Sidcar ..... £29  
**RUDGE**, 1913 3½ h.p. Multi, coach-built Sidcar ..... £33  
**SCOTT**, 1914, 3½ h.p., 2-sp., and Scott sidcar chassis ..... £45  
**ZENITH**, 1915 4½ h.p., twin, clutch, and C.B. Sidcar ..... £49  
**ENFIELD** 1914 6 h.p. 2-speed Combination ..... £55  
**CHATER LEA**, 1913, No. 7, 8 h.p. 3-sp., and Sidcar ..... £40  
**DOUGLAS**, 3½ h.p., 2-sp., Canoelet, disc wheels ..... £58  
**MATCHLESS**, 1913, 8 h.p., J.A.P. overhead, 6-speed ..... £48  
**HARLEY-DAVIDSON**, 7-9 h.p., 1915, 3-sp., C.B. Sidcar ..... £68  
**P. & M.**, 3½ h.p., 1913, 2-speed, C.B. Sidcar ..... £46  
**JAMES** 4½ h.p., 1914, 3-speed, Empress Sidcar ..... £58

## SOLO MODELS.

**DOUGLAS**, 1914, 2½ h.p., T.T., long exhaust, 2-speed ..... £45  
**DOUGLAS**, 1915, 2½ h.p., 3-speed, like new ..... £54  
**DOUGLAS**, 1915, 2½ h.p., 2-speed, splendid order ..... £48  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, Zephyr pistons ..... £48  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, kick-start ..... £48  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, Model V ..... £47  
**RUDGE**, 1911, 2½ h.p., 2-speed, touring bars ..... £20  
**RUDGE**, 1913 3½ h.p. Multi, T.T. bars ..... £33  
**IVY**, 1915, 2-stroke, single-speed ..... £16  
**NEW HUDSON**, 1913, 3½ h.p., 3-speed, J.A.P. engine ..... £30  
**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £28  
**BROWN**, 1915, 5 h.p., Bosch magneto ..... £12  
**INDIAN**, 1915, 5 h.p., 3-speed, twin ..... £45  
**ALLDAYS ALLEN**, 1915, 2-speed, 2-stroke ..... £32  
**NEW HUDSON**, 1915, 2-stroke, as new ..... £22  
**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equipment ..... £47  
**ENFIELD**, 1910, 2½ h.p., twin, Grado gear ..... £14  
**LEVIS**, 1914, 2½ h.p., 2-stroke, countershaft ..... £18  
**F.N.**, 2½ h.p., 2-speed, lightweight ..... £15  
**ALLDAYS ALLEN**, 1916, 2½ h.p., 2-speed, 2-stroke ..... £30  
**ALLON**, 1916, 2½ h.p., 2-stroke, as new, single-speed ..... £26  
**ENFIELD**, 1916, 2½ h.p., 2-stroke, 2-speed ..... £33  
**TRIUMPH**, 1913, 3½ h.p., 3-speed, all accessories ..... £38  
**INDIAN**, 1914, 7-9 h.p., clutch model, as new ..... £41  
**HUMBER**, 1915, water-cooled, 3½ h.p., 3-speed ..... £45  
**INDIAN**, 1915, 5 h.p., 3-speed, as new ..... £46  
**PREMIER**, 1913, 2½ h.p., lightweight ..... £14  
**TRIUMPH**, 1913, 3½ h.p., tourist, fixed gear ..... £19  
**INDIAN**, 1914, 7-9 h.p., 2-speed, spring frame ..... £38  
**ENFIELD**, 1916, 3 h.p., twin, 2-speed, speedometer ..... £48  
**HUMBER**, 1913, 2½ h.p., twin, had careful usage ..... £21  
**RADCO**, 1915, 2½ h.p., 2-stroke, done about 500 ..... £20  
**TRIUMPH**, 1914, 4 h.p., 3 speed, excellent order ..... £50

## NEW 1917 MODELS.

**ROYAL ENFIELD** 6 h.p. Combination ..... £94 10  
**ROYAL ENFIELD**, 3 h.p., twin, 2-speed ..... £57 15  
**ROYAL ENFIELD**, 2½ h.p., 2-speed, 2-stroke ..... £44 2  
**B.S.A.**, 4½ h.p., 3-speed, all-chain, H, 1917 model ..... £86 0  
**B.S.A.**, 4½ h.p., 3-speed, belt, K, 1917 model ..... £84 0  
**B.S.A.**, 3½ h.p., Model D, T.T. .... £52 10  
**ROVER**, 1917, 3½ h.p., 3-speed, Combination ..... £89 9  
**ROVER**, 1917, 3½ h.p., 3-speed, solo ..... £69 10  
**ROVER**, 1917, 3½ h.p., T.T., Phillipson pulley ..... £61 10  
**LEVIS**, 2½ h.p. single-speed, Popular model ..... £32 0  
**COVENTRY EAGLE**, 2-stroke, de luxe ..... £37 15  
**MORGAN G.P. No. 1**, M.A.G. engine, discs, etc. .... £160 0

A Few 1916 ROYAL RUBYS to Clear. Send for Lists and Prices.

## LIGHT CARS.

**G.W.K.**, 1914, 8 h.p., just re-painted and overhauled ..... £120  
**G.W.K.**, 1915, 8 h.p., just re-painted, detach. wheels. .... £165  
**MORGAN**, 1917, G.P. No. 1, only done 500, & as new. .... £135  
**KNIGHT**, 1914, 11-9 h.p., sporting body ..... £145  
**CALTHORPE**, 1916, 10 h.p., G.D.M. dyn., 6 wheels. .... £275  
**SINGER**, 1914, 10 h.p., dynamo lighting ..... £195  
**SINGER**, 1913, 10 h.p., 5 lamps, just being overhauled. .... £135  
**SINGER**, 1913 (late), 5 lamps, dickey ..... £145  
**HILLMAN**, 1915, 9.5 h.p., speedometer, little used. .... £205  
**MATHIS**, 1914, 15 h.p., 5-seater, dynamo ..... £300

Machines started (\*) are complete with lamps, horn, etc.

1914 and 1915 DOUGLAS MACHINES bought for Spot Cash.

**MAUDES**  
**MOTOR MART**  
 100 & 136 Gt Portland St. London W.  
 Telephone 552 Mayfair Telegrams Abdicale Wesdd

## MOTOR CYCLES FOR SALE.

## B.S.A.

**1916** B.S.A., 4½ h.p., chain drive, Canoelet combination, hood, wind screen, Lucas King of Road head lights, Stewart horn, perfect condition; £61.—Stratton, 31, Mount Pleasant, Redditch. [X3061]

**B.S.A.**, new models delivered from stock, chain driven 3-speed model H £66, model K, chain-cum-belt, £64; your present motor cycle taken in part payment.—Eagles and Co., High St., Acton, London, W. [X3039]

**1916** B.S.A., coachbuilt sidcar, 3-speed countershaft gear, mechanical horn, storm apron, lamps, and tools, the combination net run 200 miles, guaranteed, unscratched; £65.—Hatcher, 23, Dock Rd., Victoria Docks, London. [5988]

**B.S.A.** Latest New Models can be delivered from stock: Chain drive model H, 3-speed countershaft gear, £66; chain-cum-belt model K, £64; Montgomery sidcars in stock to fit from 10 gns; your present machine can be taken as part payment.—Eles and Co., 15-16, Bishopsgate Av., Canonhole St., E.C. B.S.A. Agents. [0551]

**B.S.A.'s**—Three guaranteed 1917 models H, all chain, £66; three model K's and No. 1 pattern sidcar, delivered from stock; deferred payments arranged, exchanges; good prices allowed for second-hand up-to-date machines.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5932]

**4 h.p.** 1916 B.S.A. and coachbuilt sidcar, 3-speed, 4th model H, all chain drive, clutch and kick start, in the pink of good condition, complete with accessories, 60 gns., guaranteed; also a 1916 chain-cum-belt model, fitted with roomy sidcar, including accessories, £60, guaranteed; and a sole chain-cum-belt B.S.A., 50 gns., guaranteed; easy terms, 2½% half down.—Wanchope's, appointed B.S.A. City agents, 9, Shoe Lane, London. [6123]

## Calthorpe.

**1915** 2½ h.p. Calthorpe-Jap, new tyres, splendid condition; £26.—Fray, Princethorpe, Rugby. [X3026]

**1915** Calthorpe, 2½ h.p. J.A.P., 2-speed, and accessories; £24.—Scen Bounds' Garage, Kilburn. [5969]

**CALTHORPE-J.A.P.**, 2-speed, 1915; £23.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6060]

**CALTHORPE-J.A.P.**, 2½ h.p., 1916, nearly new, 2-speed Enfield gears; £30.—Owner, 4, Spa Lane, Starbeck, Harrogate. [X2757]

**CALTHORPE** Junior, 1914, 2-speed, good condition, all accessories; first cheque 12 gns.—Meadow View, Dymchurch, Kent. [5959]

**CALTHORPE-J.A.P.**, 1916, 2½ h.p., Enfield 2-speed gear, not done 500 miles; £28.—Urquhart, 49, Hurlingham Court, Putney Bridge, S.W. [6162]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**2½ h.p.** Calthorpe-Jap, new November, 1915, Enfield 4 2-speed gear, engine perfect, lamps, horn, speedometer; £28.—Knight, Beech Lawn, Saxmudham. [X2950]

**NEW** Calthorpes, J.A.P. 2½ h.p. engine, 2-speed Enfield gear, sloping top bar, £37/16; easy terms 2½% extra, or exchange arranged.—Wanchope's, 9, Shoe Lane, London. [6114]

**CALTHORPE-J.A.P.**, 2½ h.p., with Enfield 2-speed gear; three actually in stock; deferred terms, exchanges entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5939]

**1916** 4 h.p. Calthorpe Combination, Enfield 2-speed gear, with free engine and handle starter, complete with high grade coachbuilt sidcar, only used a few miles, as new; price £60.—Alexander and Co., 272, Gt. Western Rd., Glasgow. [5883]

**NEW** Calthorpes on easy terms, 2% only extra charge: Latest lightweight, 2½ h.p. J.A.P. engines, 2-speed Enfield gears, sloping top bars, 36 gns.; also 2½ h.p. 2-stroke models, £28/17/6.—Wanchope's, Calthorpe's appointed agents, 9, Shoe Lane, London. [6124]

## Campion.

**CAMPION**, 1915 6 h.p. twin J.A.P., coachbuilt side car, 3-speed Jardine countershaft, chain drive, kick starter, speedometer, lamps, spare tyre; £60.—W. Lilac Villas, Collington St., Beeston, Notts. [X3105]

## Chater-Fairair.

**CHATER-FAIRAIR**, 3½ h.p., Grado Multi pulley, 2 mag., m.o.r., good tyres, splendid order; £25.—Bryan, Grosvenor, Hereford. [X2871]

## Chater-Jap.

**4 h.p.** Chater-Jap, free engine, Bosch, B. and B., spring forks; £16.—129, Angel Rd., Edmonton. [5916]

## Chater-Lea.

**CHATER-LEA** 7-h.p. Combination, 1915, 3 speeds, new condition; £65; appointment.—Clevedon, Pretoria Rd., Streatham. [5997]

**CHATER-LEA** Combination, No. 7, hood and screen, 1914½, every accessory, like new, 5,000 miles, new tyres; bargain, £60.—20, Derby Rd., W. Croydon. [6050]

**1915** 8 h.p. Chater-Lea Combination, hood, screen, luggage grid, tyre carrier, and all best accessories, only run 3,700 miles; cost £120, best offer over £58 for quick sale.—142, Harford St., Stepney. [5955]



## MOTOR CYCLES FOR SALE.

## Chater-Minerva.

CHATER-MINERVA, 2½ h.p., as new; £15, or offer.  
—Joyce, 42, Drury Lane, W.C. [5900]

## Clyno.

CLYNO, 1913-14, 6 h.p., 3-speed countershaft, chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [6127]

CLYNO, 1911, 5-6 h.p., in good order, will take sidecar anywhere; £19.—Billson, Finedon Rd., Wellingborough. [X3040]

1913½ Clyno Combination, spare wheel, speedometer, 2 F.R.S. lamps, hood; £50.—Griffin, Ltd., 89, Gt. Portland St., London. [5978]

1917 War Office Model 5-6 h.p. Clyno and sidecar, fitted with spare wheel and special paraffin and hot air device; £105.—Dan Guy, Weymouth. [6177]

5-6 h.p. Clyno, 1915, C.B. sidecar, Clero horn, lamps, and tools, kick starter, 2 speeds, just like new; £48; accept lightweight part exchange.—Buntings Motor Department, Harrow. [5996]

LATE 1914 Clyno Combination, 3 speeds, clutch, kick starter, spare wheel, wind screen, new tyres, mechanical horn, overhauled, splendid condition; £52.—Lieut., Norfolk Hotel, Arundel. [5954]

## Connaught.

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £23/17/6.—87-91, John Bright St., Birmingham. [X3052]

## Coventry Eagle.

COVENTRY Eagle, 1916, 6 h.p., 3-speed countershaft, coach sidecar, and accessories; cost £100, little used, £69/10.—Motor Exchange, Horton St., Halifax. [6129]

COVENTRY Eagles, Model de Luxe, single and 2-speed machines in stock; Villiers engines, Brompton forks, 26 in. wheels; for cash or easy purchase terms; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5928]

## Diamond.

ROBERTSON'S Motors, Ltd., have one shop-soiled 2-speed 2-stroke Diamond motor cycle, also one single geared model, for disposal for prompt cash only, at £33/10 and £26/10 each respectively; catalogue prices £38/17 and £31/10; both machines brand new.—Can be seen at Works, 154, Gt. Titchfield St., W. [X3078]

## Dot.

4½ h.p. Dot-Precision, 1912, clutch, speedometer, 1916 B. and B., splendid appearance and condition; £19; bought combination.—Ollerenshaw, 142, Longmoor Lane, Aintree, Liverpool. [X3011]

## Douglas.

DOUGLAS, 2 speeds, kick-start, clutch model; £34.—34, Ashvale Rd., Tooting. [6018]

DOUGLAS 1915 4 h.p. Combination, kick-start; £55.—29, St. Leonards St., Bow. [6072]

1912 2-speed Douglas, complete, lamps, etc.; £22.—Cross, Jeweller, Rotherham. [X3069]

DOUGLAS, 2½ h.p., 2-speed; £32/10.—Flying Officer, 100, High Rd., New Southgate. [5889]

COLMORE Depot, Birmingham, Leicester, and Liverpool, for Douglas motor cycles, also spare parts. [0800]

1915 T.T. Douglas, W.D. model, 2-speed, and accessories; £42/10.—Seen Bounds' Garage, Kilburn. [5968]

RIDER TROWARD, 78, High St., Hampstead.—1914 T.T. Douglas, 2-speed, very fast; 35 gns. [6088]

1915 T.T. Douglas, fast, as new, lamps, horn, new tyre, chain; £39.—Hartley, Lincoln College, Oxford. [X2988]

1911 2½ h.p. Douglas, excellent condition, unused 2 years; £15.—370, Liverpool Rd., Birkdale, Southport. [X3002]

DOUGLAS, 2½ h.p., 1915/10; 1913 2-speed, wants tuning up, £26.—Motor Exchange, Horton St., Halifax. [6128]

DOUGLAS, 1916, 4 h.p., 3-speed, clutch, unscratched, appearance as new; £60.—M. Tratheway, Roche, Cornwall. [X2975]

DOUGLAS, late 1914, 2½ h.p., 2-speed, lamps, horn, speedometer, kick-starter; £35.—14, Stanley Rd., Wimbledon. [6046]

1913 T.T. Douglas, perfect condition, new tyres; sacrifice £22.—76, Herongate Rd., Wanstead Park Avenue. [X2995]

DOUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil. Tel.: 50. [5855]

1915 2½ h.p. Douglas, lamps, all accessories, as new, under 1,000 miles; £45.—O.M.P., Oakwood, Slades Hill, Enfield. [X3005]

1914 2½ h.p. Douglas, T.T. model, just overhauled, perfect condition; £38/10.—Robinson's Garage, Green St., Cambridge. [6104]

1913 Douglas, 2-speed, kick start, clutch; any trial; £30, exchanges.—Martin, 23, Warren Rd., Tooting Tram Terminus, S.W. [6040]

DOUGLAS, 1915½, 2½ h.p., 2-speed, perfect condition throughout, little used, accessories, spares; £44.—62, Actre Lane, Brixton. [6181]



## NEW MODELS FROM STOCK.

ALLON, 2-stroke, 2-speed .....	£42 0
B.S.A., 4½ h.p., 3-speed, chain drive	£66 0
B.S.A., 4½ h.p., 3-speed, Model K ..	£64 0
CALTHORPE, 2-stroke, 2-speed .....	33 gns.
CALTHORPE-J.A.P., 2½ h.p., 2-speed	38 gns.
ENFIELD, 2-stroke, 2-speed .....	42 gns.
ENFIELD, 3 h.p., twin, 2-speed .....	55 gns.
ENFIELD 6 h.p. Combination .....	90 gns.
JAMES, 2-stroke, 2-speed .....	£42 0
JAMES, 3½ h.p., twin, 3-speed .....	£69 0
JAMES 4½ h.p. Combination .....	£86 0
NEW IMPERIAL, 2½ h.p., 2-speed	39 gns.
NEW IMPERIAL, 2½ h.p., 2-speed, clutch, and kick starter .....	46 gns.
ZENITH-GRADUA, 3½ h.p., twin .....	£62 0

## EXCHANGES

We specialise in exchange transactions, and will allow full value for your old motor cycle or light car in part payment for any new one.

## SECOND-HANDS.

The following is a selection from our large stock of machines of all types:

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PREMIER, 1913, 3½ h.p., countershaft 3-speed gear, lamps, and horn	£45
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ZENITH, 1915, 4 h.p. twin, countershaft model, lamps and horn	£48
VINCE, 1911, 5 h.p., 3-speed, head light, rear lamp, horn, and coach-built Sidecar	£22
CHATER-J.A.P., 1912, 8 h.p., countershaft 3-speed gear, all-chain drive, and coach-built Sidecar	£45
DOUGLAS, 1915, 2½ h.p., War Office Model	£50
ALLDAYS-MATCHLESS, 1915 3½ h.p. coach-built Combination, 3-speed, lamps and horn	£45
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INDIAN 1916 7 h.p. Powerplus Combination, dynamo lighting set, electric horn, speedometer, and mirror, luxurious Sidecar, fitted with hood, windscreen, coverall, and luggage carrier	£93
NEW HUDSON, 1914, 2½ h.p., 2-stroke, lamp set	£18
JAMES, 1916, 2½ h.p., 2-stroke, 2-speed, lamps, and horn	£36
NEW IMPERIAL-J.A.P., 1916, 2½ h.p., 2-speed, T.T. model, Cowey speedometer	£36
ROYAL ENFIELD 1914 6 h.p. Combination, Lucas lamps, horn, and Cowey speedometer	£55

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## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1914, T.T., 2-speed, 2 lamps, tyres nearly new, very reliable; must sell; £29.—Brook, Motor Works, The Sq., Birchington-on-Sea. [5973]

DOUGLAS Combination, 1914, clutch, kick start, 3 lamps, horn, speedometer, spares, splendid order; £50.—183, Moulsham St., Chelmsford. [X3013]

PRACTICALLY NEW 2½ h.p. 1915-16 Douglas, kick starter model, beautiful condition, only done 856; £52/10.—Lord, Mountfield, Prestwich. [X3070]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [2218]

DOUGLAS, 1915, T.T., 2½ h.p., 2-speed, new January, 1916, done less than 2,000 miles, excellent condition, all accessories; £46.—Box 550, c/o The Motor Cycle. [X2982]

DOUGLAS, 1915½, 2½ h.p., T.T., 3 speeds, done 628 miles only, guaranteed as new, special engine, specially tuned, lamps, horn; £56; experts invited.—Cox, Rocklyn, Roche, Cornwall. [X2955]

1913-14 Douglas, overhauled and enamelled, new pistons, valves, rings, beautiful condition throughout, 2-speed, T.T.; £30.—4, Grantley Terrace, Sydenham Rd., Gillingford. [6047]

1914 2½ h.p. Douglas, semi T.T., 2-speed, disc wheels, long nickel exhaust, excellent condition, lamps, and few spares, mechanically perfect; £37.—Davis, Kenmore, Murray Rd., Northwood, Middlesex. [5915]

DOUGLAS, late 1913, bought in 1914, 2 speeds, clutch, kick-start, speedometer, lamps, horn, tools, pump, spares, pan, just like new; £33, sacrifice.—T. 436, Whitehorse Rd., Thornton Heath, Surrey. [6016]

4 h.p. Douglas, 1915 model, 2-speed, kick starter, speedometer, horn, Lucas lamps, watch, with underling Millford sidecar, coachbuilt, a very fine turnout, like new; bargain, £65.—Morgan, Croft Rd., Thame, Oxon. [5993]

DOUGLAS, 2½ h.p., 2-speed, new October, 1914, perfect condition, just overhauled, tyres equal new, Brooks saddle, F.R.S. lamp, long exhaust; £33/10.—Nixon, Moss Grove, Carshalton Park Rd., Carshalton, N. [6003]

DOUGLAS, 2½ h.p., 1912, purchased 1913, ridden very little, Cowey speedometer, lamps, tools, horn, good tyres, Whittle belt, smart machine, splendid order, property of soldier away; offers.—4, Park Rd., Edmonton, N. [5974]

DOUGLAS, 1913, 2-speed, clutch model, all accessories, really fine order, £36/10; also late 1914 (date guaranteed), 2½ h.p., 2-speed, kick start model, unscratched, £44/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5934]

DOUGLAS, 4 h.p., 1915, 3-speed, special 2 in. polished exhaust, lamp set, horn, speedometer, Binks carburettor, with spare petrol tank, tyres as new, run only 1,700 miles, in perfect condition, guaranteed, whole machine as new; £55.—Winter, 14, Connaught Av., East Sheen. [6001]

W.D. Douglas, November, 1915, 2 new tyres and tube, front not yet fitted, P. and H. 6 in. lamp, generator and tail light, mechanical horn, knee-grips, and spares, specially fitted 1½ in. long exhaust pipe leading to rear wheel, just overhauled, and in perfect condition; price £55 cash, or nearest.—Grinditch, Willow Green, Little Leigh, near Northwich. [X2762]

## Enfield.

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

ENFIELD 1914½ 6 h.p. Coach Combination, wind screen, new condition; £57.—29, St. Leonards St., Bow. [6071]

ENFIELD 2½ h.p., twin-cyl., enclosed mag., good running order; £12/10.—Brown, 518, Kingsland Rd., London, N.E. [5906]

ENFIELD, 2½ h.p., 1916, 2-speed, stroke, shop-soiled, new; £42.—Jones, Garage, Broadway, Muswell Hill. [6169]

1915 3 h.p. Enfield, 2-speed, fast, reliable, good tyres, lamps, horn, etc.; £35.—Lieut. Hope Gill, The Castle, Monmouth. [X2867]

ENFIELD 6 h.p. Combination, 1914, excellent order and condition; any trial; £52/10, or near.—71, Sisters Av., Clapham Common. [6998]

ENFIELD 6 h.p. Combination, 1913, 2 speeds, Amac, just overhauled, all accessories; £45, or near.—32, Dartmouth Rd., Chorlton-cum-Hardy. [6031]

1914 6 h.p. Enfield Coach Combination, splendid condition, 700 x 80 tyres, Badcock bypass; £67.—Jackson, Lilybank, Hereford St., Sale, Cheshire. [X3071]

ENFIELD, 1913, 6 h.p., 2 speeds, handle starter, coachbuilt sidecar, speedometer, good condition; £32, bargain.—129, Warwick Rd., Earl's Court, S.W. [6027]

ENFIELD 6 h.p. Combination, genuine 1916, lamp, speedometer, purchased new August, mileage 800, as new throughout; £75.—280, Camberwell Rd., S.E. [6158]

ENFIELD 1914 6 h.p. Combination, 3 lamps, speedometer, and spares, tyres practically new, very reliable; £48.—Brook, Motor Works, The Sq., Birchington-on-Sea. [5971]

1916 3 h.p. Enfield, 2-speed, chain drive, only done 200 miles, condition as new, complete with Lucas lamps and horn; £42.—The Premier Motor Co., Aston Rd., Birmingham. [5902]



## MOTOR CYCLES FOR SALE.

## Enfield.

**ENFIELD** Combination, 90 gns.; 3 h.p. twin, £57/10; 2-speed, 2-stroke, £45; delivery from stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0838]

**ENFIELD** 1915 6 h.p. Combination, dynamo lighting set, Lucas and electric horns, wind screen, spare tyre; £58; call or write: trial any time.—Cranford, 49, Everton Rd., Addiscombe, Croydon. [5881]

**RIDER TROWARD**, 78, High St., Hampstead.—1916 Enfield combination, 3 lamps, mechanical horn, mileage 450, 70 gns.; 1915 ditto, all Lucas accessories, beautiful order, 55 gns., bargain. [6077]

**ENFIELD**, 1916, 3 h.p., 2-speed, specification as list, used 50 miles only, and as new; cost 55 gns., nocept £48, or nearest offer; owner, through wounded leg, finds it impossible to use motor cycle.—Layton's Garage, Biester, Osoa. [X3087]

**1916 Enfield** 6 h.p. Combination, nearly new, run about 1,500 miles, lamps, horn, Palmer tyres; £75 cash.—Apply, Styling, Southdown Motors, Freshfield Rd., Brighton. [X3033]

**ENFIELD**, 1916, 6 h.p., and sidecar, heap accessories, original tyres still on, 70 gns.; also 1913 3 h.p., 2-speed, kick start, 30 gns.; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5943]

**ENFIELD** 6 h.p. Coachbuilt Combination, late model, 2-speed, lightly used, perfect order, 3 lamps, speedometer, watch, sidecar hood, screen, etc.; any trial; beautiful outfit costing £104; must dispose; £66.—24, Elm Park Rd., Finchley, London, N. [6185]

**BIRMINGHAM** Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all 1917 models, including lighting set combination, special 8 h.p. with hood and screen, and standard 6 h.p. combination, also 3 h.p. standard and sporting models, and 2 1/2 h.p. 2-stroke; prices from 42 gns. [X3048]

**ENFIELD** 8 h.p. Colonial Outfit, £96/12; also 1917 6 h.p. standard combination Enfield, hood and screen, £100; seven 5 h.p. solo models, T.T. and Touring, £57/15; delivered from stock; good prices allowed on up-to-date motor cycles in exchange; deferred terms arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5933]

**6 h.p. 1916 Royal Enfield** Combination, fitted with Lucas's dynamo lighting set, comprising head lamp, rear lamp, sidecar lamp, superior quality hood, and mica screen, powerful Lucas hooter, all chain drive machine, handle starting, speed gear, beautifully sprung roomy coachbuilt sidecar; the combination complete, and as good as new, with all tools; 90 gns., guaranteed; any severe trial given, and delivered by road free.—Wanchope's, 9, Shoe Lane, London. [6111]

## Excelsior.

**EXCELSIOR** 8 h.p. Twin, 2-speed, racing sidecar; £50.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5807]

**EXCELSIOR**, 1916, 7 h.p., 3-speed, and coach sidecar, used for demonstration; £69/10, cash bargain.—Motor Exchange, Horton St., Halifax. [6130]

**FOR** a short time we can offer the new model American Excelsior, 7 h.p., 3-speed, chain drive, with improved kick starter, mechanical lubrication, etc., fitted with Montgomery coachbuilt sidecar, £80 net cash; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [5903]

## Fafnir.

**3 1/2 h.p. Fafnir**, mag., B. and B., requires a little attention; bargain price to clear, £8.—S, Wastdale Rd., Forest Hill. [5926]

## F.N.

**5-h.p. F.N.**, splendid condition; £20, or offer.—Lewis, 12, Mill Lane, Brixton Hill. [5897]

**F.N.**, 4-cyl., in excellent condition, with coachbuilt sidecar; best cash offer taken; exchanges and terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5350]

## Givaudan.

**GIVAUDAN** (French), 3 h.p., Amac, good tyres, belt; £4.—152, Camberwell Grove, London. [X2958]

## Grandex.

**GRANDEX-PRECISION**, 2 1/2 h.p., Sturmes-Archer 3-speed; £14.—138a, High St., Peckham. [6148]

## Harley-Davidson.

**HARLEY-DAVIDSON** Late 1915 Combination, electrically equipped, condition as new; £80.—Apply, G. H. Hawkins, 1, Mansfield Rd., Reading. [5961]

**COLMORE** Depot, Birmingham, Manchester, Liverpool, Leicester, for immediate delivery of all models of Harley-Davidsons, and spare parts. [0802]

**LATE** 1915 Harley-Davidson Combination, fully equipped, excellent condition, £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

**TWIN-CYL.** 8 h.p. Harley-Davidson Motor Cycle, 1915 model, as new, only run 800 miles; would accept £70 for a quick sale.—Robb, Chitiley Place, Liphook. [5911]

**HARLEY-DAVIDSONS** delivered from stock with or without their latest sidecar; liberal exchanges, deferred payment terms.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [5937]

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## MOTOR CYCLES FOR SALE.

## Harley-Davidson.

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Harley-Davidson combination, 113, electrically equipped, just overhauled by makers, perfect; cost £110, 59 gns. [6085]

**HARLEY-DAVIDSON** Combination, 1915, handsome Gloria sidecar, electric equipment, speedometer, perfect condition; £68.—Soans, Dunn, and Jones, Bromley, Kent. Tel.: Bromley 350. [6015]

**HARLEY-DAVIDSON** 1916 Models delivered from stock on the best terms for cash exchange or easy payments. Sidecars in stock to fit.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

**1916 16 1/2 Harley-Davidson** Combination, 7 h.p., 3-speed, semi T.T. bars, and Swan 20 gns. sporting sidecar, bought 7 days ago by officer on sick leave, run 200 miles, as new; 90 gns.; seen any time.—Maxwell, Maxwellton, Palmer's Green, N. 'Phone: 828. [5912]

**BRAND New Model J** 7 h.p., 3-speed Harley-Davidson, with dynamo electric lighting outfit, head lamp, tail lamp, electric horn, etc., fitted with Gloria coachbuilt sidecar; £100: the most luxurious outfit on the road; you save £15 by purchasing direct from The Premier Motor Co., Aston Rd., Birmingham. [5904]

## Henderson.

**HENDERSON**, 1914-15, 4-cyl., 2-speed, chain drive; £46/10, or exchange.—Motor Exchange, Horton St., Halifax. [6131]

**HENDERSON**, 1915 (September), 10 h.p., 3 lamps, speedometer, Millford tandem sidecar, has only done 2,500 miles, very fast lot, and reliable, in new condition; £70.—Brook, Motor Works, The Sq., Birchington-on-Sea. [5972]

## Humber.

**HUMBER**, 2-speed, free, perfect; £23.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [5806]

**HUMBER**, 3 1/2 h.p., 1912, Bosch, B. and B.; £14, offers.—Homer, 57, Foregate St., Worcester. [6020]

**HUMBER**, 3 1/2 h.p., 2-speed; £23; exchange.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6058]

**1914 3 1/2 h.p. 3-speed Humber**, lamp, etc.; £35; cash or easy terms.—E. E. Jones (Garages), Ltd., Swansea. [0863]

**1912 3 1/2 h.p. 2-speed Humber**, excellent condition, very good tyres; £19.—Stocks, Thurstons, Penistons. [X3036]

**HUMBER** Combination, 3 1/2 h.p., 2-speed, free, mag., B. and B., fast, in fine order and condition; £22.—Head, 31, Hants Road, West Norwood. [0870]

**HUMBER**, 1915, 3 1/2 h.p., 3-speed, nearly new; special price, £57/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**A OFF!** owner joined up.—Late 1913 2 h.p. Humber lightweight, 3 speeds, perfect running order, guaranteed; £15, no offers.—Bon Marche, Chesterfield. [X5074]

## Indian.

**INDIAN**, latest model, 5 h.p., 3 speeds, kick-start; £45, bargain.—34, Ashvale Rd., Tooting. [6017]

**1915 Speed Clutch Model Indian**, complete, excellent condition; £43.—Castle Motor Co., Kidderminster. [5981]

**INDIAN** 1915 7-9 h.p. Combination, fully equipped, and in really desirable condition; nocept £60, or near offer.—Layton's Garage, Bicester. [X3093]

**INDIAN**, 1915, 7-9 h.p., T.T., clutch, £31/10 speedometer, new tyres and tubes, as new; £38.—V, 66, Loughborough Park, Brixton, S.W. [X3036]

**INDIAN**, 7-9 h.p., T.T., 2 speeds, clutch, perfect order, brand new tyres; exceptional bargain, £27/10.—Burton, 66, Woodstock Av., Golder's Green, London. [5907]

**INDIAN**, T.T. model B, 1916, fast machine, ridden 1,000 miles, new condition, complete, lamps, and horn; £62.—Eveson, The Dingle, near Stourbridge. [6159]

**INDIAN**, November, 1915, 5 h.p., 3-speed, kick start, clutch, perfect condition, never had breakdown or puncture; £60.—B. J. Dunlop, 87, Victoria St., London. [X2977]

**INDIAN**, 7-9 h.p., 1914 Hendee Special, 2-speed, electric lamps, spring frame, luxurious Millford sidecar; £50; sold part exchange.—Indian, 28, Castle Rd., Bedford. [X3027]

**INDIAN** 7 h.p. Combination, 1915, fully equipped, speedometer, electric lamps horn, almost new; bargain, £70; appointment.—Pudney, Richardson St., Bermondsey. [6013]

**INDIANS**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn, also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X3050]

**1914 Indian**, 4 h.p., 2-speeds, clutch, with low sporting coachbuilt sidecar, electrical equipment; £45; would exchange for good solo machine.—Newnham, 225, Hammersmith Rd., W. 'Phone: 80. [6096]

**INDIAN**, 1914, 7-9 h.p., disabled officer wishes to sell Hendee Special combination, Model de Luxe sidecar, just overhauled, tyres in splendid condition.—W. J. Stanton, Billing Rd., Northampton. [5884]

**1915 Indian** Combination, 7 h.p., 3-speed, spring frame, Lucas lighting set, just overhauled by manufacturers; trial run by appointment; price £58 cash.—Tompsett, Moors, Marden, Kent. [6620]



## MOTOR CYCLES FOR SALE.

## Indian.

**INDIAN** Powerplus, 7h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, with lamps and horn, £78.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X3055]

**INDIAN** 1914-15 Genuine Coach Combination, 7-9h.p., spring frame, speedometer, lamps, tools, horn, large valuable skin motor rug, buck seat, lot 45 gns. trial.—Wire: Leeming, Westbourne, Vicarage Lane, Marton, Blackpool. [X3018]

**INDIAN**, 1914½, 7-9h.p., 2-speed, electric lamps, signal, speedometer, perfect condition, with M.F. Hendee de Luxo G.B. sidecar, encased red leather; accept £55, or near offer.—Kenyon, 160, Slade Lane, Levenshulme, Manchester. [X2955]

**INDIANS**, second-hand 1915 models: 7h.p. model C, with de Luxo coach sidecar, £60; 5h.p., 3 speeds, with sporting coach sidecar, £52/10; 5h.p. solo mount, £50; all overhauled and guaranteed sound.—P. J. Evans, John Bright St., Birmingham. [X3058]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery: 7h.p. T.T. Powerplus, £75; 7h.p. 3-speed spring frame, and electric light, £78; special de Luxe 7h.p., spring frame, £78; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X3051]

**INDIAN**, 1914, 7-9h.p., spring frame combination. Milford 19 gns. De Luxe sidecar, with luggage carrier, 50/- X-Pall bucket seat, speedometer, lamps, horn, etc., excellent condition, has just been overhauled, new chain, and other renewals wherever advisable; £55, or nearest offer.—Apply, Private Owner, 28, College Rd., Harrow. Phone: Harrow 77. [5965]

## Ivy.

**IVY**, 1916, 2½h.p., 2-speed, mileage 3,000, condition as new; £27.—Inman, Hunton, Bedale. [5953]

## James.

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles. [0803]

**1916** 4½h.p. James Combination, listed £80/15/-, used for few trial runs only; £65.—Parker's Motors, St. Ives, Hunts. [6152]

**1916** James Combination, 3-speed, with sidecar, electric lights, kick starter, same as new; £75.—Godfree, 124, Romford Rd., Stratford, London. [5918]

**JAMES** 1914 4½h.p. Coach Combination, countershaft gear, and accessories, £44/10; also 1915 model, £56/10.—Motor Exchange, Horton St., Halifax. [6132]

**A** 1916 3½h.p. 3-cyl. 3-speed James, new last June, done only 600 miles, perfect condition, Palmer tyres; £60.—Captain Fellows, Headquarter Staff Office, Salisbury. [X2973]

**1916** 3½h.p. Twin James, 3-speed, h.b.c. clutch, enclosed chain drive, only ridden 200 miles, and in excellent condition throughout; £50.—Box 560, c/o The Motor Cycle. [X3115]

**JAMES**, 1914, big single, 3-speed Sturmev, upholstered wicker sidecar, Binks 3-jet, speedometer, heavy Dunlops, just overhauled, in good condition; £34.—H. Marshall, Mill Pond, Hascombe, Godalming. [X2744]

**B. H. DAVIES** has for disposal 1917 model James 2-stroke, 2-speed gear, equal to new in all respects, Hellesen dry battery head and tail lamps; cost about £45, accept £35, or close cash offer; approval, deposit.—St. Wenn, Bodmin. [X2697]

**JAMES** 1915 No. 6 Coach Combination, 4½h.p., 3-speed, kick start, lamps, speedometer, beautiful order, £65; also 1915 2½h.p., 2-speed, kick start, 2-stroke, 50 gns.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5945]

## J.A.P.

**2½h.p. J.A.P.**, very low, perfect condition; £13.—18, 22 Winns Terrace, Walthamstow. [5908]

## J.E.S.

**1914 J.E.S. Motorcyclette**, 12 gns.—Particulars, 13, Tweenbrooke Av., Gloucester. [X3044]

## Kerry.

**2½h.p. Kerry**, just overhauled, new outer covers (one 2½ spare), several new accessories, belt driven, coil, everything guaranteed in good going order; a bargain, £15.—Stroud, Glen Av., Herne Bay. [X2756]

## Kynoch.

**1914 Kynoch-Jap**, 4h.p., S.A. 3-speed hub, clutch, perfect condition; £36.—Baker, 10, Church St., Baldock, Herts. [6002]

## Lea-Francis.

**LEA-FRANCIS**, 3½h.p., been ridden periodically only, perfect order; £55.—A. L. Pitts, Redditch. [X3062]

**1915 Lea-Francis** 3½h.p. Twin, 5-speed, handle-bar and foot controlled clutch, kick starter, complete with Montgomery sidecar and accessories; £70; owner buying car.—Gibb, Gough, London Rd., Gloucester. [X3023]

## Levis.

**18 Gns.—1916 Levis**, joining up; worth double.—Miller, 62, Hampstead Rd., N.W. [5956]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

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2½ h.p. CALTHORPE, 2-stroke, 2-speed	£34 13
2½ h.p. CALTHORPE-J.A.P., 2-speed	£39 18
2½ h.p. LEVIS, 2-sp., Model E, chain drive	£47 10
2½ h.p. SPARKBROOK, 2-stroke, 2-speed	£40 0
5 h.p. GLYNO, Military Model, with Sidecar, spare wheel, and luggage grid	£108 3
6 h.p. ENFIELD Combination, elec. equip.	£110 5
2½ h.p. ENFIELD, 2-stroke, 2-speed	£44 2
7 h.p. INDIAN, Model G, 3-speed	£73 18
3 h.p. ENFIELD, Model 140	£57 15
5 h.p. INDIAN, Model B, 3-speed	£70 0
4 h.p. B.S.A., Model H	£66 0
4 h.p. B.S.A., Model K	£64 0
2½ h.p. DIAMOND-J.A.P., Enfield 2-sp gear	£40 19
2½ h.p. O.K. JUNIOR-J.A.P., 2-speed	£38 0
2½ h.p. EXCELSIOR, 2-stroke, 2-speed	£39 5
2½ h.p. EXCELSIOR, 2-stroke, single gear	£30 18
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## MOTOR CYCLES FOR SALE.

## Levis.

**1914 Levis**, 2½h.p., perfect condition: £18.—Martin, 25, Warren Rd., Tooting Tram Terminus, S.W. [6037]

**1916 Levis**, 2½h.p., little used; £18, a bargain; trial by appointment.—D.H., Argyle Lodge, Feltham. [6030]

**LEVIS**, 1916, mileage under 1,000, condition excellent; sacrifices 19 gns.—15, Summerhill Rd., Dartford, Kent. [X2971]

**LEVIS** Popular Model, quite new, but very slightly shop-soiled; accept £26/10.—Layton's Garage, Bicester, Oxon. [X3094]

**LEVIS**, 2½h.p., late 1915, splendid condition throughout; £22; joining Army.—Leake, Donnerville, Wellington, Salop. [X3102]

**LEVIS**, both models, £32 and £47/10, actually in stock; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5938]

**1917 New Levis** Model E's, fitted with Enfield 2-speed gear and free engine, £47/10; Popular models, £32; easy terms 2½ extra, or exchange.—Wauchope's, 9, Shoe Lane, London. [6112]

**1916 Levis**, 4-5h.p., countershaft gear model, fitted with sporting Swan sidecar, clutch, and kick start, complete with all accessories; the combination £65, bargain, guaranteed.—Wauchope's, 9, Shoe Lane, London. [6117]

**LEVIS** Popular, 2½h.p., 1917 model, actually in stock, £32, or on easy purchase terms; deposit £8, and 12 monthly payments of £2/1; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5930]

**LEVIS** Model de Luxe, 2½h.p. (1917), with Royal Enfield 2-speed gear, actually in stock; £47/10, or on easy purchase terms, deposit £11/17/6, and 12 monthly payments of £3/0/11; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [5927]

## Lincoln-Elk.

**RIDER TROWARD**, 78, High St., Hampstead.—1915 4½h.p. Lincoln Elk, 2-speed countershaft gear, clutch, kick-start, powerful sidecar or solo machine, perfect condition; 33 gns. [6086]

## Matchless.

**1914 Matchless**, 8h.p., 2-speed, T.T.—Sampson, 28, South Park Hill Rd., Croydon. [5910]

**MATCHLESS** 6h.p. 2-speed Coach Combination; £42/10, or exchange.—Motor Exchange, Horton St., Halifax. [6133]

**MATCHLESS** 1913 Combination, 8h.p., 2 speed, pedal start, ready for use; between 1 and 2; £45.—24a, Ecclestown Rd., Islington, N. [5890]

**RIDER TROWARD**, 78, High St., Hampstead.—1913-14 Matchless T.T. combination, 8h.p., 2-speed, clutch, kick-start, very fast; 55 gns. [6090]

**8B** Matchless Combination, 1915, hood, screen, 3 lamps, speedometer, 4 covers, 5 tubes, many spares; owner joining; £75.—S. Brownham Grange, Stroud. [X3006]

**MATCHLESS** Combination, 1914-1915, 8B model, M.A.G. engine, 3-speed countershaft gear, extra bucket seat for child, fully equipped, fitted extra large tyres; £70; seen appointment.—Brunell, 26, Hanover Rd., Broadesbury Park, London. [X2923]

## Minerva.

**MINERVA**, 3½h.p. mag., speedometer, lamps, sidecar; owner enlisted; bargain, £18; seen.—P. 602, King's Rd., Fulham. [X2986]

**£10**, offers.—Minerva, 3½h.p., faultless, mechanical valves, Bosch, spring forks; must sell.—Bradstreet, 5, St. James's Rd., Kingston-on-Thames. [5964]

## Motocacoche.

**MOTOSACOCHE**, 2½h.p., perfect condition; £8.—Fenton, 313, Kingston Rd., Wimbledon. [5899]

## New Hudson.

**NEW Hudson**, 1916, 2-stroke, 2-speed, lamp, horn, speedometer; £27; must sell.—Box 557, c/o The Motor Cycle. [X2999]

**NEW Hudson**, 1912, 3½h.p., 3 speeds and clutch, with sidecar; £22.—P. J. Evans, John Bright St., Birmingham. [X3059]

**NEW Hudson**, 2½h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Buth Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

**1912 New Hudson**, 3½h.p., coachbuilt sidecar, 3 speeds, clutch, speedometer; £31.—Kerry, Sylvan Av., Brooklands, Cheshire. [X2957]

**NEW Hudson**, late 1913, 3-speed, 3½h.p., very good order throughout, all tools, accessories, etc.; genuine bargain, £25.—Sidney Brown, Cowley Hill, St. Helens. [X2974]

**NEW Hudson**, 3½h.p., 3-speed, thoroughly overhauled, and several parts renewed, A1 condition, insurance policy included; a bargain, £30; exchanges and terms entertained.—W. E. Clark and Co., Motor Engineers, Doncaster. [5948]

## New Imperial.

**1916 2½h.p. New Imperial-Jap**, 2-speed, good as new; only £30, or offers.—Parker's Motors, St. Ives, Hunts. [6153]



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1D

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Thursday, December 21st, 1916.

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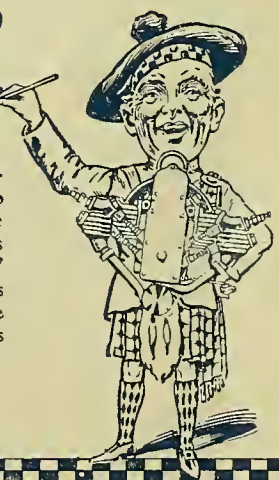
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To every motor cyclist, and es-  
pecially to those gallant lads who  
are obeying the call of the cause  
so nobly on land and sea. His  
silently uttered "Good Luck"  
is just sincere—and he wishes  
you all a speedy return to the  
joys and glories of old Blighty's  
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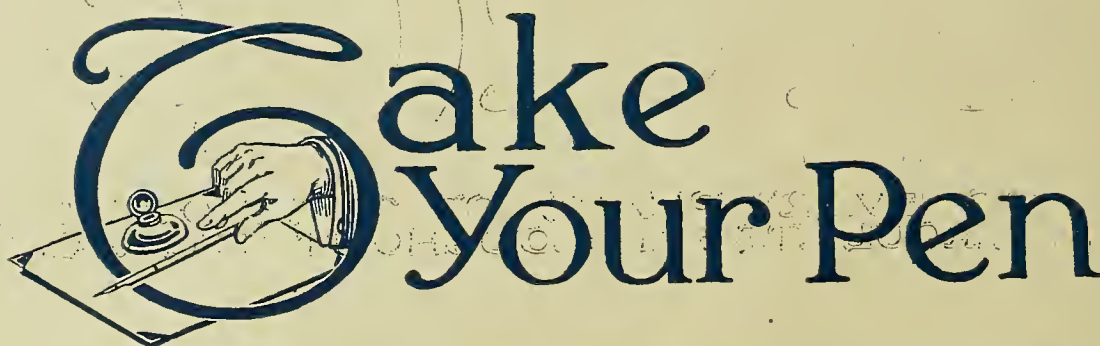


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## SPECIAL NOTICE.

The Ministry of Munitions has given us permit to supply any motors, erected or assembled up to the 15th February, 1917. If Agents, therefore, are desirous of securing motors which we have coming through the works they could be delivered before that date; after that date we expect no more motors can be supplied for the English market.  
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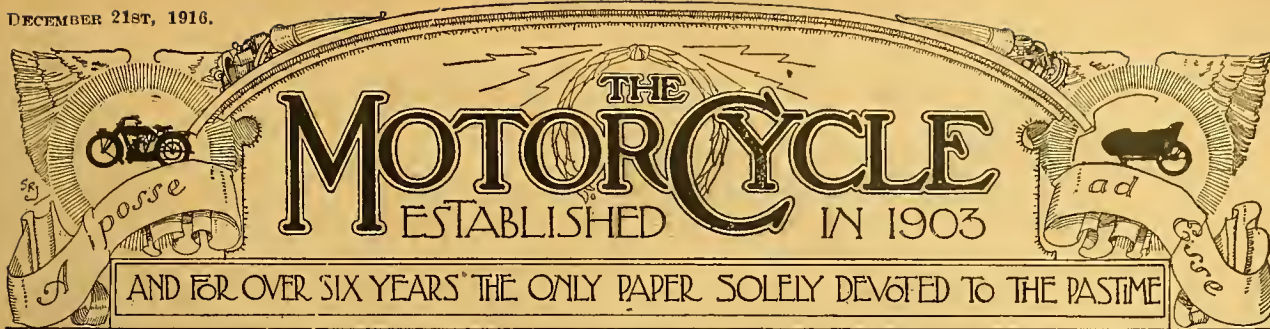
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### A Third War Christmas.

IT would be an irony to wish any reader a happy Christmas in these troublous times, when so many near and dear to us are fighting the common enemy. The best we can hope is that, after our task is accomplished and "adequate reparation for the past and adequate security for the future" are assured, we shall all be peacefully and happily re-united by Christmas 1917. In the meantime, we extend our heartiest greetings to all readers at home and abroad, and sincere wishes for a successful conclusion of the war in 1917. May the thoughts of a happy re-union at Christmas next year prove an additional incentive to renewed efforts. Peace is impossible with a nation unbroken which has made a study of war for over forty years past, and has even taught war and militarism in its schools and churches. When the object with which the Allies entered the field in 1914 has been achieved we may look forward to happy times a-wheel, and the renewal of our ordinary and peaceful avocations. Here's to success and a safe return!

### Two-stroke Lubrication.

THE system of lubricating two-stroke machines, it is generally agreed, is not yet on a satisfactory basis. Proof of that fact lies in the number of different methods of lubrication adopted by the various producers of two-stroke engines. It is almost unnecessary for us to point out that a perfect system of lubrication is more desirable—if such a remark is permissible—in the case of a two-stroke than in the case of a four-stroke, as the former engines are usually of small size, and for the greater part of their life work almost up to their limit output. Again, carbon deposit is more apt to form in these engines with detriment to the piston rings and, of course, the compression, largely due to the extra heat generated by the double explosion. It is a

subject we have discussed at different times, and have at various periods offered suggestions, as the result of prolonged riding experience with such machines. The petrol system is at once the most foolproof and attractive method of lubrication evolved, and is entirely in keeping with the simplicity of the machine as a whole, but it has its shortcomings. Messiness is its main defect, as it detracts from that smart and workmanlike appearance of the two-stroke light-weight of typical British design. When petrol is mixed with oil the vibration to which the carburetter is subjected causes the fluid to collect on the top of the float chamber. In time the petrol evaporates, and so leaves a yellow sticky mess in the region of the carburetter. Dust and dirt collect on this, with the result all users know only too well.

Two years ago, in dilating upon this subject, we suggested that the throttle-controlled lubricator is surely ideal and perfectly automatic, relieving the rider of all lubrication worries. We went on to state that from these considerations alone it was to be hoped that some discovery would be made that would overcome the objections outlined. On this subject, it is not without interest that we are at the present moment riding a two-stroke machine fitted with a throttle-controlled lubricator, the details of which we must refrain from divulging at the present time, for the simple reason that duplicates cannot be produced owing to war demands. This design, however, is not the only one of the type, for of late months we have seen three designs of throttle-controlled lubricators specially designed for two-stroke machines. Thus it will be seen that, though progress, so far as the ordinary riding public is concerned, may be comparatively slow and almost indiscernible, the fact remains that behind the scenes there is a good deal of experimental work quietly in progress, all of which will be to the general good of the pastime and trade when the glorious days of peace return.





### Our Toolbags.

Not long ago I fitted up a couple of new machines with my favourite kit, and as usual got into difficulties at once. One of the pannier bags was not unreasonably fully occupied by the tool roll, and as the tool-roll contained a good set of ordinary weapons, I had no quarrel with it. I then laid out on the bench the goods destined for the remaining pannier—delivered empty, but carefully sealed by some humorous packer, who presumably wished to play a trick on railway thieves. The assortment comprised a tyre repair outfit, two spare sparking plugs, a valve removing tool, two spare valves (the engine in question has inlets which differ from the exhausts), a spare chain and links, a belt punch, and a lamp burner. Not an excessive catalogue, but they would not go in anyhow. In particular, the tyre repair outfit could not be coaxed into the pannier, even when the latter was empty, and three of other makes were equally reluctant. I do not know whether we should blame the pannier maker or the repair outfit maker, but the fact is that every year fewer and fewer makers supply tyre repair outfits with their bicycles, and as a consequence touch is being lost between the two. So I am actually driven to mount two small leather wallets on my handle-bars, one holding two spare plugs, the other a repair outfit. I do not see why pannier toolbags should not be much larger than they are; after all, we are not compelled to fill them with anything heavier than cotton waste, if we prefer to travel light.

### Ugh!

I must not grumble, for I have had very few punctures during the last two years, but when the spell of luck broke of course I got a really shocking puncture in inky darkness and pouring rain. The tyre, as you will expect to hear, was a brand new gin. with steel studs in the tread, and as stiff and unmanageable as it could be made. There was no divided axle, no handy railway bridge or barn, and my supply of carbide wasn't excessive. There were no tyre levers in the standard kit, nor in the repair outfit. I draped my oilskin neatly over the back wheel to keep the tube as dry as possible, crept into the tent thus improvised, propped my head lamp to throw a fitful glare on the job, and turned the water as low as possible. Wiping my hands dry and clean, I gouged the reluctant cover off the rim at last with the aid of a stumpy screw-driver and two or three stamped spanners; by this time, of course, my hands were wet and gritty, as the whole tail of the machine was drowned in mud. There is only one worse experience in motor cycling, and that is tackling the same job in a blizzard, and the worst of it is that there is no cure for it; it is still a rotten job even if you have a drop-out wheel and a spare tube. Thank goodness, it is far easier than it used to be, for there was a time when tyre solution wouldn't stick unless it was treated delicately, whereas modern solutions dry quickly and stick closer than a dun.

AIO

### An Imported Sparking Plug.

One of my most treasured possessions is a cheap imported sparking plug with two hook electrodes of very thin wire. I am afraid I was rather rude to the agent who sold it me, but I bought it when one cylinder of my twin was sooting badly, in the days when British makers were choked up with Government work, and the vendor had nothing else in stock. I soon learnt its value and its limitations. If I put it in a baby two-stroke or a high-efficiency T.T. mount, it grew red hot in a very short distance, and terrific pre-ignition would set in on the first long hill; so it went on the shelf one day, and I pigeon-holed it in my memory as one of the hottest plugs I had ever struck. Before long I was in trouble with another twin, equipped with a low efficiency engine and an oily back cylinder. Several expensive standard British plugs were being paraded for a good scrub after short service in that oily back cylinder, when my eye fell on the weedy-looking electrodes of the discarded foreigner. Methought it was just the sort of little beast to keep itself burnt clean in that exacting cylinder; and so it proved.

### The Future.

I may be wrong again, as I have often been wrong in the past, but I cannot help thinking that, unless considerable extension of the decarbonisation intervals is possible, the simplicity of this job will exercise a marked influence on the survival of certain types of engine. If I may take leading names in vain, let us suppose that in 1925 A.D. the Douglas and Triumph firms are both producing 8 h.p. sidecar outfits; that any duffer can decarbonise the one make in an hour and a half, whilst the other represents a whole day's work. In 1925 A.D. the two outfits would sell on their makers' past reputation. In 1926 A.D. the quick decarboniser would begin to forge ahead; and in 1927 A.D. the clumsy decarboniser would fall far away in the rear on sales statistics, unless it was improved in the meantime. Now it is apparently certain that the thumping big V twin can never be decarbonised very simply and quickly unless it is, for example, fitted with a bolted-in top tube to the frame, so that the whole of the top hamper can come away quickly, and leave the cylinders clear to be lifted off. It is easier, but still not really easy, to design a big horizontal twin so that its cylinders whip off smartly. Of course, as the super-efficient engine is developed, the thumping big twin may be eliminated altogether in favour of a "revving" small twin. If this does not happen, I wonder if the four-cylinder will come into its own? Imagine a four-cylinder, set rather low in rather a deep frame. Fit it with a detachable cylinder cover, and with overhead valves. Add, if you like, a second joint lower down between the *monobloc* cylinder casting and the crank case. It will be difficult to design a twin of the same c.c. to equal this for general handiness and accessibility.



## A MESSAGE TO OUR COMRADES AT HOME AND ABROAD.

Hearty Greetings for Xmas, 1916  
and Best Wishes for  
the Ensuing Year.

MAY Christmas Nineteen Seventeen see you all re-united in glorious peace, having fulfilled your Country's service in France, The Balkans, Egypt, Mesopotamia, East Africa, "At Sea," or at home in "Blighty."

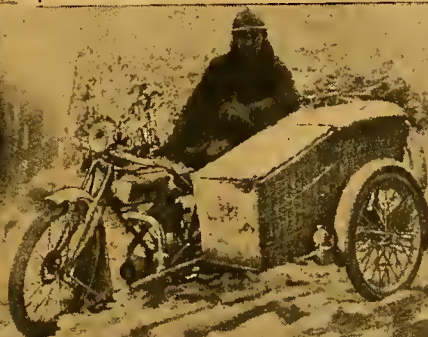
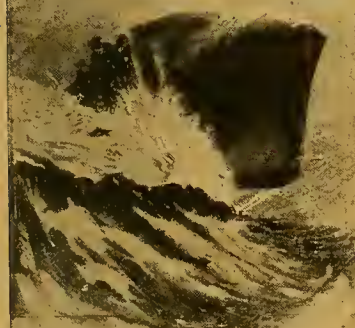
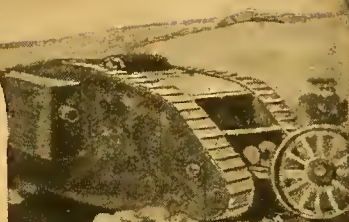
MAY the advent of the New Year find you as resolute and determined in your fight for the right, and carrying on in true British fashion, with the knowledge that our hearts are with you all the way.

MAY you be inspired to still greater deeds.

MAY you, who have provided such admirable material for all the specialised sections of our gallant Army—whether in the air, on land, on sea, or under the sea—may you return safe and sound to the joys of the open road astride a motor cycle, exhilarated by the knowledge of a deserved victory hardly won, to "rev" on unlimited petrol and with unrestricted lighting.

These are but a tithe of the Good Wishes we would convey to you.

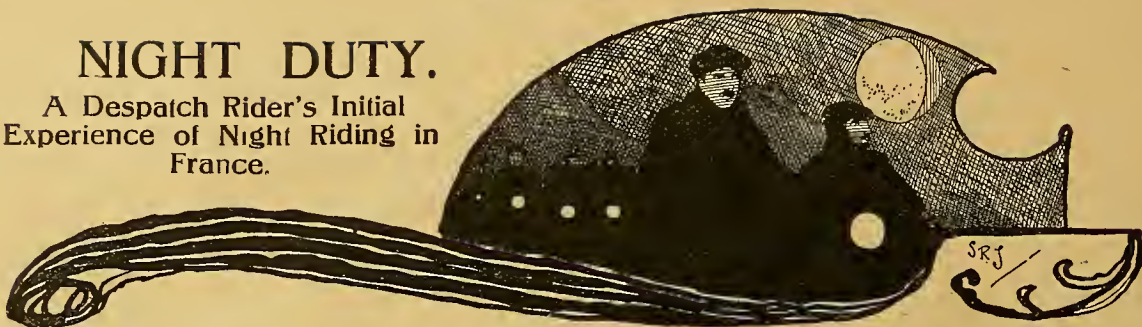
HERE'S TO OUR NEXT MEETING!!!





## NIGHT DUTY.

A Despatch Rider's Initial  
Experience of Night Riding in  
France.



THE sergeant looked into the motor cyclists' billet and shouted, "Where's 'Udson?" A long, lean youth got up from his kitbag and replied, "Here, sergeant." The other D.R.'s looked round with interest.

"You're for night duty to-night," said the sergeant. "Morgan's gone sick, so you'll have to take his place."

"Righto, sergeant," said the long youth, "when do I start duty?"

"You report to the Signal Office at ten o'clock, fully dressed and ready to go out. And don't be late, mind you, or there'll be trouble."

The sergeant walked out of the barn, and the other D.R.'s returned to their magazines and letters. All, that is, save one, a fatherly individual, who had been on duty the night before. He lit a cigarette with great deliberation and gazed on the tall youth, who was a new-comer to the section.

### Wasted Sympathy.

"Poor devil," he said, with intense feeling.

The new-comer, No. 87,501 Motor Cyclist Corporal Hudson, J.E., was surprised. He was still full of that vim and enthusiasm which is characteristic of new arrivals in the land of France, Army area. Everything to him was so strange and interesting. True, it was rough at times, but this was a thing for which he was prepared, and the novelty and excitement more than compensated for it. He could not understand the boredom of his companions, nor yet their remarkable agility when it came to avoiding work. So he was surprised when a comrade sympathised with him, merely because he had a hard night's work in front.

"Why, what's the matter," he exclaimed, "everyone's got to do night duty sometimes, I suppose? I'm not frightened at taking my turn with the rest."

The fatherly one grunted.

"Maybe not," he replied, "but you don't know what you're in for, my boy. If you did you wouldn't be quite so pleased with yourself. I had it last night: it poured with rain all the time. To-night it'll be worse."

"Why's that?" queried Hudson; "it hasn't rained since this morning, so——"

"That's just the reason why it'll be so bad to-night," replied the other. "Yesterday it was wet; to-day it's been fine. The roads are getting dry now. To-night they'll be sticky. You haven't been on the roads here when they're really sticky. The mud's so thick that it absolutely clogs up your wheels. You can't go 200 yards without getting off and clearing out the mud. You'll see what it's like all right. And

there's no moon—won't be any stars either, for the amount of cloud there is about. You're in for a picnic, mark my words. And don't say I didn't tell you."

### Where Ignorance is Bliss.

"Oh, well, if that's all I needn't worry much. Many a time at home I've ridden without a lamp, and had the police to dodge as well. I'm not afraid of things like that. We'll have worse to put up with if we get to moving warfare again."

"Cut it off," said the fatherly one. "We've heard all that stuff before. You get it for a ha'penny a day in the *Daily Mail*, along with a bit about 'horrors of war' and 'gallant lads.' I've been out since Mons, that's over two years now. You won't buck so much in the morning."

The conversation had taken place in the tumble-down barn that was the billet of the motor cyclist despatch riders of the Tenth Division. Hudson had arrived from the base two days before. Like all others of the "just out" variety, he was keen to prove his worth. Every job that was put before him he performed with alacrity and despatch. He held exalted opinions on doing odd jobs to help other people, and was always to the front when there was a long run to be done. The old hands had seen many of his type. As a rule their energy lasted about a week, sometimes a fortnight, but never more. These first few days after the arrival of a reinforcement from the base were good times for the old hands. Morgan, had he not gone sick, would probably have persuaded Hudson to do his night duty for him in any case.

Hudson, clad in oilskins, mufflers, and Hutchinson waders, presented himself at the Signal Office on the stroke of the hour. The signal master, who was accustomed to waking a bored "night man" at about 10.30 p.m., was surprised at his punctuality and enthusiasm, for the D.R. seemed almost disappointed to hear that there was nothing important to be taken out.

"Don't you worry, sonny," he laughed, "you'll be out before the night's much older. There'll be some "specials" for brigades about midnight, unless I'm much mistaken. Know the way to the brigades all right?"

"Yes, thanks," said Hudson. "I went over them all this afternoon. Well, I suppose I'd better make myself comfortable."

### A Start for Brigade Headquarters.

He selected a packing case, and, placing it against the wall, settled down till such time as his services should be required. His glance wandered from the signal master to the operator at the telephone exchange,



**Night Duty.—**

and on from him to the Morse operators seated in front of their polished brass sounders. Each bore on his face the dull contented look of the man who has done a **thing** a hundred times before, knows exactly what **will** happen, and exactly how long it will last. They, poor devils, thought the despatch rider, had got a sickly, monotonous job. They were doing, under somewhat unpleasant conditions, exactly what they had always done in civil life before the war—at less than half the pay. He, on the other hand, was working at his favourite pastime—motor cycling, and being paid for it, to boot. That was where the difference lay; that was why he was so keen on his job, whilst these others were “bored” to a man.

A clerk walked into the Signal Office towards midnight carrying a bundle of official envelopes. He tossed them on to the signal master's table, muttering “Three specials.” Then, grumbling about the lateness of the hour and the pressure of work on hand, he departed into the outer regions.

The signal master looked through them lazily, and entered particulars of them on the “Register for Outgoing Messages.” He made out a “Despatch Rider's Docket” in triplicate, and tore off the two top copies. These he handed to Hudson, who signed the remaining copy, gathered up his despatches, and went off to his motor cycle. He soon had the engine running, and was bouncing over the abominable road towards the nearest Brigade Headquarters.

It was one of those nights which is dreaded by all road users in Northern France. The roads were in the most appalling condition of mud—thick, sticky mud, which clung to the tyres and filled up the mudguards so that the wheels could scarcely turn. Added to this was considerable traffic on the roads, horses frightened and plunging, men shouting and swearing; and it was black as pitch.

**The Awakening.**

Hudson had not gone many hundred yards before he realised that the Fatherly One had spoken solid truth. His machine was slipping and sliding from side to side of the road. With feet out, he could just keep it upright. Progress on top gear was impossible—it was a struggle to get along on second or first; and he could not go more than 200 yards without dismounting to clean the wheels.

There were difficulties before him of which he had not thought. In the main it was the traffic which disturbed him. Given a clear road he could have held

up against any amount of mud and darkness. But the continuous stream of “limbers,” water carts, “G.S. waggons” and the like went a long way towards breaking his nerve. Every second he was having hair-breadth escapes; each skid was rendered fifty times more dangerous by the congested traffic and horses about him.

At last, however, he came to a clear stretch of road. He cleaned out his wheels at the beginning of it, and congratulated himself on having reached a road where he would be able to proceed at more than three or four miles an hour. It was dark, of course, but the direction of the road was clearly outlined by the rows of trees on each side, which stood out blacker than the sky above. Hudson opened his throttle slightly and changed up into top gear.

But many are the traps for the unwary. Horses and waggons, to be sure, he had left behind, but motor cycles and cars coming in the opposite direction still had to be reckoned with. A car bore down upon him at reckless speed. Involuntarily he stamped on the brake; he swerved, skidded, and came heavily to the ground. The car twisted away to the right, missed him by six inches, and disappeared. Hudson picked himself up and shifted his machine to the side of the road to count the damage. Then, finding that little or none had been done, he started the engine and continued on his way.

Presently he heard a most weird and uncanny noise above the beat of his engine. The noise of the latter made it impossible for him to define or locate it; but with a care gained by his previous fall, he changed down to low gear and proceeded warily. The noise now became more distinct. There was a hiss, a whistle, and a shower of sparks rose in

the air. He was riding into the back of a train.

**A Narrow Escape.**

To those who are accustomed to the wayside trains of France there is nothing so very alarming in encountering one at night, but to the new-comer it is the most frightening experience. This particular train was moving in a series of jerks at a speed of something under two miles an hour, but, save for occasional showers of sparks which showed it to be somewhere on the right it was almost invisible. And Hudson, in giving it a wide berth, had to risk being run down by any approaching vehicle.

But, somehow, he got past it, and, somehow, he reached the headquarters of each of the three brigades. Similarly, “somehow” and with many



“This particular train . . . save for occasional showers of sparks . . . was almost invisible, and Hudson . . . had to risk being run down by any approaching vehicle.”



## Night Duty.—

narrow escapes, he reached Divisional Headquarters and walked into the Signal Office, more wise and tired than he had walked out. The signal master greeted him with a grin.

"Had a rough time, sonny? Thought you would. It's bad going, these dark nights."

"By gad it is!" said Hudson, and tumbled down on to his packing case, half exhausted. "A few more runs like that would do me in."

The signal master laughed.

"You'll have lots worse than that before the war's over, my boy," he said. "And I suppose I shan't cheer you up over much when I tell you that there'll be another special for all brigades in about half-an-

hour. The 'G' branch clerk has just been round to warn me."

"Good gracious!" said Hudson.

\* \* \* \* \*

"Well," said the Fatherly One, "how did you enjoy your night's work? Cushy, eh?"

"It was rotten," said Hudson, briefly. "I never thought anything could be like it."

The Fatherly One laughed.

"No, my boy, I didn't think you did. And no more do all the blighters who say motor cyclists have got soft jobs. We may not get shelled or sniped much, but we *do* stick it. And when you've done about two years of the sort of riding you had last night—well, you get to know something about motor cycling, eh?"

## ODES ODIOUS AND PARODIUS. No. 13751.

### A TALE OF TWO TRIUMPHS.

#### I.

*She* : I have a song to sing, oh.

*He* : Sing me your song, oh.

*She* : 'Tis the tale of a Tyke  
And a motor-bike,  
That was blissfully bowling  
along, oh.

'Tis the tale of a Triumph's purr  
and puff,

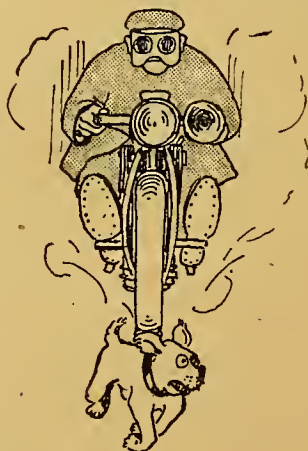
'Tis the lay of a lap-dog's larboard  
luff

In a scurry to 'scape with scathe-  
less scruff

From a puffer propelled by petrol.

Heighdy, heighdy! lacka-  
daisy! misery me!

Pity the pup with a larboard luff  
Polished off by a puffer of petrol!



#### III.

*She* : I have a song to sing, oh.

*He* : Sing me your song, oh.

*She* : A tale I tell  
Of the fate that befell  
The rascal who wrought this  
wrong, oh.

'Tis a song of the reading of marriage  
banns—

(The mongrel-murdering motor  
man's

And the girl's who'd grieved for the  
ghost that fled

From the colloped corpse of her  
doggie dead,

To the tune of a Triumph's purr  
and puff,

In spite of his luckless larboard luff  
And his scuttering scurry to save  
his scruff

From the puffer propelled by petrol.)

*He* : Heighdy, heighdy! lackadaisy!!  
misery me!!!

I'm in place of the pup with the  
luckless luff  
Polished off by my puffer of petrol!!!!

#### II.

*He* : I have a song to sing, oh.

*She* : Sing me your song, oh.

*He* : 'Tis no song for a cyn-  
ical soul; therein,  
A thousand threnodies  
throng, oh.

It takes for topic the teardrops shed  
By a maid dismayed at her doggie  
dead,

To the tune of a Triumph's purr  
and puff,

In spite of his luckless larboard luff  
And his scurry to 'scape with scathe-  
less scruff

From that puffer propelled by petrol.  
Heighdy, heighdy! lackadaisy!  
misery me!

She pined for the pup with luckless  
luff,  
Done to death by that puffer of petrol.







The following article is purely imaginary, being contributed by a motor cyclist who has never seen a Zeppelin, never made an aeroplane ascent, and has no connection with, or knowledge of, the Flying Services.—Ed.

**Z**EPPE crossing, are they? That means a cold job for me, anyway. Thank heaven for a decent 'bus. No fog either. Fog's the devil on this game. Alister got on top of one of them last raid, and nearly loosed off everything on her, fancying he was over the water; then a rift opened in the mist beneath, and he said it was a toss-up whether she'd have come down on a cathedral or a munition factory. Then he lost her in the fog; then he lost himself, and had about a pint of petrol left when he spotted the aerodrome signal 6,000 feet below. Talk about sport! Dog's life, I call it. Well, here goes for a messy death or the D.S.O. "Contact?"

6,000 feet, eh? What's the time? Another ten minutes if the reports were anywhere near right. Better wait at 10,000 feet, I suppose, and get a dive at her. Wonder if she'll be the new type with a gun on top. I'd rather ram her than miss her. Guess she'd buckle if I punch her amidships with a 4,000 feet run at 120 m.p.h. She's about due now. Must get my nose round—facing seawards. Nothing doing yet. Better make another spiral. *Gosh!* That was close. Who was it? Alister, I suppose. Wish he'd keep over his own side; this is my beat. Hello! Searchlights at last. What's the good of my climbing for a dive if those silly fools will blaze their beastly beams right in my eyes, and blind me for ten minutes. See anything, Hugh? Fool I am—who could hear the last trump with my engine running like the peach she is?

Wish I could paint. Some Johnny will get his R.A. for one of those fleecy clouds with searchlights playing on it from the bottom side. Happy thought—go and hide in that cloud; it's just about the right level, and the Zepp won't see me so easily if the cloud's thick enough to blanket our searchlights. Whoosh! It's some cold. Cloud's too beastly thick. Can't see a thing. Don't know whether I'm right side up or sideways. What's Hugh slugging me for? Can he

see her? Finds this cloud a bit damp, I suppose. Let's get out. Searchlights still wandering. Silly fools think they're whitewashing the sky, instead of looking for Zepps. What's that? Zooks, they've found her. Seven thousand, I should say, perhaps eight; and say three miles. All the beams on her now. She can't possibly see me. What's my best game? Keep up, anyhow. Right up, I should think. What's she over? There's the — mark. Whew, she's bang over X—, and doesn't know it; she ain't dropping anything. Steering due west too. Open land out there. Shall I cut her line and dive at her? It's a chance before she sights me—one of those beastly beams is sure to show me up soon, or she may cut out her engines, hover and listen for us. What's she doing? Sixty? Seventy? Not more anyhow. No-o-o. I don't think. How's this? Keep right up, curl round behind her. Dive down on her stern in her line, and loose the whole blessed tray of ammunition right along her back. Bound to get one home; and if she's a gun on top and wings me, why, she'll just get the beak of this old 'bus where her hair is short, and that'll be as good as a bomb any day. Keep those — beams off me, you fools down there. Pretty mess there'll be if Alister is on the same lay, and doesn't see me. He curls in from the south, I curl in from the north, and whichever of us is bottom dog takes *the other's bombs*. Well, we shall be in the beams long before that, so here goes.

I reckon my course is just about dead parallel to hers, now. Mustn't keep on it long. Suppose she's coming to meet me at sixty, and I'm meeting her at sixty, a minute will just about do it. Then I bank south, line on her, and dive. Mustn't mull it, or she'll be out of the lights. That glow on her hull means the cabin lamps are going, but I shan't see them from upstairs. If I miss her in the dive, what's next? Run alongside, and let Hugh try his gun. Poor look out that. She'll have three guns on her broadside, and bigger ones than ours. No. Let her run on till she gets into the searchlights at —, and then try another stern dive. We *won't* miss.



**Bringing Down a Zeppelin.—**

There she's nearly up level now. Say 4,000 down. Time to bank. I guess Hugh's jumpy. We'll be doing 120 in a minute, and he'll have to loose off to the tick, or he'll only singe her nose or her tail. A bit more to port, old girl. Dead on her line now. Another half-mile, and down we go. Now then. Up with everything. Keep those beams steady, curse you. Oh, dear! the gunners are starting on her. Well, it'll be rotten shooting if they hit me till I'm all but on her tail. Wonder if she's got a gun on top. Soon know, anyhow. — that beam. M'yes, a battery, I should think. No, it's only one. Coming his fire, is he? Drilling holes all round me by the zips. Well, so long as he doesn't hit a stay, he's only got about another half second in this world to practise in. STEADY, old girl!

Wish our explosives were a leetle less hefty. That shell just about capsized us. Of course, if it had hit the Zepp., it would have been a dud right enough; but as it fizzed off just under my right-hand plane, it was a never-wozzer. Now I shall have to climb and find her again. No searchlights for ten miles. She's 3,000 feet above me, and going full throttle with a tail wind. Bet Hugh's some sick. Thought our number was up, too. Get my nose up, and look for her cabin lights. What's that? Good biz. She's winged. She's stopping. No! Something up, though. An engine or two out perhaps. Where's Alister? Almost as soon he got her as I. Now, old girl, climb, climb, climb! She's off again, too. Turning, eh? Good gracious! why can't the brutes keep a course? How am I to apply tactics to a drunken Zepp. pirouetting like Adeline Genée at 6,000 feet? Has she spotted X—? Is she taking her bombs back there? No, I believe she's running. They've hit her somewhere, and she's taking no risks. Out to sea, that's her game. Oh, the cads! Loosing off every bomb they've got on the off chance of hitting a few kids and women. Nothing but farms under there, though, and pretty thin at that. She'll only save Hodge a little ploughing to-morrow. Get on a course, Fritz, my friend, and then I'll lay mine. Till then, up, up, up.

Yes, Fritz, I see. A bee-line for the North Sea, is it? You don't know I'm above you, do you? Above and behind. Straight behind, it'll be in a very few moments, my babykilling friends. Now when shall the strafing begin? Rather hard to pick up the signals at X— at this pace. May be five miles of open country, may be two. Better let her get over the water. Sure to be lights there by now. Anyway, the mist's clearing. I shall see her against the sea at the worst. Yes, we'll keep up, and dive when she crosses the coast line. Plenty of time—time to tell Hugh the game. (*Writes and passes back to observer.*) "I dive along her back when she clears the harbour. Twig?"

Here's the sea. We're lined straight on her. I'll dive in a thousand yards from now. Not too fast, either. The slower I go, the better Hugh's chance

with his pills. What about that gun, too? We've lost some bits of rigging already. If I dive fast enough, the rush means a ram, even if their gun gets home on us again. M'yes, pretty fast will pay, I think. Here goes. Hugh! Now!

BANG!

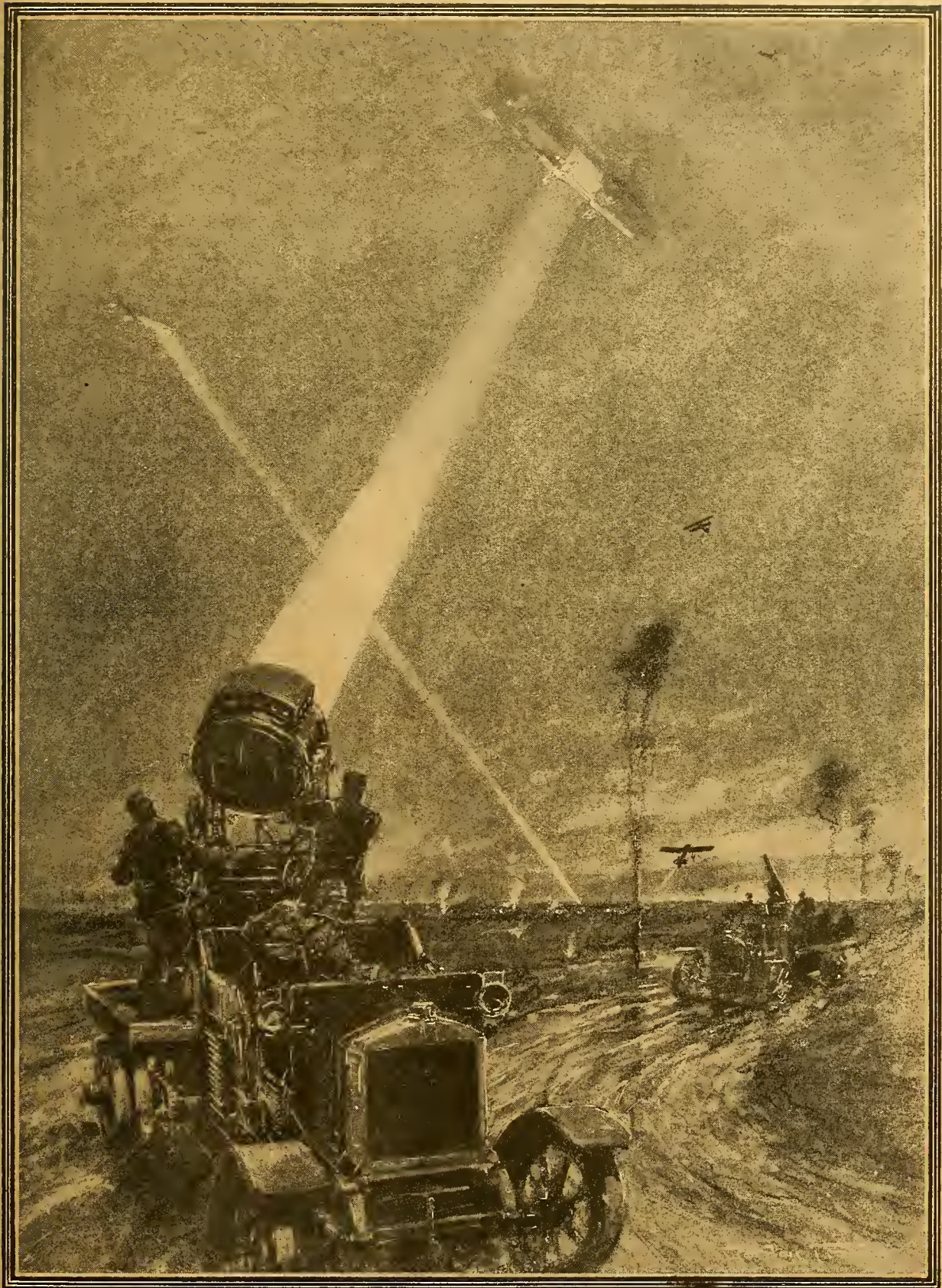
Golly! Sticking on a bucking broncho must be child's play to that I think. Shouldn't think I've an eyebrow left. Regular sheet of flame. Poor devils! It's a dog's game, and a dog's death. They wouldn't get our boys to do it. Rather a-sell if we smash up now. Never did like night landings. Wonder if I'd better climb a bit first. Don't know where we are—rather too low to be pleasant. The old 'bus feels a bit shaky, too. That gunfire must have carried away a decent few wires I fancy. Won't Alister be sick? Perhaps he's got one too; the brutes generally hunt in couples. Ah, there's the signal. What a bit of luck—no mist, either. Funny thing, never felt so jumpy coming down before. Would be rotten to pile her up to-night of all nights. Steady does it, old girl—that's it. Well, boys, some flare, wasn't it?

**A SURE SIGN OF CHRISTMAS!**

In some of the old-world villages flocks of geese were frequently to be encountered during the past month. Sad to relate, there is a distinct probability that the majority are new hanging on poultry hooks!



BRINGING DOWN A ZEPPELIN. (See pages 535 and 536.)





## THE A.B.C. INJECTOR CARBURETTER.

An Automatic Carburetter on New Principles, Vertical or Horizontal at Will.

**A**LL carburetters, automatic or hand-controlled, have two principal difficulties to overcome. What is commonly called the suction on the jet is really the difference in atmospheric pressure in the induction pipe and above the petrol in the float chamber. The force which causes petrol to spurt from the jet is the pressure just referred to (and not suction at all), but it would have no effect were not the pressure in the induction pipe and in the carburetter above the jet not reduced by the action of the piston. As the speed of the engine increases the difference in the two pressures becomes greater, and therefore a larger quantity of petrol flies from the jet. It is true that a larger amount of air enters at the same time, but the air does not increase in the same ratio as the petrol, and the gas therefore becomes too rich. This is the first difficulty. In a hand-controlled carburetter, as every motor cyclist knows, this inequality is adjusted by means of the hand lever controlling the extra air and allowing more air as the speed increases. In some carburetters, known as semi-automatic, the throttle also controls the air to some extent.

### Throttling Down.

The second difficulty is that of maintaining sufficient suction (we use the popular term for the sake of convenience) on the jet at low speeds with the throttle nearly closed. The throttle being in most cases between the jet and the engine causes a great difference in atmospheric pressure in the induction pipe and above the jet, consequently the petrol does not issue from the jet in sufficient quantity to produce a satisfactory mixture. In the hand-controlled carburetter the extra air supply would now be cut off and a sufficient head of petrol thus obtained. The designers of automatic carburetters attack these two difficulties in a variety of ways, the methods adopted in the new A.B.C. carburetter being as follow:

### A Double Choke Tube.

In the A.B.C. carburetter are two choke tubes, one situated inside the other in such manner that, as the speed of the engine increases, the outer choke tube injects an increased quantity of air into the inner, and, as the jet is situated in the latter, the pressure round the jet, which would otherwise be largely reduced and thus cause an increased flow of petrol, is, on the other hand, slightly increased. This action is positive, and is dependent entirely on the speed of the air entering the carburetter, and so automatically

keeps the mixture correct from the lowest to the highest speed. (It is to be understood that the change of speed to which we refer here is caused by a change of gradient or some other outside force, and not by a movement of the throttle.)

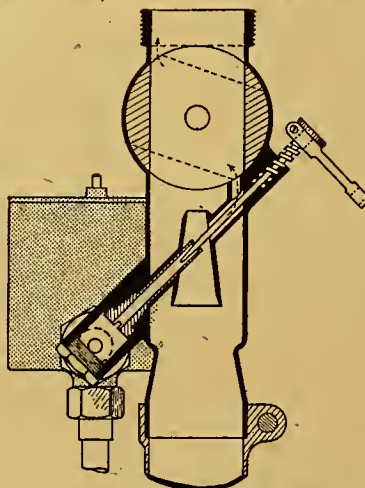
The second difficulty—that of maintaining a sufficient head of petrol with the throttle almost closed—is met by fitting a small slow-running tube from a point opposite the jet to the small opening of the throttle. The result is that at small openings the suction is concentrated almost entirely upon the jet, and, as the throttle is opened further, the special concentration upon the jet is lessened in proportion to the throttle opening, and there can be no “dead” point or change from one operation to another.

### Other Details.

The size of the jet is controlled by a taper needle which is designed to be used as an adjustment to suit varying atmospheric conditions, also a rich mixture can be obtained for starting purposes, after which the needle can be returned to its normal position. This control needle passes through the centre of the slow-running tube and greatly facilitates starting from cold by increasing the capillary attraction of the tube and enabling it to hold the petrol which is squirted into it when the carburetter is flooded. Only very slight flooding is necessary, as the petrol which is held in the tube readily forms an explosive mixture by mingling with the air contained in the induction pipe. The jet control also produces an annular jet, with its obvious advantages and freedom from choking.

As the rich mixture issuing from the small end of the inner choke tube impinges upon the air passing more slowly around it, a very thorough mixture of petrol and air is the result. The carburetter has no constantly moving parts, and obtains perfect correction without the use of a number of small jets, and is without a multiplicity of adjustments which can easily be upset. The only adjustment can be controlled from the saddle. Another advantage is that the mixing chamber is capable of being turned through an angle of 90° about the float chamber, and so it can be used as a vertical or horizontal carburetter at will; in either case the jet will be at an angle of 45°.

It will be gathered from this description that the carburetter is a most interesting one, and has great possibilities.

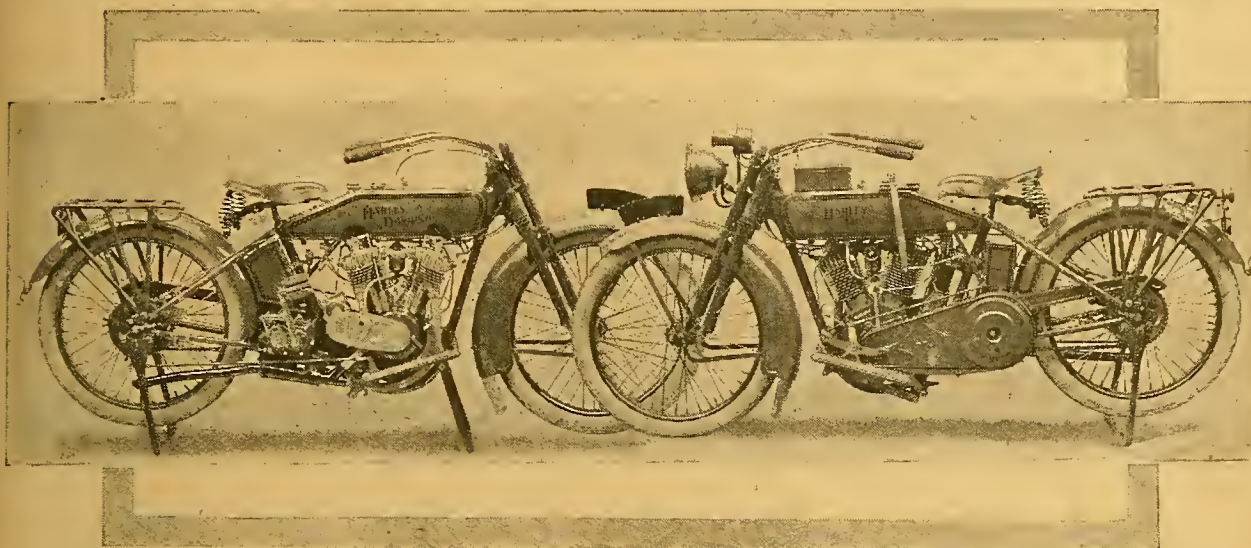


The A.B.C. automatic injector carburetter.



# THE 1917 7-9 h.p. HARLEY-DAVIDSON.

Twin-cylinder Engine (84.1 mm. × 88.9 mm., 938.83 c.c.) having New Cam Design.



(Left) A specimen of the 1917 model 7-9 h.p. Harley-Davidson. (Right) The electrified Harley-Davidson, which is equipped with the Remy electric lighting, warning, and ignition system.

THERE is not outwardly very much difference between the 1917 Harley-Davidson and the 1916 model, except the striking change of colour, the "silent grey fellow" to which we have been so long accustomed having changed his coat for a khaki hue. The colour is most effective, and is adhered to throughout the whole machine, with the exception of the timing gear cover, which is left polished aluminium, even the crank case harmonising with the rest of the machine. A further inspection reveals the fact that the detail finish has been very greatly improved.

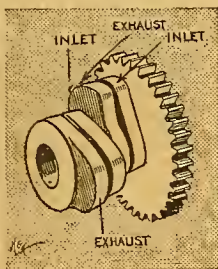
## Engine Improvements.

The chief alteration is in the power unit, and consists in the adoption of a special cam wheel, possessing four cams, each one of which is different. It will be seen that the cams are arranged in pairs, and actuate the four rockers inside the timing gear case. The reason why the cams are all different is not at first apparent to the casual observer, but a further study of the arrangement will show that the difference in contour has been arranged to make up for the idiosyncrasies of each cylinder. The matter has been carefully studied, and each

cylinder now develops an equal amount of power, and so much has the running of the engine been improved that 16 h.p. has been guaranteed. The small pinion on the engine-shaft, besides driving the cam wheel, drives also the timed crank case release valve, which is an excellent Harley-Davidson feature of long standing. It allows the crank case compression to escape on the downward stroke of the pistons, and prevents oil from being driven out from the bearings. A still further improvement has been made in the valve gear; the lower portions of the push rods operating the inlet rockers are now enclosed by casings containing springs, which cause the rollers to follow the cams at all speeds, and reduce rocker arm clatter to a minimum. The inlet valve stem now works in a longer guide so as to reduce wear, while the width of the inlet valve seating has been reduced so as to ensure longer and better seating without regrinding. There are more coils on both inlet and exhaust valve springs, in order to ensure uniform tension. The coils are wound by an improved method, which prevents distortion and gives the springs a longer life. The inlet domes are ventilated so as to provide adequate radiation, and cause the springs to retain their temper through being kept reasonably cool.

The main engine-shaft on the driving side is now provided with a bearing of

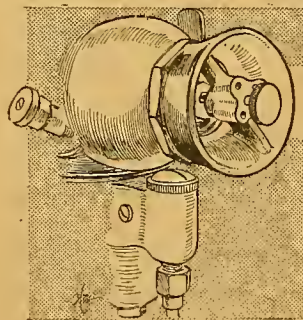
the double roller type, which replaces the ball bearing used on the 1916 model. The shaft itself forms the inner race of the bearing, thus simplifying construction and reducing the friction. An oil channel leads into the bearing direct from the crank case, and after the lubricant has run through the bearing it is deflected by a deflector ring through a second channel at the bottom, thence returning to the crank case, while the deflector acts as an additional oil guard to the felt washer, which has been a standard fitting on Harley-Davidson sprocket shafts during the past two seasons. The outside of the flywheel is now provided with a hardened steel facing ring to take side thrust, which is used in connection with the roller bearing just referred to.



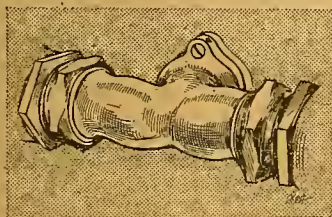
The newly-designed double cam wheel.

## Induction Pipe and Carburetter.

Some alteration has been made in the design of the inlet pipe and also in the method of attaching the carburetter. This inlet pipe is of smooth and even design, and is so shaped that the mixture



Three-point adjustment of the automatic air valve.

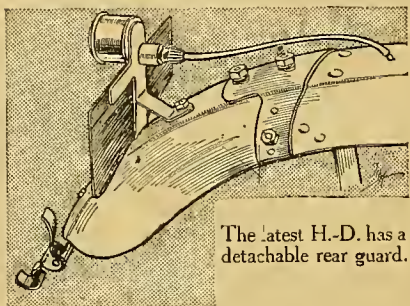


The new inlet pipe and carburetter attachment.



**The 1917 6-7 h.p. Harley-Davidson.—**

can flow with equal ease into each cylinder. The carburetter is now bolted up against a casting forming a flat face. In the carburetter itself there have been



The latest H.-D. has a detachable rear guard.

some slight alterations, the most important of these being a three-point air adjustment, which enables the driver to alter the position of the automatic air valve so as to suit different temperatures. A new needle valve actuating cam is now fitted to the carburetter, and when the latter has once been correctly adjusted it is unnecessary for the rider to make any further alteration. However, if an increase of power is desired, use may be made of the large auxiliary air shutter at the side.

A small detail which will be much appreciated by those who look after their own machines is in the fitting of the oil pump, which may now be reached by the employment of an ordinary screwdriver, whereas formerly to dismount the pump special tools were required.

**General Improvements.**

A few improvements in detail have been carried out in the Remy electric lighting, warning, and ignition system, which provides a high-tension alternating current for the ignition, a low-tension direct current for the horn and lamps, and also serves to charge the battery. It is not generally known that in the event of the battery being run down a start can be made by using the generator direct, the generator then acting as a magneto, but it is required in this case to put a little more energy into the kick-starter. As soon as the engine starts running the generator begins to charge the battery

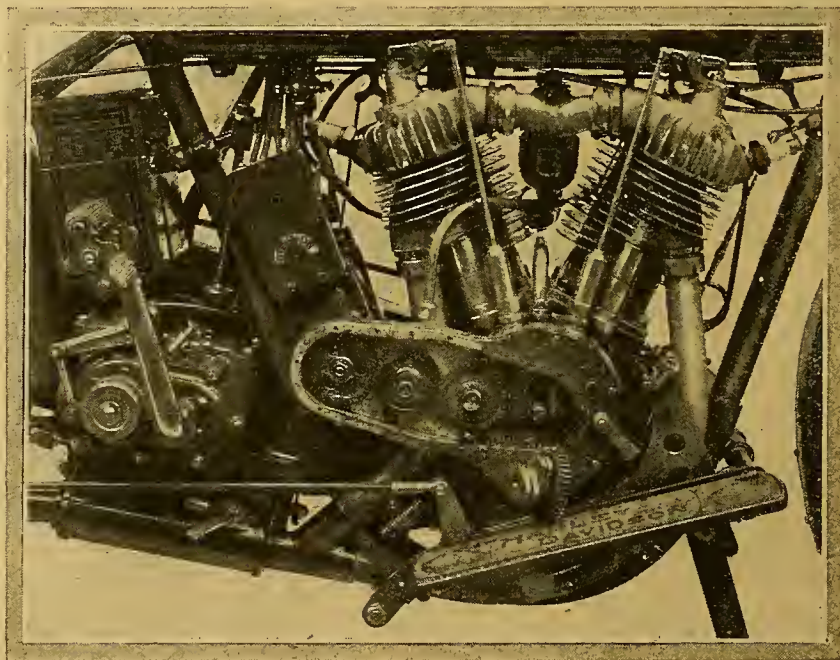
which gradually resumes its normal condition.

The main features of the machine have not undergone any great alteration. For example, the gear box is the same, but the kick starter has been improved by providing a rubber-covered pedal, which gives more surface for the foot to work upon than the step which was provided in last year's model. Strength has been added to the back stand by providing a substantial web at the ends. Last year the front chain cover was incomplete, but now it encloses the whole length of the chain.

To enable the rider to have access to as large a portion of the tyre as possible, the rear end of the back mudguard is detachable. Attached to this is the tail lamp, the wire of which passes through a brass tube underneath the mudguard, and is thus adequately protected from the elements.

Of the two brakes in the rear hub, the external band brake is controlled by hand. This has been improved in design, and is provided with powerful take-off springs, so that the brake frees itself when the pressure of the hand is released. The size of the drum upon which the brake acts is 7½ in. in diameter with a ½ in. face. The foot brake is of the internal expanding pattern.

Attention has been given to the relative positions of the handle-bars, saddle, and footboards, with the result that the riding position has been considerably improved, and the comfort of the 1917 Harley-Davidson has been consequently increased. Altogether, the latest model deserves the highest praise. The reason given for the change in colour is that it is chosen by the American military authorities, who have taken delivery of a large number of these machines for military work during the year.



The latest Harley-Davidson power unit with cover removed, showing new cams and timing gear. The new pedal starter will be observed.

**MOTOR CYCLES IN THE WAR ZONE.**

AS stated in last week's issue, Mr. Richard Moore, director of Messrs. Phelon and Moore, Ltd., recently visited the various R.F.C. stations in France where repairs, etc., are being carried out. Accompanied by Capt. Jarrott, M.T.R.F.C., Mr. Moore landed at Boulogne, and first visited the 1st A.D., which he found to be well equipped and ably managed.

Moving to the second A.D., Mr. Moore found himself well within earshot of the guns, which, at that distance, was a continuous boom, the only comment at the station being that "some poor blighters were getting it"! Mr. Moore was able to give those in control of the repairs department several useful tips, which were much appreciated, and he and Capt.

Jarrott then moved to the G.H.Q., where their report was made.

**A City amidst the Firing Line.**

Mr. Moore expressed a desire to visit a squadron operating under fire, and subsequently he was taken by car to a city in the midst of the firing line. Here he describes the road conditions as beyond all belief. It was impossible to sit naturally on the seats of the luxurious car provided, and throughout the journey they were compelled to support themselves by clutching the seat with both arms rigid. They were driven at walking pace, but even then their heads occasionally bumped the canopy. The D.R.'s, however, seemed perfectly at home, riding at surprising speeds over the skiddy and

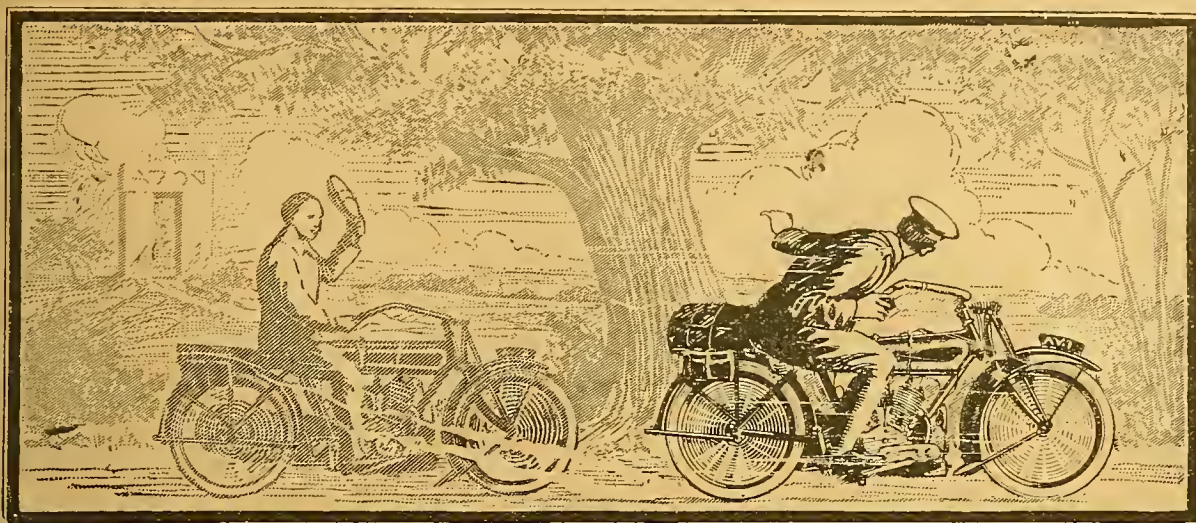
shattered roads. The batches of German prisoners, working on the roads, also seemed quite contented.

At all quarters Mr. Moore heard nothing but praise for the P. and M. machines.

Only one unpleasant experience befell them, when amidst rain and darkness, Mr. Moore and his colleague had some difficulty in locating the ancient chateau where they were to put up for the night; but, finding it eventually, they were greeted by a most effusive and willing host, whose quaint manners afforded them much amusement.

Mr. Moore anticipates a periodical visit to France—an arrangement which would doubtless prove of very great assistance to the willing and able officers in charge of the P. and M. motor cycles.





¶ The tourist or racer of yesterday is the despatch rider of to-day. He is naturally a connoisseur of the things that make motor cycling successful — and he welcomes such trusty equipment as Avon Tyres with lively recollection of “services rendered” in the good old days before the War. Sometimes he is good enough to write us — as, for example, the following from an A.S.C. driver at Zagazig, Egypt :—

¶ “Before proceeding to Ismailia I was stationed at Alexandria, and for two months I rode a ‘Douglas’ motor cycle fitted with Avon tyres. The roads were of the roughest — cobbles, sand, etc. — but, despite the hardest wear and tear, I experienced no trouble whatever with the tyres.

¶ “My work was delivering despatches, and the machine was very seldom at rest. No matter what part of Egypt I have been to, I have always found the greatest reliance is placed on Avon tyres.”

# AVON

## TYRES

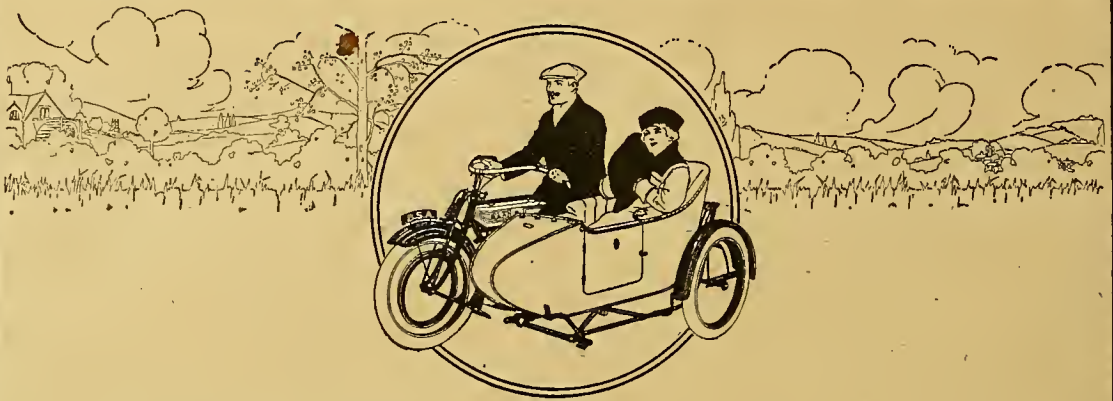
Full illustrated Catalogue free from —

**Avon India Rubber Co., Ltd., 19, Newman Street, Oxford Street, London, W.**

DEPOTS—Manchester : 38, King Street West. Birmingham : Broad Street Chambers. Glasgow : 55, Queen Street. Bristol : 119, Victoria Street.  
Newcastle : 5, Gallowgate. Nottingham : Mansfield Road. Aberdeen : 126, Union Street. Swansea : Fisher Street  
Dublin : L. J. Sullivan, “Croc Alvin” Dalkey.

*In answering this advertisement it is desirable to mention “The Motor Cycle.”*





War conditions have emphasised the soundness of B.S.A design & the efficiency of the B.S.A. Motor Bicycle fitted with B.S.A. Counter shaft Three Speed Gear.

Latest Catalogue free from The Birmingham Small Arms Company Limited, Small Heath, Birmingham



For Solo or Sidecar



## MILITARY NOTES.

## PENALTY FOR BEING TALL!

A CADET writing to us last week bewails the fact that he stands no chance of being accepted for the Tanks, as he has been informed that only small men are wanted, and he himself stands over six feet.

## HON. SEC. OF THE M.C.C. CONVALESCENT.

SERGEANT W. E. SOUTHCOMB MAY, late hon. secretary of the Motor Cycling Club, when we last heard from him was with the Motor Machine Gun Section in German East Africa. He now writes from Alexandra Hospital, Maitland, Cape Town, where he is convalescent:

"The above address is the result of getting in the way of a bullet on September 12th. but I am hoping to get back to my regiment very shortly. I had a varied journey back from the Front to Korogove, the stationary hospital—motor lorry first, then seven miles on a stretcher, and the rest of the way by Ford ambulances.

"The roads are appalling. We got hung up at Turiani for eight days owing to rain, and as the hospital there was moving, they had sent most of their stores on, and we were on half rations. By the time we eventually got to Korogove the wounds in my leg were healed, but as I had been hit by a ricochet, and I was



Sgt. Southcomb May, M.M.G.S., late hon. sec. of the M.C.C.

sure there were some pieces still in, they X-rayed me and operated forthwith, making four cuts: so I had to start the healing process all over again. We came down here by the hospital ship *Ebani* from Tanga after a fifty-mile trip in the hospital train. The railroad was about on a par with the rest of the roads. I have never before been so thrown about in a train.

"I had three days' scrapping up in the mountains, and got through nearly 3,000 rounds with my Vickers gun. That was on September 4th. We had marched over 200 miles, and had quite despaired of ever seeing a shot fired. My company went into action again on the 12th, after which I left, leaving only one of the six who went out from Bisley in the firing line—fever, etc., having caused the temporary absence of the others.

"I have seen three issues of *The Motor Cycle* since I have been out; they came from the Armoured Car Section, and one of them I had seen at home—in fact, it was the one with my portrait in."

## THE LATE SEC.-LT. O. C. GODFREY.

IT has been previously announced in these pages that Sec.-Lt. O. C. Godfrey, R.F.C., was reported missing. At the time it was hoped that he had been forced down in the enemy lines and taken prisoner, but later practically all hope was given up of his being alive, and on the 13th inst. he was reported by the War Office as killed. We have known Godfrey for a number of years, and are keenly aware that his loss will be a serious one for the motor cycle community. He was an excellent sportsman in every sense of the word, and a first-class rider of no mean skill.

Early in the war he offered his services to his country, and applied himself most diligently to his work with the Flying Corps. He eventually passed the tests and duly became a second-lieutenant and a pilot in the R.F.C. Not very long after, however, he suffered an accident and broke his leg, and while on leave recovering from this he officiated at a motor cycle meeting, acting as starter, on the occasion of the H.Q.C.D. hill-climb at Pebble Hill, Dorking, on July 29th, 1916.

Godfrey's name first appeared in the issue of *The Motor Cycle* of February 19th, 1906, when he rode a 4 h.p. twin-cylinder Werner, in the hill-climb organised by the Lewisham Automobile Club, winning his class. He rode consistently throughout the year, and became quite famous on his bright yellow Werner. During the same year he rode in the first Land's End to John-o'-Groat's run, but after performing well for the greater part of the journey had to retire with a broken connecting rod at Pitlochry. When the Werner disappeared from the public gaze, he rode Rex machines, and as usual performed well on them. Riding a 3½ h.p. Rex, he set up one of the first 500 c.c.



The late Sec.-Lt. Oliver C. Godfrey, R.F.C., killed whilst flying over the enemy lines.

hour records at Brooklands, which remained unbroken for several years. Later he became a devotee of the Indian, a machine to which he adhered until the outbreak of war.

It is interesting to note that at the end of our report of the Lewisham A.C. hill-climb just referred to the following paragraph appeared: "H. Mogridge entered a 2 h.p. chain-driven Indian, a much boomed American motor cycle.

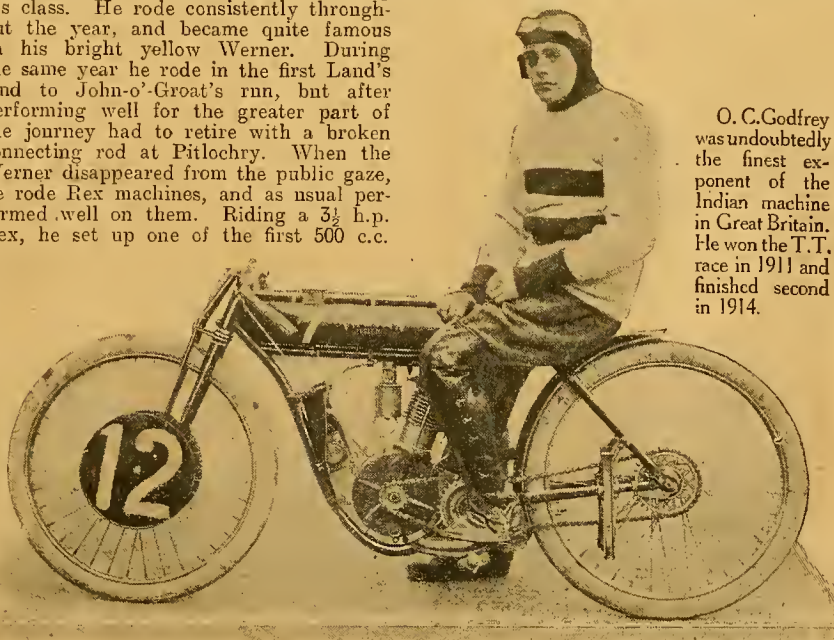
Godfrey founded the firm of Godfreys, Ltd., that prosperous business in Great Portland Street, which acts as the retail London agents for the Hendee Manufacturing Co., and does an extensive business in second-hand machines.

To revert to Godfrey's prowess, it may be mentioned, among his numerous performances on road and track, that in 1911 he won, after a magnificent race, the Senior Tourist Trophy on a twin Indian, and on the occasion of the last Senior T.T. race in 1914 he tied for second place with H. R. Davies, who was riding a Sunbeam.

Godfrey, who was of a bright and genial disposition, will be sadly missed when competitions are run off once more. We desire to take this opportunity of expressing our sincere sympathy with his widow and parents.

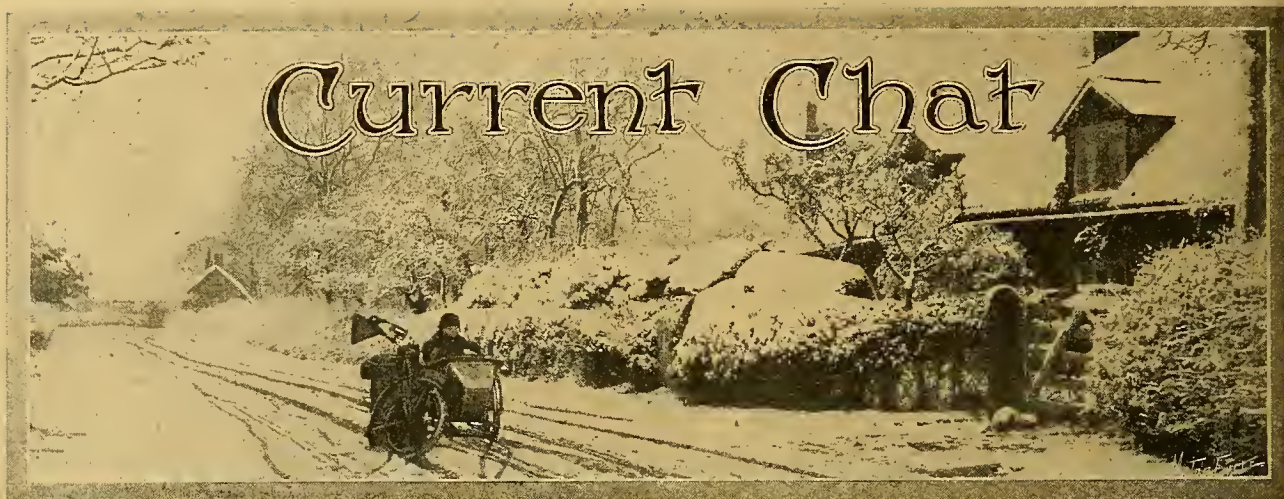
## MOTOR CYCLIST TO LEARN FLYING.

NO doubt many readers will be interested to hear that A. Milner, the well-known Levis competition rider, has now left the Royal Engineers, in which he has been sergeant in charge of a workshop at a D.R. training centre for a very long period. He has applied for a commission as pilot in the R.F.C., and is now training in an O.T.C. We expect the D.R.'s at the training centre will miss his amusing and thrilling trick riding, in which he was a real expert.



O. C. Godfrey was undoubtedly the finest exponent of the Indian machine in Great Britain. He won the T.T. race in 1911 and finished second in 1914.





# Current Chat

## TIMES TO LIGHT LAMPS. GREENWICH TIME.

Dec. 21st	...	...	4.21 p.m.
" 23rd	...	...	4.22 "
" 25th	...	...	4.23 "
" 27th	...	...	4.25 "

### Motor Cycles taken by Train.

For the period of one week dating from last Monday, Railway Companies will not carry by passenger trains motor cycles unaccompanied by passengers.

### Motor Cyclist Volunteers Wanted.

The Warwickshire Volunteer Regiment are appealing to motor cyclists to join the Motor Section, which is in urgent need of recruits. Every man who joins the Volunteers releases one man for service abroad. Applications should be addressed to Adjutant, Warwickshire Volunteer Regiment, Motor Section, Orderly Office, 142a, Great Charles Street, Birmingham.

### Christmas Number of "The Light Car."

In the Christmas number of *The Light Car* there are several features of special interest, among them being an entertaining article entitled "Legends of the Road," a racy narrative dealing with some traditional spectres of the highway. "Unlucky Houses" deals with a subject especially interesting at this time of the year. "A Motorist's Christmas Dinner" and "Consolation from Retrospection" are among other entertaining articles in the issue.

### An Admiral's Widow Honoured.

Lady Arbuthnot, widow of the late Rear-Admiral Sir Robert Keith Arbuthnot, received from H.M. The King, at Buckingham Palace on the 13th inst., the insignia of a Knight Commander of the Bath, awarded to her late husband, who went down in H.M.S. *Defence* in the Battle of Jutland.

Lady Arbuthnot has recently taken a very keen interest in the Arbuthnot Trophy, and made very valuable suggestions to Lady Scott who is executing it. The statuette will be completed very shortly.

### A Rude Awakening.

At Shoreditch Tribunal.  
Capt. Fisher: "Who called you up?"  
Applicant: "I have an alarm clock."  
The Mayor: "It will be a bugle in future."

### Colmore Depot's Greeting.

We have received an amusing greeting card from the Colmore Depot, Birmingham, representing in a humorous manner the advance of a Tank across the German lines. The Colmore Depot will be pleased to send one to any person who forwards his address. Accompanying the card was a Roll of Honour giving the names of fifty-five men of the staff who had responded to the country's call.

### See "Exchange" Column.

It is interesting to know that if any of our readers have "anything motorish" lying about their garages that is in the way generally they may obtain two drum tambourines and a new accordion in exchange for these goods. A solid oak music stand, pianola, roll top desk, typewriter, and 7in. lathe are among the items offered in exchange for motor cycles this week.

### A Double Deck Sidecar.

A manufacturer in Eastern U.S. has constructed a double deck type of sidecar stretcher, which it is proposed to use as a high speed motor cycle ambulance. The track of the machine is adjustable to suit different road conditions, and straps over the chest and feet are used to hold the wounded men in position while being transported.

### The Triumph Co.'s Example.

At the annual meeting of the Triumph Co. last week Mr. S. Bettmann, seconding the chairman's (Lord Leigh's) proposition, said, in reviewing the situation of the company, that 560 employees had enlisted, and that 60 or 70 of them had been wounded. Those who were able to work would be taken back by the Triumph Co., and if the directors had to sacrifice their salaries and their fees those men would not be allowed to be deficient in anything that was necessary to uphold them and to enable them to

## SPECIAL FEATURES

SEASONABLE ARTICLES AND  
ILLUSTRATIONS.

NEW DESIGNS (Illustrated).

live in relative comfort. Out of the number he mentioned about 25 had been killed. He was particularly proud that they had a Pension Fund, out of which he hoped, in addition to the Government grant, they would be able to support the widows and children of those brave men.

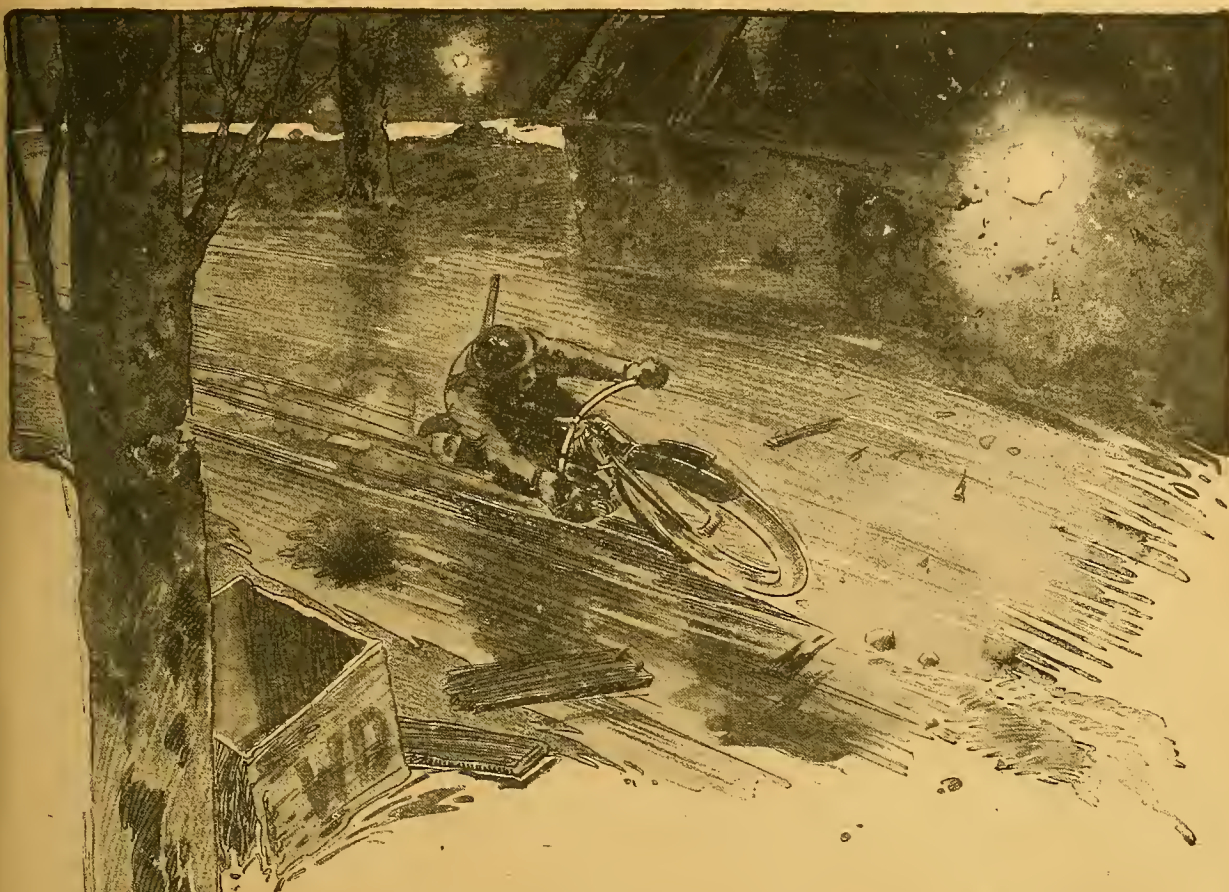
### Dangers of Ruddy Ice.

During a recent week-end a member of the staff, a well-known rider, had a narrow escape from a disaster which might have ended disastrously. After almost accomplishing a trip of about 100 miles in the night, and thinking the terrible journey would soon be over, he struck a patch of ruddy ice which caused the machine to skid. He rolled over several times and eventually landed on a heap of granite with the machine on the top of him. After he recovered sufficiently to grasp the situation he found pure petrol running freely over his coat and face, and the lamp with the door open still burning within an inch or two of his saturated garments. What might have happened did not happen; there is no dramatic sequel, only a moral.

### Spring Frame Criticism—Ten Years Ago.

"Ixon" writing ten years ago—in the December 5th, 1906, issue—criticised the spring frames of motor cycles exhibited at the Stanley Show. "There is a perfect rage for spring frames. Several firms exhibited sound devices of this kind, though I saw one or two machines with springs of so great a play, that I am certain the tail of the front guard (and perhaps the bottom of the crank case as well) is bound to touch stones occasionally, if not the road surface as well. I was a little surprised at this tendency—I should fancy the vertical bouncing of the entire weight on the road wheels must tend to induce slip, and on paper I prefer a device like the Bat, which insulates the rider, but leaves the weight of the machine steady on the rear wheels."





It's a muddy road and a bloody road,  
And a road that's swept by fire,  
But we've got to get through with the Orders 'bus  
Or we'll raise the C.O.'s ire.

So you'll hold at the bend, I know, old girl,  
You'll stick it and turn not a hair,  
Just one more dash! Through one more splash!  
And we're there, old girl, we're there!



The Dunlop rubber-studded non-skid motor-cycle cover.



# SUNBEAM SUPERIORITY

23rd October, 1916.

The Palace Cigar Box,  
Reading.

Dear Sirs,

Including my two Sunbeams ( $3\frac{1}{2}$  h.p.) I have had 17 motors in 5 years for my own private use; the 1915 model I bought of Messrs. Baker and Son, Reading, in May last year, and, after travelling 25,000 miles in **all** weathers regularly, it has not yet cost me a penny for repairs, and I have not had a single trouble on the road; in fact, apart from puncture trouble, I could have ridden the whole distance without tools, and now the machine looks better than any other make I have had after doing 10,000 miles.

My 1916  $3\frac{1}{2}$  h.p. I purchased through an advert. in "The Motor Cycle" a fortnight ago; the machine has only done 1,500 miles, and is unscratched; the price I gave for it was £65; two friends of mine here want it, their offers are £70 and 70 gns., but it is not for sale; they are keen on it, knowing all about my 1915 model.

Yours faithfully,

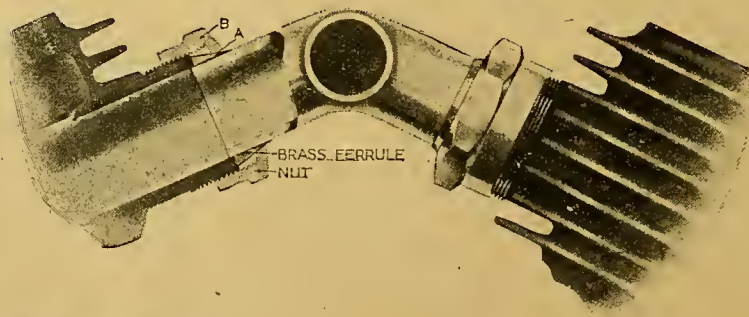
W. PRIDMORE HARDY.

Prospective buyers are advised to apply to have their names put on our Waiting List.

Catalogue and full particulars sent on application to

**JOHN MARSTON, LIMITED, 11, Sunbeamland, WOLVERHAMPTON.**

## FEATURES OF THE **JAP** ENGINES



### No. 5.—THE INLET PIPE.

It will be remembered that the usual practice in fitting an inlet pipe to a twin engine is a very tedious and awkward one. The J.A.P. pipe has been carefully designed to overcome all these troubles, and, at the same time, give a perfectly gas-tight joint.

The pipe is a very light casting, all three "limbs" are turned, inside and out. The brass ferrule "A" is a sliding fit on the pipe, and the top portion of the nut "B" is bored taper to exactly correspond with the ferrule. In fitting, the nut is first slipped on to the pipe, then the cone; hold pipe in place and put cones tight up against inlet ports and screw up nut. The result is that the thin edge of the cone grips the pipe tightly, that air is entirely excluded, and a perfect fit is made. It also allows for any expansion in the cylinders. A further advantage is that the pipe is adjustable; should the pipe be transferred to another engine, or for any reason another cylinder fitted, the same inlet pipe will serve.

B10

When examining the various features of the J.A.P. Engine, their careful design and sturdy nature give the user confidence of reliability. Every part is a sound engineering job, all flimsy work being studiously avoided, therefore

Specify always J.A.P.

**J. A. PRESTWICH & CO.,**

Northumberland Park, Tottenham, London, N.

Grams: "Prestwich, Tottilane, London,"  
Phone: 1613 Tottenham.

*In answering these advertisements it is desirable to mention "The Motor Cycle."*



**Easy Starting from Cold.**

If any reader has trouble in starting his engine these cold mornings, half a kettleful of boiling water poured over the inlet pipe will work wonders. Water is cheaper than petrol these days.

**Silencers or Mufflers.**

When the American makers build factories in England shall we have to call a silencer a "muffler"?

In many instances the latter term will be more correct.

**Alldays and Onions' Report.**

The directors of the above company, although unable to present a balance-sheet, are satisfied that the profits made justify the payment of a further interim dividend on the old ordinary shares of 7½% for the six months ended July 31st, 1916, and a bonus of 2½%, making, with the interim dividend already paid, 12½% for the year.

**Petrol Licences in Ireland.**

Up to the present time the usual Petrol Control Committee licences have not been necessary for the purchase of petrol in Ireland. A recent Army Council Order under the Defence of the Realm Regulations now prohibits the sale of petrol there, except to the holders of special licences issued and signed by the competent military authority, authorising the purchase of a specified quantity of spirit.

**Sidecarists Wanted in France.**

The British Ambulance Committee to the Service de Santé Militaire requires immediately the services of a few expert sidecarists who can speak French. Men of military age are eligible provided they have not been passed for general service. Paid men are provided with uniform, keep, and £2 per week; volunteers are kept and only have to provide their uniforms. Applicants should write to the British Ambulance Committee, 23a, Bruton Street, London, W.

**Valve Lifter on the Zeppels.**

One would hardly credit the Zeppelin engines with a valve lifter; nevertheless, they have one. It lifts all the valves for starting, and the exhaust passages are then closed. Gas is subsequently pumped into the engine, and the valves are allowed to fall. The next operation is to produce sparks in the cylinders, which are already filled with gas; this is done by a geared up magneto revolved by hand. Result, "phut, phut," many "phuts."

**Another Old Motor Cycle Feature.**

Cast threads and steel cylinders, another feature of the Maybach engine, were quite common on Zedel racing motor cycle engines some years ago. Anzani, Demeester, and other Frenchmen rode machines fitted with such cylinders, and they had overhead valves, too.

The only difference between the Zepp engine cylinders and the Zedel was that the heads of the latter were hard cast iron and not malleable.

We suppose the experts have not been deceived with regard to the Maybach heads. Did they commence life as hard iron and become annealed in the air and on the ground?

Perhaps not. It takes a fortnight in an oven to make good malleable.

**American Motor Cycle Journals.**

There appears to be nothing in the U.S.A. in the journalistic line which occupies the same position as *The Motor Cycle* does in England. The two principal motor cycle papers seem to ignore the private owner, and to devote their energy to fostering the trade, and the trade only, while, curiously enough, they are both introducing pedal cycles into their pages.

**Fickle December Weather.**

At this time of year many varying weather conditions are likely to be encountered on a cross-country ride. During a recent hundred mile early morning ride we encountered the following conditions: Start in mild, clear weather, then came mist, mist and frost, fog and snow-covered roads, mild and rain, cold mist, then ice-covered roads (very treacherous), sleet, snow-covered roads and thick mist again, finishing in dense yellow fog with mild atmosphere; two hours later a heavy snowstorm took place.

**Special Features of this Issue.**

It is our usual custom in the Christmas issue of *The Motor Cycle* to include features of a seasonable nature, but as we are in the midst of a world conflict, and most of us are either directly concerned or have associates who are engaged in warfare, we have included articles that have "war" atmosphere, and departed from our usual type of Christmas motor stories.

**Petrol Figures.**

We imported into this country last year (1915) 150,000,000 gallons of petrol. A vast quantity indeed, but relatively small when compared with the consumption in the United States. Nearly 1,000,000,000 gallons are used annually, yet the population of the U.S.A. is only double that of Great Britain. If the industrial and all other petrol consuming devices are reckoned, then 2,400,000,000 gallons will be about the amount of petrol consumed in the United States in twelve months—truly an enormous quantity, but likely to be still further increased during next year.



FROM THE CAUCASUS TO THE DOBRUDJA.

The difficulties of transit on the narrow rocky mountainous roads of the Caucasus are revealed in the photograph, which shows part of the British armoured car section, consisting of Lanchester cars of the Royal Naval Air Service, halting whilst a Red Cross ambulance car passes by. A despatch rider's mount (a Douglas) is seen in the foreground.



# Some M TOURIST TROPHY I

Being the fo  
reminiscen  
mence

**I**T is curious how the Isle of Man always crops up sooner or later when a few D.R.'s foregather. The sporting little place certainly gets a hold on one's affections; even though we all vote the T.T. as dull as ditch-water when we board the home-bound steamer, and we all know perfectly well that as soon as the war is over we shall all be there again, simmering with the same frantic excitement. Indeed, we often find ourselves smiling at the want of proportion which turns our sympathies more to the distress the war has brought on the kindly Manx folk than to the infinitely more pitiable fate of Belgium or Armenia. I wonder if the Manx girls are to blame for the spell their home has for so many motor cyclists. I always think it is a toss up whether an Irish or a Manx belle is the prettier; certainly, there is nobody like her anywhere else. That dark red hair, freckles—more bewitching than a sedan chair beauty's patches have ev-

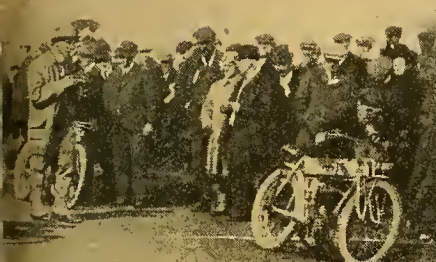
1. The rider, A. W. Jones (2½ h.p. Scott)
2. Stan Fowler (5 h.p. Scott)
3. The rider, A. W. Jones (2½ h.p. Scott)
4. A. W. Jones (2½ h.p. Scott)
5. D. R. O'Donovan (5 h.p. Scott)
6. Approaching Hilberry Corner in the distance
7. Tim Wood (3½ h.p. Scott) just starting



# x Memories.

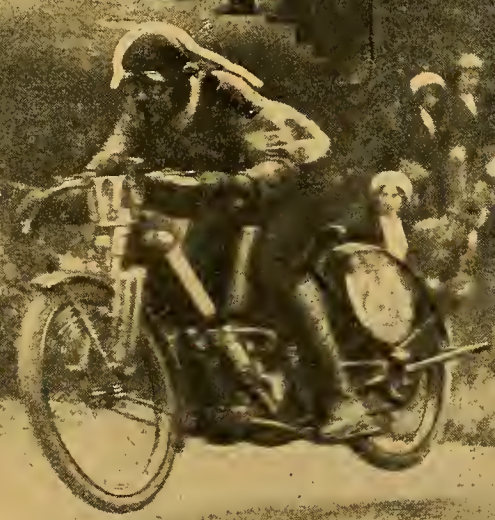
## SCENCES OF "VETERAN."

talment of a series of  
rials and races com-  
ne Motor Cycle"  
13th last.



er  
been  
—eyes,  
which you  
must look into  
for ever to be sure  
whether they' are  
really blue or really grey,  
and those funny little  
smudgy patches under the eyes  
which only make the colouring  
more wonderful. The steamship com-  
pany have one splendid boat, the *Ben  
ma Chree*, which usually leaves Liverpool at  
10 a.m., and ensures you a fast and tolerably  
smooth passage. Having a "queasy"  
stomach, I regularly brave the terrors of  
the Liverpool hotels in order to use this  
boat; one year it was missing, and  
I got their most turbulent little  
tug, and was seven hours at  
sea. But I was better  
off than another un-  
fortunate, who is  
also a bad sail-  
or. Some  
oce an-  
going  
pal

Willaston  
1913 Senior race.  
G. Braid (Indian).  
1908 race. H. Rem  
orton), on the left, and  
l: (Matchless).  
3½ h.p. A.B.C. encounters belt  
me 1913 race.  
l) at Ballacrairie in the 1914 Junior.  
b Gooseneck in the 1913 Junior.  
Senior race. The rider is H. G. Dixon (James).  
llig Bridge in the 1913 race, which he won.





**Some Manx Memories.—**

had given him a dose of a patent drug which paralyses your stomach and prevents it from flapping when the stormy winds do blow at sea. But his Good Samaritan never told him that the stomach should be empty before you paralyse it. So he made an unusually hearty meal, intended to last the voyage, and then he duly paralysed his interior. I spare you all the details of the menu, but we were not out of the Mersey before he confessed that a five-course breakfast, when paralysed within you, feels rotten. Halfway over he decided he would rather be very seasick indeed than put up with that paralysed breakfast any longer. So he was.

Some readers will recall the most lurid voyage of many which we have shared. The sea at Douglas is usually rough, but on this occasion spume flying over the Promenade warned us what things would be like off the Head. After its custom of speeding the parting guest, the I.O.M.S.P. Co. had put on its oldest and narrowest boat—a champion “roller.” There were something like 400 motor cycles on board, and fifty cars, whilst the passengers were packed as tightly as oysters in a barrel. Many people capitulated to Neptune before we cleared the breakwater, and the agonised faces of those riders on the lower deck who saw green faces vertically overhanging them from the upper deck will ever live in my memory. I fancy that more than once on this voyage it was touch and go whether the old boat would ever recover from one or two of her worst rolls, as the tons of metal on her upper deck made her more top-heavy than ever.

**The Onlooker's Point of View.**

The racing? Well, I hope I am not *blasé*, but as a spectacle it is somewhat overrated. The eye soon gets habituated to high speeds, and after two or three laps there does not seem to be anything very wonderful about the pace. If you have the patience to keep in touch with the positions of the riders, you begin to form opinions about the results, and anyhow you

are gradually learning whether any new engines or riders show extraordinary capabilities. This is, perhaps, the main interest of the opening rounds, unless you chance to be a frenzied partisan and would bet your boots on one given make. The closing laps are always breathless. You know, and the riders know, that the issue lies between a select knot of riders, and perhaps only seconds separate them. One of them is sure to be your favourite, and probably some of the leaders are on foreign-made machines.

But, taking the whole race through, the chief interest lies in watching the magnificent corner work of the few brilliant riders who are out for blood; some of our cracks, as you know, ride for safety, and depend on the other fellows' mistakes. Let me sit somewhere within earshot of a telephone, and close to a bad corner, where I can see the Scotts lying over till their radiators almost tear the ground, and I ask for nothing better.

**Other Attractions.**

There are other attractions, and it is the sum total of a Manx week which tempts us all over the water. There is the incomparably ridiculous golf on Douglas Head. Scores of duffers intermingled with scratch men, nearly all hopelessly out of temper with each other, or with the jeering townies ensconced in the gorge out of bounds; and the chance of a sea fog descending and swamping you all in a mist from which hoarse cries of “Fore” and whizzing balls emerge in all directions. The Palace, where you may see 3,000 couples on the floor at once, and perchance be lucky enough to see a girl in evening dress footing it with a partner in a straw hat, tail coat, and gaiters. The music halls, where you may get London programmes, with topical petrol verses and patter thrown in. The grease—than which none in the world can be more skiddy! The fog on Snaefell at early morning practice, out of which low crouching figures hurtle at 70 m.p.h. There's a lot of human nature in a Manx week. May we all keep another one together, when the Kaiser has gone to his own place.

## THE ART OF ADVERTISING.

### YEAR OF ORIGIN AND PRICE THE MOST NECESSARY DETAILS.

**W**HEN a prospective motor cyclist has decided to purchase a motor cycle second-hand, he will most likely consult the second-hand advertisement columns of a motor cycle journal, having in all probability previously decided on the type of machine required, and in most cases also on the particular year of manufacture, most suited to his banking account. Now, curiously enough, this most essential particular is often omitted by the advertiser, who seems to think that the prospective buyer will be misled into believing that the machine in question is of more recent date. The price, too, is often omitted, with the result that the advertisement is passed over with only a casual glance. The following details are really essential in order to sell to the best advantage:

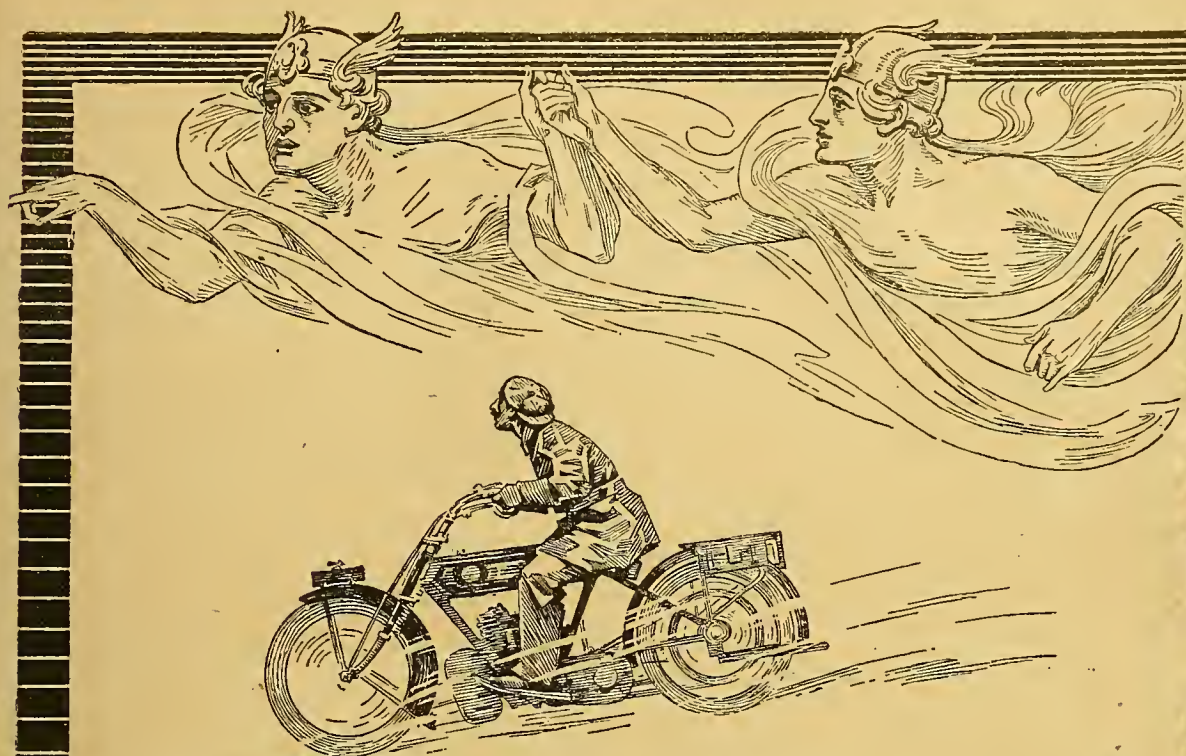
First and foremost, the date of manufacture, then horse-power, type (whether T.T. or touring), the number of gears, and whether a kick-starter is fitted. Another useful piece of information is the approximate number of miles covered, while the price

expected is most necessary, as many purchasers will not take the trouble to write or go to see a machine when they have no idea whether the price that will be asked will come within their means. Any accessories which are included should be mentioned, and, if the machine is a sidecar outfit, the make and type of the sidecar are also necessary. The writer would suggest the following as a typical advertisement, and one which is likely to succeed in its object:

“1916, —, 7 h.p., three speeds, kick-starter, chain drive, 26 x 3 — tyres unpunctured, machine covered 4,000 miles, enamel and plate unscratched, mechanical condition good, expert examination, — lamp set, — speedometer, tools and spares, — sidecar, torpedo coachbuilt body; £70.—Address.”

With such an advertisement the prospective purchaser knows roughly what he is to expect, and if these essential details come up to his requirements all he has to do is to see the machine to confirm the specification.





# Safety and Speed go with Bates Tyres

They not only mean economy in petrol, but they stand the toughest of tests, and the increased output due to growing popularity has made it possible, in spite of higher cost of materials, to reduce prices.

*Lose no time in writing for our new illustrated price list.*

Note this testimony of a Government official in Australia :

"After a varied experience of eight different makes during the past nine years I was forced to the conclusion that no tyres were much good. But I am so delighted with my first experience of Bates Tyres that in future I will see that my machines are always equipped with your excellent tyres."

**Bates**  
SUPER RUBBER.  
**Tyres**

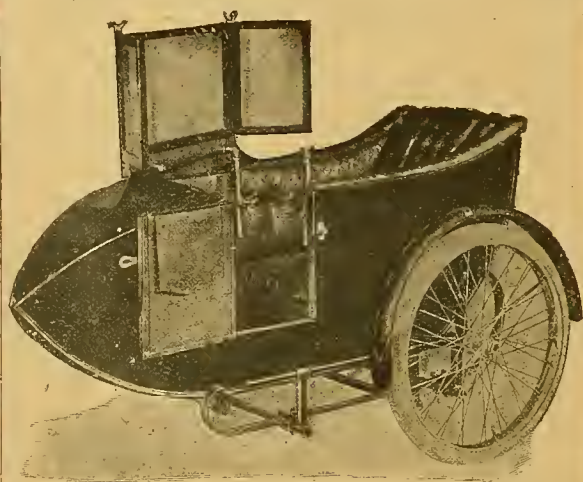
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The Glasgow Depot has been removed to 24, Carlton Place.





## DUNHILLS PATENT TRIPLE WINDSCREEN

**A**N ideal windscreen—keeps the passenger always snug and cosy in the coldest weather and free from draughts.

The side wings are detachable, and the screen can be tilted to any angle. It will fit any make of car.

A twist of a wing nut is sufficient to release the catch and let the screen swing across and allow the passenger to alight.

In Polished Walnut, with Nickel Fittings:

Price complete with side wings - - - £3 0 0  
Price of Single Screen - - - - - £2 2 0

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and experience *real* "tyre comfort." They are made on generous lines, and show an increase of 25% Air Capacity. Withal they are the most economical, because, after all, "the best is really the cheapest."

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Established 1897.

Manufacturers of Bowden Wire and of all Levers and Accessories used in its application.

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# BOWDEN WIRE LTD LONDON

Victoria Road, Willesden Junction, N.W.





## LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents. All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and should be accompanied by the writer's name and address.

### A Curious Case.

Sir,—I possess a  $2\frac{1}{4}$  h.p. Levis, 1916 model, and I have been troubled continually for the last two months with the carburetter. The machine runs perfectly when started from cold until hot (for about two miles); then, when it is necessary to open out for hills or more speed, there is a peculiar choking and blowing back in the carburetter, also in the silencer, and, I am inclined to think, through the release valve as well. The fact is the machine will take only a set proportion of the throttle, and if this is exceeded the engine chokes up completely and soon stops.

I may say, I never so much as heard the engine "pop" before the time stated, and I have tried the engine with all mixtures of spirits and still with no better results. I have tried enormous sizes in jets, and am running on a 26 now, which was fitted when new. The petrol flows quite freely to the carburetter, and it has been cleaned times without number to make sure that dirt is not the fault. There is no hole in the induction where air can leak.

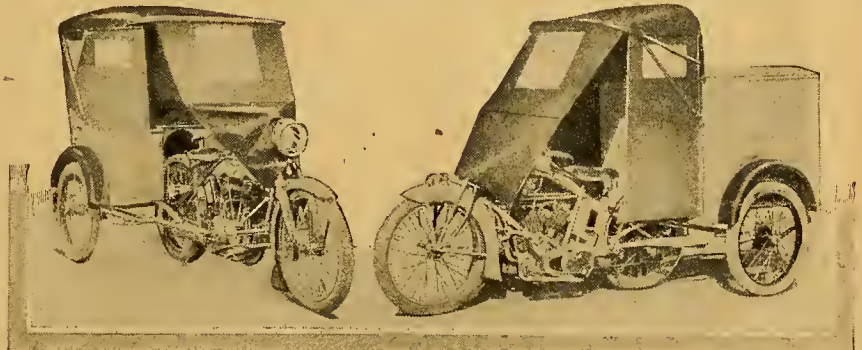
Probably some of your readers have had the same experience with their machines, and I shall be glad of their advice. (CYCLIST) H. J. IVES (2581).

### An American Rear Car.

Sir,—In reference to *The Motor Cycle* of November 2nd, 1916, we wish to correct the statement of your correspondent, Mr. T. W. Cooper, Toronto, Canada, that the driver is still exposed to the elements, as you will see by the enclosed illustration showing the protection afforded the motor cycle attached to Cygnet delivery car and Cygnet pleasure car.

In the near future we expect to have a test made by a leading engineering school, showing the relative superiority of the Cygnet rear car over sidecars, and substantiating the claims which motor cycle drivers have made to us as follows: (1.) Larger capacity. (2.) Less wear and tear on the motor cycle. (3.) Less petrol. (4.) Less danger of accident. (5.) Easier operation for motor cycle rider. When these tests are completed we will send you copies.

CYGNET REAR CAR CO.  
Buffalo, U.S.A.



The new American Cygnet car hood, which completely protects both driver and passenger. (See letter.)

### Will the Single-cylinder Survive?

Sir,—Replying to the article by "Road Rider," I consider myself in a position to intervene, because I have ridden for 11,000 miles one of the machines which he instances as being comparatively free from engine vibration. This was a 1913 four-cylinder F.N., from which I had great satisfaction except as a sidecar machine.

I passed straight from this machine to a 1915 650 c.c. single made by Bayliss, Thomas, and Co., and have in no way regretted the change. I find that I am less tired after riding a long journey on this machine than after a similar journey on the four-cylinder. Perhaps the explanation is that the Excelsior machine (English) is so well provided with a slipping sprocket that the drive is really not rigid at all, despite the all-chain drive.

Tyre wear and petrol consumption are better than on the F.N. As for power, I dare not compare the two, because I would not be hard on a good machine, which was essentially reliable, but was very mistakenly (as I think) considered as a sidecar machine.

I have ridden all three of the most popular singles which were the other day referred to as the worst. I agree with the verdict, and I write this letter because I would not see the English Excelsior classed with them. Usual disclaimer applies.

A. G. CHILD.

Sir,—May I be allowed to say a few more words on this subject? I have read Mr. M. A. Pyke's letter with special interest, as my experience in the matter of petrol consumption by "singles" has been very similar to his, and, although 120 to 140 m.p.g. may have appeared an exaggeration to some of your readers, I am fully convinced that it is not so in the case of a well-tuned and well-driven  $3\frac{1}{2}$  h.p. single. On three consecutive Sunday mornings in the early autumn of last year I ran to Brighton and back, a distance of 110 miles from my residence, on a T.T. Rudge-Multi. The riding conditions on the three occasions were practically similar, and each journey of 110 miles was done on seven pints of Shell No. 1. Had my average speed been somewhat less (the riding times for the journeys averaging 3h. 40m.), the consumption would have reached the high average mentioned. My average consumption with a 4 h.p. countershaft Triumph, over a mileage of 7,600 and with a top gear of only 5 to 1, has been slightly over 100 m.p.g. I should like to know of any horizontal or V type of twin of similar capacity that can show such economy. Also, I should like to know how the driving powers of such engines would compare with those of singles, equally geared, across, say, Salisbury Plain,



against a westerly wind blowing at a velocity of 60 m.p.h., as it often does, or across Lincolnshire in the teeth of a cold easterly wind of like velocity, in which carburetters are prone to freeze. I venture to think the twin would, comparatively speaking, put up a poor performance. In conclusion, again I ask, can the survival of the single be denied after the War Office has given it the place of honour it has had in the Army? MYER B. LEE.

Sir,—Might I trespass on your valuable space to inflict my dole in defence of the big single? It would seem that the largest stone thrown at it is that it cannot be considered so mechanically perfect as the flat twin. But what is mechanical perfection if it is not maximum efficiency, and what is superior efficiency if it is not a lower fuel consumption, a greater pulling power, and greater reliability; and who will deny the big single these qualifications? In fact, I consider the big single at present preferable to the flat twin on almost every score. I say "at present," because the flat twin is as yet in its infancy, and will doubtless undergo many radical changes for the better before it settles down into the groove of almost standard design which characterises the best known big singles. The assumption that the flat twin is so much more flexible than its one-lunged rival is surely not well founded. If the "horizontally-opposed double motor" is really so flexible, why is a fixed geared specimen practically unheard of, while the T.T. fixed engined, single-geared single abounds?

I have had experience of both types of machines of the most popular makes, and I can confidently state that my experiences, at any rate, justify my preference. My present mount is a Triumph, and if I can wait till the cessation of hostilities again liberates the supply of these excellent motor cycles, my next love will be a Triumph also.

MALCOLM G. HALLOWES.

#### The Double-acting Two-stroke.

Sir,—May I be allowed to criticise the three designs for one-stroke engines as applied to motor cycle engines? In the first place, all designs are quite possible for large power water-cooled engines, but for motor cycles, in my opinion, unworkable, for these reasons: Commercial expense to produce, gland troubles, inaccessibility of slides and valves, overheating of pistons and rod and stuffing boxes. It will be noted that two designs require a working cylinder and a pump cylinder, and employ two cranks, etc., and would require three bearings. When the total is set against two simple cylinders with a double crank in one case with two bearings and utilising lower portion of each cylinder for pump cylinder with cool gland, it can be seen the latter is the simpler and cheaper to produce. H. SWIFT.

#### Petrol Substitutes.

Sir,—I herewith send you particulars of my experience of running on petrol substitute for the last six months, having just taken my engine down for cleaning, etc.

My machine is a 4 b.p. B.S.A., three-speed countershaft gear, 1915 model, all-chain drive, with sidecar, and it has been run entirely since the end of April on raw substitute without any petrol whatever in the tank. I do not use even an auxiliary tank to start with, but simply inject into the cylinder one teaspoonful of No. 2 petrol, when the engine always starts off at the first or second kick. To each gallon of substitute I add three naphthalene balls, which can be obtained locally anywhere at a cost of about a humble copper (I have tried Spots and other nostrums, but prefer naphthalene balls), with the result that, after running about 5,000 miles, the valves grind in with about five minutes' easy work. The carbon deposit was removed with a duster; even on the exhaust valve cap it was quite loose, and rubbed off with one's finger. I also found all the bearings, gudgeon pin, and the big end perfect, without the slightest shake of any kind. Is not this a record?

As to the carburettor, it is just as it left the makers adjusted for petrol, without any hot-air pipes or other accessories whatever. I have never had the slightest trouble in starting, even in the present cold, damp weather. I am still running the original engine chains. Although the mileage is not large, I have been as far as Farnborough and back several times from here, so it is possible the mileage is more than I have stated.

B18

In conclusion, I may say that I shall never go back to petrol again, and that whilst the machine is at least five miles per hour faster and the consumption about 65 to 70 m.p.g. (it was only 60 m.p.g. with petrol at 2s. 6d.), the only slight disadvantage I can find is that it is not quite as powerful on hills. I can now add the usual disclaimer. B.S.A.

Barton-on-Humber.

#### Two Useful Hints.

Sir,—Having received a vast quantity of valuable information through the columns of your paper, I should like to pass on to others a little in return.

In the first place, the front brake of the motor bicycle is usually little better than an ornament. I obtained a sample of Ferodo brake lining, and cut it to shape to fit the front shoes. The improvement in braking powers is quite incredible. I understand that after the war this firm intends to market its goods for the requirements of bicycles of all sorts. At present after obtaining the lining one has to cut it to shape, but it is well worth while. I have since fitted it as band brake to my P. and M. Result, twice as great efficiency as with my previous lining.

Secondly, who was the idiot that invented the word "tacky," referring to solution? In the event of a puncture two coats of solution should be given, both to patch and tube, and each allowed to get absolutely dry. This is the practice of the repairers in all big rubber firms. I have repeatedly allowed three or four days to elapse between the solutioning and the fixing of the patch. It is years since I had a patch leak. The back tube of my bicycle had patches put on two or three years ago, and there is not the slightest sign of any lifting. I am quite sure that no one will believe (until after trial) the great difference between an absolutely dry patch and one which is "tacky."

Brist 1.

EXPERIMENTALIST.

#### The Flat Twin at the Bar.

Sir,—After reading Mr. de Lissa's letter in *The Motor Cycle* for December 14th I should like to say something on the matter. Firstly, Mr. de Lissa seems to have fallen into the very error of which he accuses Mr. Bradshaw—that of criticising other people's ideas and designs a little too quickly. I think that it is rather obvious that if a "hot top" does occur in the A.B.C. cylinder it is in a far less harmful position than in the overhead valve design, for a "hot side" will tend to warp the cylinder barrel and cause loss of compression, whereas a "hot top" will not have any effect in this direction.

It might be argued that a "hot top" would warp the exhaust valve seating, but this seems to be effectively cooled by the rushing charge of cool gas, as is the plug. I should also imagine that few engines, even the M.A.G., could stand being run "all out" when new, and that most owners are accustomed to run in their engines before driving them really hard. Finally, I do not see that the ordinary A.B.C. engine is so very much a special racing engine as Mr. de Lissa states. Let him grumble if the racing A.B.C.—model C—is sold as a touring mount; but I should have thought that an engine which would stand up to the amount of hard second gear work that the A.B.C. will was eminently suitable for strenuous touring conditions. No one doubts the efficiency of the M.A.G., but it will have all its work cut out to beat the A.B.C. Usual disclaimer. JAM SATIS.

Wellington College.

Sir,—Having read Mr. de Lissa's article on the A.B.C. flat twin I can only draw one conclusion, that he is suffering from extreme jealousy. The usual disclaimer.

A. WILKIN.

#### IMPORTANT NOTICE.

#### GOODS MADE IN GERMANY.

The proprietors of this journal, being fully in accord with the recommendations agreed upon at the Paris Economic Conference, give notice that they will not permit the advertisements of new goods manufactured in enemy countries to appear in this publication, either during or after the war.

ILIFFE & SONS LTD.



# C.A.V. Magnetos

BRITISH THROUGHOUT

## Ignition troubles cannot exist

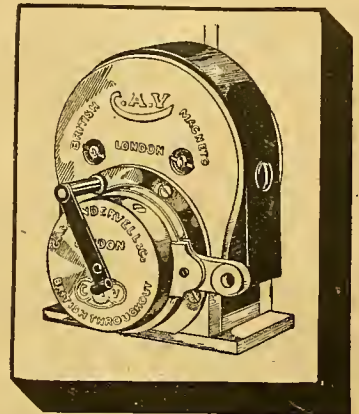
when the Motor Bike or Cycle Car is fitted with a C.A.V. Magneto.—It's the little contrivance that sparks for sure even at walking pace—the Magneto which water, dust, heat, or cold cannot put out of action—the Magneto that relieves all ignition anxieties . . . . . Write now for folder.

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## The Belt with the "Bite"—

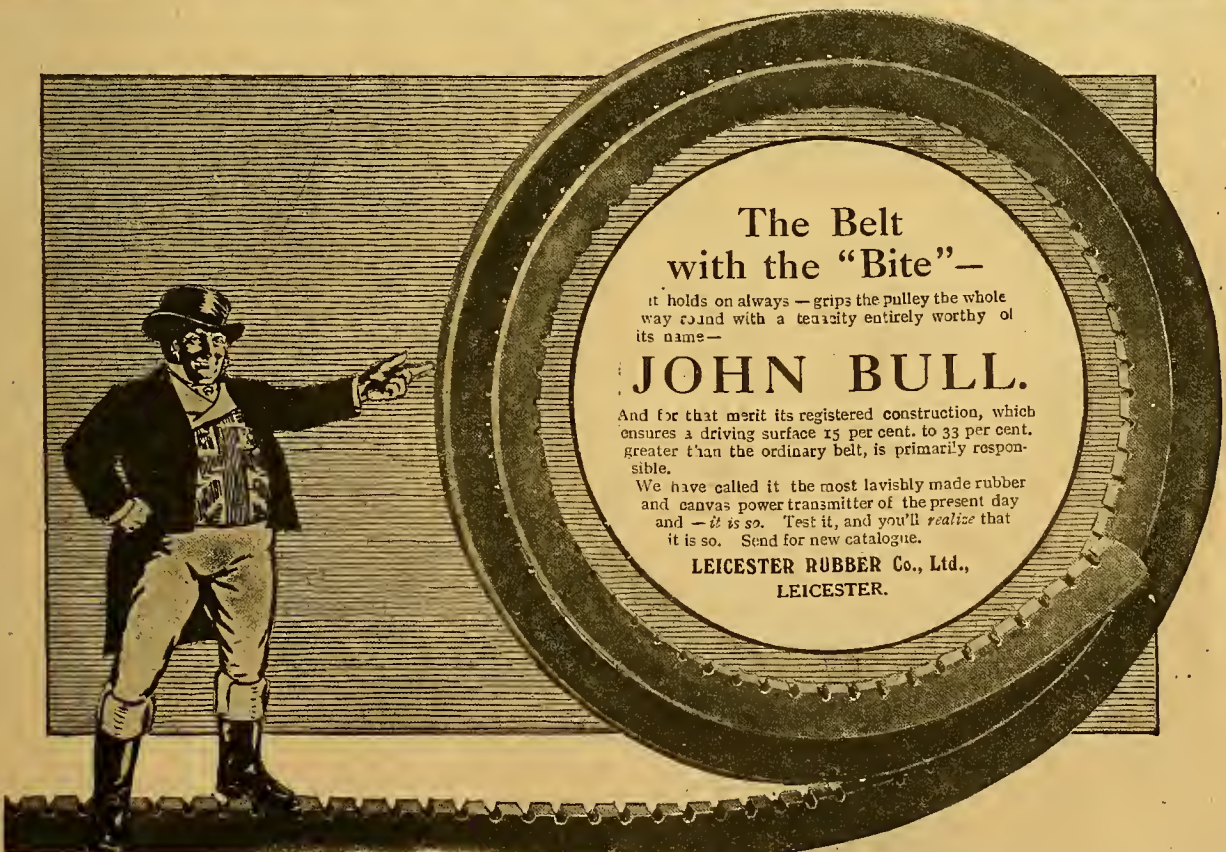
it holds on always—grips the pulley the whole way round with a tenacity entirely worthy of its name—

## JOHN BULL.

And for that merit its registered construction, which ensures a driving surface 15 per cent. to 33 per cent. greater than the ordinary belt, is primarily responsible.

We have called it the most lavishly made rubber and canvas power transmitter of the present day and — it is so. Test it, and you'll realize that it is so. Send for new catalogue.

**LEICESTER RUBBER Co., Ltd.,**  
LEICESTER.



*In answering these advertisements it is desirable to mention "The Motor Cycle."*



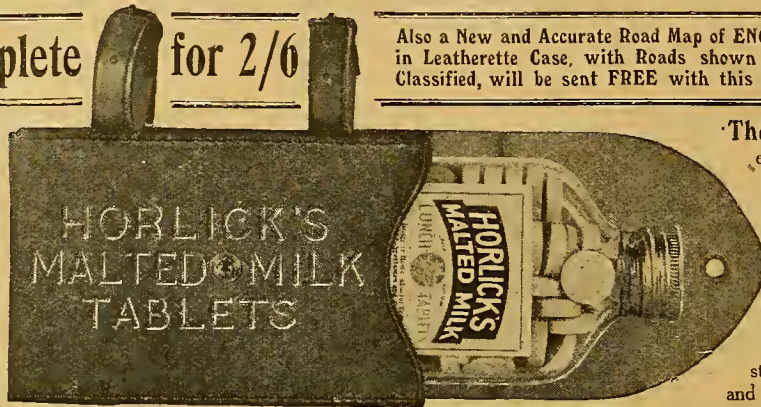
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## A LEATHER CARRYING CASE with FLASK OF HORLICK'S LUNCH TABLETS.

May be attached to the handle-bars or in any other convenient position by means of the two neat straps. Actual size of case closed is 3½ in. x 5 in. x 1½ in. deep.

By post complete for 2/6

The Leather Case is strongly made in solid leather, is excellently finished, and may be attached to the handle-bars or in any other convenient position, so that the Flask may be removed for use at a moment's notice, thus making it possible to carry full nutriment in a light and palatable form



Also a New and Accurate Road Map of ENGLAND & WALES in Leatherette Case, with Roads shown in Colours and Classified, will be sent FREE with this Case and Flask.

The Flask holds enough Tablets for a day's run. A few dissolved in the mouth from time to time will supply the necessary nutriment to maintain strength and vigour and prevent thirst.

*Horlick's Malted Milk Lunch Tablets have been very extensively supplied to the Expeditionary Forces both direct and through the War Office.*

Also in Sterilised Glass Bottles, from which these Flasks may be refilled, 1/6, 2/6 & 11/- at all Chemists and Stores. Send Postal Order, and write plainly, to—**HORLICK'S MALTED MILK CO., SLOUGH, BUCKS.**

## ORIENTAL

—for building Motor Cycles.

The excessive strain imposed upon the modern Motor Cycle necessitates the use of highest grade Tubes in its construction.

Then specify **O<sup>R</sup>IENTAL SEAMLESS STEEL TUBES**—the tubes that are recognised throughout the trade as representing the highest standard of steel tube manufacture. Ask us for details.

**ORIENTAL TUBE Co., Ltd., West Bromwich, Birmingham.**  
 Telephone: 45, West Bromwich.  
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## SEAMLESS STEEL TUBES

## ALBION.

**ALBION ENGINEERING CO., Ltd.,**  
 Upper Highgate St, BIRMINGHAM.

## A Useful Little Pocket Companion.

Every motor cyclist should make use of this book. It is brimful of sound advice respecting the care, management, and repair of motor cycles. Every hint and tip is numbered, and reference is made very simple by a very exhaustive alphabetical index.

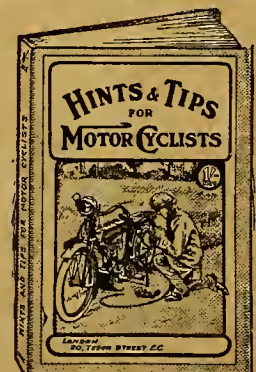
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 and all Booksellers and Bookstalls.

**Price 1/- net.**

By Post, Home or Abroad, 1 1/2





# QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

## A Debate in a Dug-out.

Recently we had a debate in our dug-out about the small two-stroke machine. One section said that it has no valves, and the other section said it has. We have agreed to stand by your answer in the matter, so shall be glad if you can settle the matter for us.—R.A.M.C.

The small two-stroke has no valves. The mixture is taken into the engine and the exhaust gases allowed to escape through ports which the piston covers and uncovers in its travel. It is, however, quite possible to construct a two-stroke with valves.

## An Extra Air Inlet.

My motor cycle is fitted with a B. and B. carburetter, and I wish to fit a lever or tap so as to admit extra air when possible. Shall I be right in fitting this in the induction pipe? If not, where would you suggest it being fitted? What kind of a lever would you recommend? I might add that the smallest possible jet is fitted, and the machine will take full air with the throttle a quarter open.—B.H.N.

You would be quite in order fitting a tap as suggested on your induction pipe. The only thing we should advise you to be careful about is that the tap itself and all joints in connection therewith are perfectly airtight. The ordinary tap handle, if accessible, should suffice.

## The Question of Plug Gaps.

I use the plugs recommended by the makers of my machine. The central electrode in these plugs is a very thin wire, and when central it is approximately  $\frac{1}{16}$  in. from the earthed electrode, which entirely surrounds it. Is this distance too great to get a spark, and, if so, will you kindly inform me at what distance the centre wire should be to get the best results? In cleaning the plugs the centre electrodes have bent (as they are very thin), and I am now in doubt as to their correct adjustment.—W.H.F.

The correct plug gap varies considerably, according to the engine in which the plug is used. Some engines will fire best with the points almost touching, most like a gap of about half a millimetre, and others even will fire best with a gap of a full millimetre. One-eighth of an inch is much too great, and would be likely to cause extremely difficult starting. A machine having a magneto run at engine speed would probably take a much larger plug gap.

## Oily Engine.

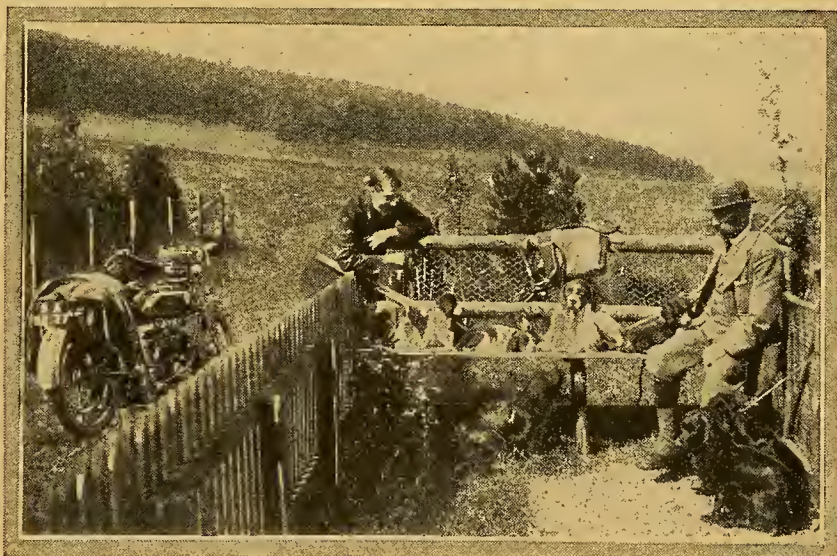
(1.) Why does the engine throw oil around the crankshaft, and what remedy is there? (2.) Would a hollow crankshaft not afford sufficient release for the crank case compression? (3.) Do you think it is necessary to fit an additional release, and where would be the most suitable place? (4.) Would you tell me the reason of smoke coming from the crank case through the engine-shaft? (5.) Could an amateur be trusted to dismantle the flywheels and reassemble them?—H.M.L.

(1.) The usual cause of oil throwing out of the bearings is either worn bearings or inefficient crank case release. This causes considerable pressure in the crank case, and forces the oil out of any doubtful joint. The trouble might be cured by fitting an additional release valve of normal type, such as can be obtained from most accessory dealers. Then, if you still get leakage from the bearings, you will know that these require attention. (2.) It certainly ought to. (3.) There seems to be no alternative. It might be fitted to any convenient place near the top of the crank case. (4.) The smoke is the smoke of overheated oil, burned through contact with piston top. (5.) Not unless he was unusually skilled.

## Uneven Running when Running Light.

My 1913 7-9 h.p. Indian has a slight defect which I cannot trace. When pulling uphill or running hard on level, the engine runs perfectly, but when running light or on pilot jet in free the engine seems to misfire slightly.—A.H.

It is possible that the mixture is too strong, with the result that the engine fires regularly under load, but runs unevenly when free or downhill. To get over the difficulty of the front cylinder running faster than the rear one, we would suggest that you examine the carbon brushes, and, if necessary, remove any grease or oil which may have collected thereon. It would also be as well to examine the front inlet valve dome and valve guides to see if there are any air leaks, which would make the mixture weaker in that cylinder. Uneven oiling might cause the difference; see that the front cylinder obtains plenty of lubrication, also check the timing of the front cylinder. The mixture for slow running can be corrected by means of the small adjustable air inlet on top of the pilot jet tube; altering this while the engine is running will probably correct the slight misfire. For good slow running a fairly large plug point gap is required—about  $\frac{1}{32}$  in.



To many of our readers who are in the trenches this scene will recall memories of the days of the autumn shoots and the tramps across the moors with a beloved hammerless ejector and the dogs at heel. The photograph shows a Lowland keeper and a rider of a 7-9 h.p. Abingdon admiring the puppies.







## To the Trade.

**"SHELL"**  
**"SHELL" II**  
**"CROWN"**  
**"SWAN"**  
**MOTOR SPIRITS**

## EMPTIES

Commencing January 1st, all empty cans and steel barrels in which the well-known "Shell," "Shell" II, "Crown" and "Swan" brands of motor spirit have been delivered, should be returned to the "Shell" Marketing Co.'s vans or depots—not to the British Petroleum Company. Credit in full will be given for all such empties received in good condition

### DIVISIONAL OFFICES:

#### LONDON—

Town	...	...	} Canada House, Kingsway, W.C.
Home Counties, North	...	...	
Home Counties, South	...	...	
MANCHESTER	...	...	1, Brazenose Street
BIRMINGHAM	...	...	Carlton House, 28, High Street

BRISTOL	...	...	...	5a, Union Street
PLYMOUTH	...	...	...	"Shell" House, East Street
HULL	...	...	...	"Shell" House, 21, Story Street
GLASGOW	...	...	...	53, Bothwell Street
DUBLIN	...	...	...	70, Grafton Street

**"SHELL" MARKETING CO., LTD.,**  
**EMPIRE HOUSE, ————— KINGSWAY, ————— LONDON, W.C.**



# MISCELLANEOUS ADVERTISEMENTS.

## PRICES.

ADVERTISEMENTS in these columns—First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd., and crossed** & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

## NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. All replies should be addressed, "No. 000, c/o 'The Motor Cycle,' 20, Tudor Street, E.C."

## DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pay carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

## SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S. Spares, prompt delivery.—Cyril Williams, A.J.S. Agent, Chapel Ash Depot, Wolverhampton. [X3491]

A.J.S., Oct., 1914, 6h.p. combination, wind screen, etc., in perfect condition: £60-39, Queen St. Ryhl. [X3468]

A.J.S., 2½h.p., 1913, 2 speeds, chain-driven, in real good order; £23.—Percy and Co., 337, Euston Rd., London. [6473]

1916 2½h.p. 3-speed A.J.S., sporting model, used 500 miles, Lucas head lamp, tail lamp, Lucas horn, spare sprockets, spare valve, speedometer with maximum hand, condition as new; cost £70, accept 50 gns.—Layton's Garage, Bicester, Oxon. [6450]

A.J.S., 1914, 2½h.p., 2-speed, kick start, hand clutch, all chain drive, accessories, £38/10; and a 1915 2½h.p., 3-speed, kick start, hand clutch, new tyres, £44/10; deferred terms if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green, Walthamstow 169, and Hornsey 1956. [6265]

6h.p. A.J.S. 1915 or 1916 Motor Cycle, fitted with De Luxe sidcar, screen, storm apron, 3-speed gear, handle-bar control, free engine and kick start, Watford speedometer, Lucas lamps, Stewart warning signal; this combination is like new, only ridden 750 miles; price 90 gns., guaranteed; this combination should appeal to a purchaser who requires a good and reliable combination for Xmas.—Wauchope's, 9, Shoe Lane, Fleet St., London. [6438]

THERE'S DOUBLE THE NUMBER OF GOOD LINES to choose from at

# Wauchope's

TO PROVE IT, CALL OR WRITE FOR TO-DAY'S BIG LIST. IT INCLUDES THESE—

Whatever famous make you seek, New or Second-hand, we hold double the number of Models to be found at any other house, and we offer double advantages in Lowest Cash Prices, Fastest Easy Terms, Finest Guarantee, and Promptest Delivery.

No.	h.p.		
10809.	3½	1916 3-sp. SUNBEAM & S'car.	£35 0
10810.	4-5	1916 countershaft ZENITH and sporting Sidcar	£67 10
10814.	2½	1916 2-speed PEVERE	£35 0
10816.	4½	1916 3-sp. B.S.A. and Sidcar	£65 0
10824.	3½	1913 3-speed TRIUMPH	£37 10
10828.	3½	1911 2-speed HUMBER	£20 0
10830.	6	1916 ROYAL ENFIELD & S'c.	£84 0
10831.	5-6	1915 2-sp. FAFNIR and Sidcar	£32 10
10833.	4½	1916 3-sp. B.S.A. and Sidcar	£65 0
10834.	4	1914 A.C. Sociable	£40 0
10838.	2½	1915 2-sp. NEW IMPERIAL	£39 0
10842.	7-9	1916 3-sp. HARLEY-DAVIDSON and Sidcar	£100 0
10786.	2½	1911 Single-speed HOBART	£20 0
10789.	8	1914 HUMBERETTE	£75 0
10794.	4-5	1914 ZENITH Gradua	£42 10
10795.	3	1914 2-sp. ROYAL ENFIELD	£42 10
10800.	7-9	1915 3-speed EXCELSIOR	£60 0
10802.	4½	1915 3-speed B.S.A., chain-cum-belt	£52 10
10804.	3½	1913 3-speed TRIUMPH	£37 10
10805.	4	1911 3-speed BRADBURY and wicker Sidcar	£32 10
10806.	3½	1912 3-speed TRIUMPH	£33 0
10808.	3½	1915 2-sp. SCOTT and Sidcar	£63 0
10763.	2½	1916 2-sp. NEW HUDSON	£33 0
10768.	3½	1910 single-speed TRIUMPH	£20 0
10772.	4	1915 3-sp. DOUGLAS and Sc.	£65 0
10776.	3½	1911 single-sp. LINCOLN-ELK and Sidcar	£20 0
10779.	2½	1915 single-speed WOL	£15 0
10739.	2½	1915 2-sp. NEW IMPERIAL-J.A.P.	£27 10
10740.	2½	1916 2-sp. NEW IMPERIAL-J.A.P.	£39 0
10744.	2½	1915 2-sp. ALLON	£27 10
10746.	2½	1914 single-sp. SUN VILLIERS	£17 10
10748.	2½	single-speed HOBART	£20 0
10750.	4½	1915 3-sp. B.S.A. and Sidcar	£65 0
10757.	8	1915 MORGAN Runabout, De Luxe Model	£94 10
10705.	12-16	VAUXHALL Car	£125 0
10713.	4-5	1914 ZENITH-GRADUA	£37 10
10717.	4	1913 3-sp. PRECISION	£22 10
10724.	3½	1912 3-sp. TRIUMPH and Sc.	£42 10
10727.	4½	1915 3-sp. B.S.A. and Sidcar	£60 0
10822.	3½	1914 3-sp. BRADBURY	£47 10
10687.	1½	single-speed J.E.S.	£10 0
10688.	2½	1911 2-sp. DOUGLAS	£22 10
10699.	3	1913 3-sp. HOBART & Sidcar	£35 0
10701.	2½	1911 single-speed DOUGLAS	£22 10
10638.	3½	1912 single-speed INDIAN	£20 0
10643.	3½	1914 RUDGE Multi	£140 0
10649.	3½	1913 single-speed B.S.A.	£25 0
10661.	6	1913 ENFIELD and Sidcar	£45 0
10673.	4½	1914 3-sp. B.S.A. and Sidcar	£45 0
10610.	2½	1914 3-sp. NEW HUDSON, Sc.	£45 0
10614.	3½	1911 single-speed HUMBER	£25 0
10629.	3½	1914 3-sp. ROVER and Sidcar	£50 0
10633.	4	1914 3-sp. SINGER and Sidcar	£45 0
10587.	3½	1914 3-sp. QUADRANT & S'car	£42 0
10588.	3½	1913 RUDGE Multi and Sidcar	£45 0
10596.	3½	1913 RUDGE Multi	£38 0

WAUCHOPE'S, 9, SHOE LANE, FLEET ST., LONDON.  
Phone: 6777 Holborn. Wires: "Opiteler, London."

## IMPORTANT NOTICE.

Owing to the Christmas Holidays, the issue of "The Motor Cycle" for Dec. 28th must be closed for press earlier than usual. All copy and instructions for Miscellaneous Advertisements in that issue must therefore be in our hands not later than first post on Wednesday, Dec. 20th.

## DEFENCE OF THE REALM ACT.

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

## MOTOR CYCLES FOR SALE.

### A.J.S.

A.J.S. 1912 6h.p. Twin Combination; £40.—Tuke and Bell, Ltd., Motor Dept., Cauton Engineering Works, High Rd., Tottenham, N. [4913]

### Alldays.

ALLON, 1916, 2-speed, 2-stroke, as new; £30-29, St. Leonard's St., Bow. [6349]

COLMORE Depot, 31, Colmore Row, Birmingham, can supply immediately all models of Alldays Allon. [0793]

ALLON, single-speed, practically new, perfect; must sell; £27.—Brooks, Church St., Caversham, Reading. [6415]

ALLDAYS Allon, 1916, 2-stroke, 2-speed; £26.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0579]

ALLON, 2-stroke, 2-speed, late 1916, ridden under 1,000 miles, condition as new; £38.—Box L2769, c/o The Motor Cycle. [6232]

NEW Allons, 2-speed, 2-stroke, 2½h.p., 1917 models; £42; easy terms 2½ extra, or exchanges arranged.—Wauchope's, 9, Shoe Lane, London. [6426]

ALLONS, all models, 12 positively in stock, £37/18 to £47/5; exchanges, easy payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6266]

ALLON, 1915, single speed, new condition, lady's and gent's push cycles, 3-speed, excellent condition; exchange for good combination and cash, or sell.—78, Sedlescombe Rd., Fulham. (Evenings.) [X3402]

ALLDAYS Allon 2½h.p. 2-stroke Motor Cycle, single-speed, £36; 2-speed, £42; ditto, with clutch, £45; Model de Luxe, £52/10, plus 5% advance; easy purchase terms arranged; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [6230]

### Ariel.

ARIEL, 3½h.p., latest 3-speed model, actually in stock.—Crow Bros., Guildford. [6366]

ARIEL, 3½h.p., 1914, Armstrong 3-speed, lamp, horn, etc., new condition, mileage 2,000.—Montgomery, Victoria Rooms, Bristol. [X3350]

ARIEL, 3½h.p., semi T.T., with variable pulley gear, fast, most excellent condition; £24, bargain.—Layton's Garage, Bicester, Oxon. [X3086]

ARIEL, 1915, 3½h.p., semi T.T., Philipson (hand control), lamps, horn, speedometer; £34.—M. H. Hoffer, The Castle, Monmouth. [X3356]

COLMORE Depot, 31, Colmore Row, Birmingham, have in stock for immediate delivery all models of Ariel motor cycles, with or without sidcars. [0797]

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.



## MOTOR CYCLES FOR SALE.

## Ariel.

**1917** New Ariels in stock, 3-speed countershaft gear, clutch, and kick start, chain-cum-belt drive, £65/10; easy terms 2½ extra, or exchange arranged.—Wauchope's, 9, Shoe Lane, London. [6427]

**ARIEL**, 3½ h.p., 3-speed, hand and foot clutch, Bosch, head and rear lamps, horn, etc., good running order and condition; must sell owing to shell shock; £14; trials Northampton.—2/Lieut. Livinge, Combroke, Warwickshire. [X3142]

## Auto-Wheels.

**UTO-WHEEL**, absolutely perfect, just done Devonshire four; best offer over £5.—2, Grove Rd., Isleworth Station. [6303]

**UTO-WHEEL**, 1916, new condition, run about 100 miles, perfect order; bargain, £9/10.—Groves, 27, Tyson Rd., Forest Hill. [6358]

## Bat.

**1915** Bat 6 h.p. Combination, new condition; £62.—22, Gilmora Rd., Lea. [6376]

**BAT J.A.P.**, 1913, 6-7 h.p. twin, Bosch; must sell; £19/10.—1, Ebner St., Wandsworth. [6315]

**NEW** Bats from stock, 2-speed gear models, solo mounts; £63/6.—Wauchope's, 9, Shoe Lane, London. [6437]

**BAT**, 1912-13, 6 h.p., sporting model, 3 speeds, usual spares; £32.—P. J. Evans, John Bright St., Birmingham. [X3448]

**BATS**—P. J. Evans, Birmingham agent.—Immediate delivery 4-5 h.p. sporting model, 2 speeds; £63/15.—87-91, John Bright St., Birmingham. [X3444]

## Bradbury.

**BRADBURY**, 3½ h.p., 1912, in real good order; £14; a bargain.—Percy and Co., 337, Euston Rd., London. [6471]

**BRADBURY**, 4 h.p., variable gear, perfect, £20; sports sidecar, £5; no offers.—Broom, 77, Marylebone Lane, W. [6360]

**1911** 4 h.p. Bradbury, N.S.U. gear, perfect order; £22/10, or take lower power and cash.—Clayphan, Laughton, Gainsboro'. (D) [6324]

**1912** Bradbury, 2 speeds, free engine, complete tools, lamp, spares, excellent condition; bargain, £20.—Bissell, Sutton Grange, Kidderminster. [6418]

**BRADBURY**, 4 h.p., 3-speed, coachbuilt sidecar, free engine, all new tyres, just overhauled; bargain, £35.—Charles Wood, Forest Brickfields, Coopersale, Epping, Essex. [X3464]

**BRADBURY**, 3½ h.p., free engine, 2-speed, kick starter, Bosch mag., speedometer, underslung sidecar, excellent condition; trial run; £25.—567, Forest Rd., Walthamstow. [6210]

**BRADBURY** Combination, 6 h.p. twin, 3-speed countershaft, chain drive, speedometer, etc., twin sidecar, latest model, new condition; £68.—Challen, 328, Ditching Ed., Brighton. [6310]

**3½ h.p.** Bradbury Motor Cycle, with Montgomery wicker 2 sidecar, free engine, 2 speeds, all tyres practically new, lamps, mirror, Cowey speedometer, tools, and spares; £30, or near offer; seen by appointment.—225, Nottwich Ed., Crews. [X3377]

## Brough.

**1914** Brough, 3½ h.p., opposed, very nice condition; £37.—Ross, 66, High Rd., Lea. [6381]

**BROUGH**, late 1915, 3½ h.p., horizontal engine, 2-speed countershaft, very fast, fine machine, little used, all accessories; £45; owner for France.—Apply, 60, Marine Parade, Sheerness. [X3415]

## Brown.

**RIDER TROWARD**, 78, High St., Hampstead.—1912 Brown, 3½ h.p., re-enamelled, overhauled; 16 gns. [6412]

## B.S.A.

**B.S.A.**, brand new 1916 model K, £62.

**B.S.A.**, 1917 model K, just delivered; £64.—Castle Motor Co., Kidderminster. [5983]

**B.S.A.**, 1917 models H and K, with sidecars, in stock.—Moss, Wem. [X3137]

**COLMORE** Depot, 261, Deansgate, Manchester, for immediate delivery of B.S.A. [0798]

**1916** 4½ h.p. B.S.A., complete, done 1,500, perfect; £58.—35, Westcombe Park Rd., Blackheath. [6219]

**NEW** B.S.A., chain drive, in stock; £66; exchanges quoted.—Motor Exchange, Horton St., Halifax. [6126]

**LATE** 1913 3½ h.p. B.S.A. 2-speed and Montgomery sidecar, guaranteed perfect; £35.—20, Whitley St., Reading. [6446]

**OPEN** all Christmas.—1914 B.S.A., 3-speed countershaft, all chain drive; 36 gns.—Troward, 78, High St., Hampstead. [6401]

**B.S.A.** 1917 Models in stock, H £66, K £64; also genuine B.S.A. No. 1 sidecar, £17/17.—Hucklebridge, 133, Sloane St., London. [X2742]

**1917** B.S.A. in stock. Catalogues free. Spare parts per return. In. belts, as fitted by makers, 8/6, post paid.—Albert J. Pitts, Redditch. Tel.: 91. [X0529]

## SECOND-HAND BARGAINS

## SIDEAR OUTFITS.

**REX**, 1914, 6 h.p., 2-speed, modele de luxe ..... £35  
**TRIUMPH**, 3½ h.p., 2-speed countershaft, Sidecar ... £32  
**INDIAN**, 1913, 7 h.p., coach-built Sidecar, 2-speed ... £42  
**ZENITH**, 1914, 6 h.p., countershaft clutch model ..... £60  
**RUDGE**, 1913 5-6 h.p. Multi, with Rudge Sidecar ... £46  
**ENFIELD**, 1912, 6 h.p., 2-speed, twin, Enfield Sidecar RUDGE 1913 3½ h.p. Multi, coach-built Sidecar. .... £23  
**SCOTT**, 1914, 3½ h.p., 2-sp., and Scott sidecar chassis £45  
**ZENITH**, 1915 3½ h.p., twin, clutch, and C.B. Sidecar £49  
**ENFIELD** 1914 6 h.p. 2-speed Combination ..... £55  
**CHATER LEA**, 1913, No. 7, 8 h.p. 3-sp., and Sidecar. £40  
**DOUGLAS**, 3½ h.p., 2-sp., Canoelet, disc wheels. .... £58  
**MATCHLESS**, 1913, 8 h.p., J.A.P. overhead, 6-speed. £48  
**HARLEY-DAVIDSON**, 7-9 h.p., 1915, 3-sp. C.B. S/car. £68  
**P. & M.**, 3½ h.p., 1913, 2-speed, C.B. Sidecar ..... £46  
**JAMES** 4½ h.p., 1914, 3-speed, Empress Sidecar .... £58

## SOLO MODELS.

**DOUGLAS**, 1914, 2½ h.p., T.T., long exhaust, 2-speed £45  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, Zephyr pistons ... £48  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, kick-start ..... £48  
**DOUGLAS**, 1914, 2½ h.p., 2-speed, Model V. .... £47  
**DOUGLAS**, 1911, 2½ h.p., 2-speed touring bars ..... £20  
**RUDGE** 1913 3½ h.p. Multi, T.T. bars ..... £33  
**WV**, 1915, 2-stroke, single-speed ..... £16  
**NEW HUDSON**, 1913, 3½ h.p., 3-speed, J.A.P. engine £30  
**REX**, 1913, 3½ h.p., 2-speed, and clutch ..... £28  
**BROWN**, 3½ h.p. model, Bosch magneto ..... £12  
**INDIAN**, 1915, 5 h.p., 3-speed, twin ..... £48  
**ALLDAYS ALLON**, 1915, 2-speed, 2-stroke ..... £32  
**INDIAN**, 1914, 7-9 h.p., 2-speed, electric equipment. £47  
**ENFIELD**, 1910, 2½ h.p., twin, Grado gear ..... £14  
**LEVIS**, 1914, 2½ h.p., 2-stroke, countershaft ..... £18  
**F.N.**, 1914, 2-speed, lightweight ..... £15  
**ALLDAYS ALLON**, 1916, 2½ h.p., 2-speed, 2-stroke. £20  
**ALLON**, 1916, 2½ h.p., 2-stroke, as new, single-speed £28  
**ENFIELD**, 1916, 2½ h.p., 2-stroke, 2-speed ..... £33  
**TRIUMPH**, 1913, 3½ h.p., 3-speed, all accessories. .... £38  
**INDIAN**, 1914, 7-9 h.p., clutch model, as new ..... £41  
**HUMBER**, 1915, water-cooled, 3½ h.p., 3-speed. .... £48  
**INDIAN**, 1915, 5 h.p., 3-speed, as new ..... £45  
**PREMIER**, 1913, 2½ h.p., lightweight ..... £14  
**TRIUMPH**, 1913, 3½ h.p., tourist, fixed gear ..... £19  
**INDIAN**, 1914, 7-9 h.p., 2-speed, spring frame ..... £38  
**ENFIELD**, 1916, 3 h.p., twin, 2-speed, speedometer. £43  
**HUMBER**, 1913, 2½ h.p., twin, had careful usage ..... £21  
**RADCO**, 1915, 2½ h.p., 2-stroke, done about 500 ..... £20  
**TRIUMPH**, 1914, 4 h.p., 3 speed, excellent order .... £50

## NEW 1917 MODELS.

**ROYAL ENFIELD** 6 h.p. Combination ..... £94 10  
**ROYAL ENFIELD**, 3 h.p., twin, 2-speed ..... £57 15  
**ROYAL ENFIELD**, 2½ h.p., 2-speed, 2-stroke ..... £44 2  
**B.S.A.**, 4½ h.p., 3-speed, all-chain, H, 1917 model. £66 0  
**B.S.A.**, 4½ h.p., 3-speed, belt, K, 1917 model ... £64 0  
**B.S.A.**, 3½ h.p., Model D, T.T. .... £52 10  
**ROVER**, 1917, 3½ h.p., 3-speed, Combination ..... £89 9  
**ROVER**, 1917, 3½ h.p., 3-speed, solo ..... £69 10  
**ROVER**, 1917, 3½ h.p., T.T., Philipson pulley ..... £81 10  
**LEVIS**, 2½ h.p. single-speed, Popular model ..... £32 0  
**COVENTRY EAGLE**, 2-stroke, de luxe ..... £37 15  
**MORGAN G.P. No. 1**, M.A.G. engine, discs, etc. .... £150 0

A Few 1916 ROYAL RUBYS to Clear. Send for Lists and Prices.

## LIGHT CARS.

**G.W.K.**, 1914, 8 h.p., just re-painted and overhauled £120  
**G.W.K.**, 1915, 8 h.p., just re-painted, detach. wheels. £160  
**MORGAN**, 1917, G.P. No. 1, only done 500, & as new. £135  
**KNIGHT**, 1914, 11.9 h.p., sporting body ..... £145  
**CALTHORPE**, 1916, 10 h.p., G.D.M. dyn., 6 wheels. £275  
**SINGER**, 1914, 10 h.p., dynamo lighting ..... £196  
**SINGER**, 1913, 10 h.p., 5 lamps, just being overhauled. £135  
**SINGER**, 1913 (late), 5 lamps, dickey ..... £145  
**HILLMAN**, 1915, 9.5 h.p., speedometer, little used. £205  
**MATHIS**, 1914, 75 h.p., 5-seater, dynamo ..... £305

Machines started (\*) are complete with lamps, horn, etc. 1914 and 1915 DOUGLAS MACHINES bought for Spot cash.

**MAUDS**  
**MOTOR MART**  
 100 & 136 Gt Portland St. London W.  
 Telephone 552 Mayfair telegrams Abdicat Wesdd

## MOTOR CYCLES FOR SALE.

## B.S.A.

**NEW B.S.A.** 1917 War Office Model, chain-cum-belt transmission, 3-speed countershaft gear and kick starter; £64.—Wauchope's, 9, Shoe Lane, London. [6439]

**B.S.A.** 4½ h.p. Combination, 1915, chain-cum-belt, all accessories, excellent condition; £59; would consider exchange for car, 4-seater.—Fish, Watergate, Luton Village, Salisbury. [6350]

**B.S.A.**, chain-cum-belt model, just delivered from works; £64; easy purchase terms arranged; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [6231]

**B.S.A.** Model K, 1915, 4½ h.p., 3-speed, with coach-built sidecar and all accessories, overhauled throughout, most excellent condition; accept £60, or nearest offer.—Layton's Garage, Bicester, Oxon. [6451]

**B.S.A.** 1916 Model K, 4½ h.p., 3-speed, kick start, original tyres, Palmers' overize on rear, coach sidecar, and screen; £68/10.—Lamb's, 151, High St., Walthamstow, 50, High Ed., Wood Green. [6268]

**B.S.A.**, 3½ h.p., 2-speed, clutch, new heavy tyres, only trial, £28, or exchange lower power; J.E.S., fitted in B.S.A. cycle, 3-speed hub, new Dunlop Mognum tyres, lot as new, £12/10.—Martin, 23, Warren Rd., Tooting. [6462]

**B.S.A.**, 1918, 4½ h.p., 3-speed, gear box, clutch, kick starter, Palmers' tyres nearly new, and new spare Dunlop, lamps and horn, 1916 coachbuilt Millford sidecar, all splendid condition; £65.—Edmonds, Laughead, Lechlade. [6341]

**B.S.A.** Model K, 4½ h.p., 3-speed, B.S.A. Canoelet motor, No. 1 with hood, wind screen, grid, lamps, mechanical horn, 2 months old, done 500, fine combination; cost £88; officer going overseas; sell £78, or £28 deposit, and 12 monthly payments of £4/8.—P., 32, Eighth Av., Forest Town, Mansfield. [3423]

**B.S.A.** Latest New Models can be delivered from stock: Chain drive model H, 3-speed countershaft gear, £66; chain-cum-belt model K, £64; Montgomery sidecars in stock to fit from 10 gns; your present machine can be taken as part payment.—Elce and Co., B.S.A. Agents, 15-16, Bishopsgate Av., Camomile St., E.C. [0551]

**B.S.A.'s** 1917 model H, all chain, £66; and 1917 model K, £64; not coming in, but actually in stock; deferred payments arranged; exchanges; good prices allowed for second-hand up-to-date machines.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. 'Phones: Walthamstow 169, and Horsaey 1956. [6262]

**4½ h.p.** 1916 B.S.A. and coachbuilt sidecar, 3-speed, model H, all chain drive, clutch and kick start, in the pink of good condition, complete with accessories, 60 gns., guaranteed; also a 1916 chain-cum-belt model, fitted with roomy sidecar, including accessories, £60, guaranteed; and a solo chain-cum-belt B.S.A., 50 gns., guaranteed; easy terms, 2½, half down.—Wauchope's, appointed B.S.A. City agents, 9, Shoe Lane, London. [6424]

## Calcott.

**CALCOTT** Lightweight, in good running order, tyres as new; £15, bargain.—Bacon, Wellington, Salop. [6205]

## Calthorpe.

**CALTHORPE** Junior, 1914, 2 speeds; £13.

**CALTHORPE** Junior, 1915, 2 speeds, J.A.P. engine; £23.

**CALTHORPE**, 4 h.p., 1914, 3 speeds, speedometer, coachbuilt sidecar, as new; £33.—Percy and Co., 337, Euston Rd., London. [6477]

**CALTHORPE J.A.P.**, 2-speed, 1915; £23.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6060]

**CALTHORPE J.A.P.**, 1915½, but little used, perfect condition; £25.—Apply, 10, Tideswell Rd., Putney. Tel.: 1660 Putney. [6240]

**COLMORE** Depot, 31, Colmore Row, Birmingham, have in stock all models of Calthorpes for immediate delivery; also at our Manchester Depot. [0799]

**1914½** Calthorpe-Jap, 2-speed, just overhauled, lamps, horn, new belt; exceptional bargain, £20, offers.—Curtis, Brightside, Golders Green Rd., N.W. [X3339]

**NEW** Calthorpes, J.A.P. 2½ h.p. engine, 2-speed Enfield gear, sloping top bar £37/16; easy terms 2½ extra, or exchange arranged.—Wauchope's, 9, Shoe Lane, London. [6425]

**1916** 4 h.p. Calthorpe Combination, Enfield 2-speed gear, with free engine and handle starter, complete with high grade coachbuilt sidecar, only used a few miles, as new; price £60.—Alexander and Co., 272, Gt. Western Rd., Glasgow. [5883]

**NEW** Calthorpes on easy terms, 2½ only extra charge: Latest lightweights, 2½ h.p. J.A.P. engines, 2-speed Enfield gears, sloping top bars, 36 gns.; also 2½ h.p. 2-stroke models, £28/17/6.—Wauchope's, Calthorpe's appointed agents, 9, Shoe Lane, London. [6428]

**CALTHORPE** Combination, 4 h.p. J.A.P., twin engine, Royal Enfield, 2-speed gear, footboards, coachbuilt sidecar; £73/10; just delivered from works; easy purchase terms arranged; exchanges considered.—Harrods Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [6225]

## Champion.

**CHAMPION J.A.P.**, 1913, 3½ h.p., complete with free engine, h.b.c., Binks carburetter, Lucas lighting set, automatic oil feed, speedometer, tools, and spares, in perfect running order; a good bargain, £28, or near offer.—P. Tidall, Market Rasen. [X3390]



## MOTOR CYCLES FOR SALE.

## Chater-Jap.

CHATER-J.A.P., 1913, 8h.p. solo, 2-speed, clutch, chain, links, 1915 cylinders, tyres nearly new, accessories, excellent condition; £30.—Reid, 68, Balgait, Lincoln. [X5395]

## Chater-Lea.

CHATER-LEA, 5h.p. twin J.A.P., free engine combination; £16.—Percy and Co., 337, Euston Rd., London. [6478]

## Chater-Lea-Minerva.

CHATER-LEA-MINERVA, 5h.p. twin, ideal motor cycle; £14, or cycle in part.—W. Norman, Greyhound Lane, Streatham, S.W. [6417]

## Clyno.

CLYNO, 1913-14, 6h.p., 3-speed countershaft, chain drive; £39/10.—Motor Exchange, Horton St., Halifax. [6127]

RIDER TROWARD, 78, High St., Hampstead, 1912 Clyno, 2-speed, with sidcar 24 gns., solo 21 gns.; good order. [6410]

CLYNO 2-stroke, 1915, 2-speed, clutch, recently overhauled; bargain; nearest offer secures.—Usher, Moor House, Hawkhurst, Kent. [6290]

CLYNO, late 1914, 2-stroke, 2 speeds, hand clutch, 2 lamp sets, speedometer, condition as new, mileage 2,400; lowest £26; owner in Egypt.—7, Vale Terrace, King's Rd., Chelsea. [X3147]

## Connaught.

P. J. EVANS, Birmingham Agent.—Immediate delivery all models Connaught from stock; miniature and double-purpose models, prices from £28/17/6.—87-91, John Bright St., Birmingham. [X3442]

## Coventry Eagle.

COVENTRY Eagle, 1916, 6h.p., 3-speed countershaft, coach sidcar, and accessories; cost £100, little used, £69/10.—Motor Exchange, Horton St., Halifax. [6129]

## Dalm.

DALM 2-stroke, 1915, 3 speeds, clutch, lamps, etc., do 46 m.p.h.; £22.—11, Luna Rd., Thornton Heath, S.E. [6371]

## De Dion.

DE DION, 3½h.p., sidcar, just overhauled; £12, or nearest offer.—G. Felgate, 72, Beechfield Rd., Finsbury Park. [6420]

## Dot.

DOT, 3½h.p. Precision engine, just been overhauled; £20, or near offer; owner called up.—Leigh, King's Bromley, Lichfield. [X3469]

## Douglas.

DOUGLAS Combination, 4h.p., 1916, almost new; £65.

DOUGLAS 4h.p. 2-speed 1914 Combination; £55.

DOUGLAS, 1915, 2½h.p., 3 speeds; £46.

DOUGLAS, 1912, 2½h.p., 2 speeds; £24.—Percy and Co., 337, Euston Rd., London. [6467]

1912 Douglas, good condition; £25.—Ross, 86, High Rd., Lee. [6379]

1915 Douglas, in fine order, complete.—Cross, Jeweller, Rotherham. [X3473]

DOUGLAS, 1913½, 2-speed, new condition; £30.—29, St. Leonard's St., Bow. [6348]

1912 Douglas, re-enamelled, only wants seeing; £18.—537, Holloway Rd., N. [6224]

1914 T.T. Douglas, complete, lamps, etc.; £34.—Cross, Effingham Sq., Rotherham. [X3472]

COLMORE Depot, Birmingham, Leicester, and Liverpool, for Douglas motor cycles, also spare parts. [6800]

DOUGLAS, 1912, 2 speeds; £20.—Smith, 16, Haverstock Hill, opposite Chalk Farm Tube Station. [6213]

DOUGLAS, 1916, W.D. model, 2-speed, and accessories; £45.—Stour Cycle Depot, Stourbridge. [X3492]

DOUGLAS, 1914, perfect condition, fully equipped, left by an officer; £37.—Alderton, 105, Cheapside. [6297]

DOUGLAS Combination, late 1915, new condition; bargain, £50.—Maher, 75, Effra Rd., Brixton, S.W. [6307]

1911 Douglas, running order; £11, or exchange 2-stroke.—McCarthy, 10, Douglas Av., Christchurch. [6332]

DOUGLAS, 2½h.p., £15/10; 1913 2-speed, wants tuning up, £26.—Motor Exchange, Horton St., Halifax. [6128]

1913 T.T. Douglas, purchased 1914, in exceptional condition, fully equipped; £33.—20, Whitley St., Reading. [6447]

1913 Douglas, 2-speed, T.T. handle-bars, good condition throughout; accept 30 gns.—Hayes, 344, Euston Rd. [X3407]

DOUGLAS.—Wholesale and retail West of England agents; write us your requirements.—Moffat, Yeovil, Tel.: 50. [5855]

DOUGLAS, 1913, 2-speed, and clutch, in excellent condition, black lamp set, spares; £32.—47, Hamilton Rd., Reading. [6456]

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CALTHORPE Combination, 4 h.p., C.B. S/car, 3-sp. £73 10  
LEVIS 2-stroke, 2½ h.p. £32 0  
LEVIS 2-stroke, 2½ h.p., Enfield 2-speed gear £47 10  
COVENTRY EAGLE 2-stroke, c/shaft, 2-sp. gear £44 2  
NEW IMPERIAL, J.A.P. engine, 2-speed gear £38 0  
B.S.A., 4½ h.p., 3-sp., countershaft gear (Model K) £64 0  
B.S.A., 4½ h.p., Model K, Millford Corvette Sidecar £79 15  
ALLON 2-stroke, 2½ h.p., countershaft 2-speed gear £44 2  
ALLON, 2-stroke, 2½ h.p., 2-speed gear, clutch £47 5  
ENFIELD 6 h.p. Comb., C.B. S/car, 2-speed gear £39 10  
ZENITH, 3½ h.p. J.A.P. engine, Gradua gear £32 7  
ZENITH, 4-5 h.p. J.A.P. engine, Gradua gear £65 16  
ZENITH, 6 h.p., twin cyl. J.A.P. engine, Gradua £76 4  
JAMES, 4½ h.p., 3-speed countershaft gear, k-start £69 10  
JAMES Comb., 4½ h.p., C.B. Sidecar, 3-sp., k-start £87 5  
JAMES 2-stroke, 2½ h.p., 2-speed gear £42 0  
ROVER, 3½ h.p., 3-speed, countershaft gear, k-start £69 10  
ROVER Comb., 3½ h.p., 3-sp., Rover C.B. Sidecar £89 9

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ZENITH, 3½ h.p., 1912, Gradua gear, speedometer and lamp £25 0  
HUMBER, 3½ h.p., 1911, 2-sp., complete with S/car and accessories £25 0  
SCOTT, 3½ h.p., 1912, 2-str., 2-sp., k/start, speedometer, etc. £26 0  
VELOCEITE, 2½ h.p., 1915, 2-str., 2-sp., chain drive £28 0  
REVERE, 2½ h.p., 1916, 2-stroke, 2-speed £28 0  
NEW IMPERIAL, 1915, 2½ h.p., J.A.P. engine, acc. £28 0  
INDIAN, 7 h.p., clutch model, 1913, accessories £30 0  
CLYNO 2½ h.p., 2-stroke, 1914, 2-sp., and clutch, C.B. Sidecar £32 0  
HUMBER, 3½ h.p., 3-sp., and kick-starter £36 0  
DOUGLAS, 2½ h.p., 2-sp., and accessories, 1914 £43 0  
DOUGLAS, 2½ h.p., 2-sp., and accessories, 1914 £44 0  
TRIUMPH, 4 h.p., 1914, 3-sp., Montgomery Sidecar, and accessories £45 0  
ENFIELD, 6 h.p., 2-sp., C.B. Sidecar, and accessories £45 0  
DOUGLAS, 2½ h.p., 2-sp., and accessories, 1914 £45 0  
INDIAN, 5 h.p., 3-sp., k-start, accessories, 1914 £49 0  
DOUGLAS, 3½ h.p., 2-sp. and kick-starter, 1914 £52 0  
INDIAN, 5 h.p., 1916, 3-sp., k-start, and accessories £54 0  
ZENITH, 4-5 h.p., 1915, countershaft gear, k-start, accessories £55 0  
HARLEY-DAVIDSON, 1915, 3-sp., k-start, lamps and horn £55 0  
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INDIAN, 5 h.p., 3-sp., access., and C.B. Indian Sidecar, 1915 £62 0  
SCOTT, 3½ h.p., 1916, 2-sp., k-start, speedometer and lamp, etc. £65 0  
INDIAN, 7 h.p., 3-speed, spring frame, elec. equip., C.B. Sidecar £69 0  
INDIAN, 5 h.p., 1916, 3-sp., C.B. S/car, new condition £72 0  
INDIAN, 7 h.p., Mod. F., elec. equip., disc wheels, as new £85 0  
INDIAN, 7 h.p., Mod. F. access., & Swan sporting Sidecar £88 0  
INDIAN, Mod. F., 1916, 7 h.p., 3-sp., C.B. Sidecar, shop-soiled £96 0

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## MOTOR CYCLES FOR SALE.

## Douglas.

DOUGLAS, 1912, 2-speed, kick starter, F.R.S. lamp set, splendid condition; called up; £27.—35, Colwell Rd., E. Dulwich, S.E. [6254]

1913 T.T. 2½h.p. Douglas, 2-speed, tyres and belt as new, thoroughly overhauled throughout; £32.—Railway Garage, Staines. [6459]

DOUGLAS, 1914, 2½h.p., 2-speed, T.T., enamelled red, condition perfect, accessories; £35, nearest.—Lovell, 42, Church St., Baldock, Herts. [6222]

DOUGLAS, 1916, 3-speed, rests and footboards, splendid condition, Watford, Stewart horn and Lucas rear; £46.—Riley, 39, Charles St., Sheffield. [6345]

DOUGLAS Specialists.—Gibb, Gough, London Rd., Gloucester. Gibb, the International Douglas rider, winner of numerous cups and gold medals. [6218]

1915 W.D. Pattern T.T. Douglas, spare inlet and exhaust valves; £38.—Capt. C. P. Symonds, Connaught Hospital, Aldershot, or Tel. 93 Farnborough. [X3588]

1913-1914 T.T. Douglas, 2-speed, free engine, kick start, tyres new, guaranteed perfect; any trial £26.—Watson, Foresters' Arms, Brady St., Whitechapel. [6306]

DOUGLAS, late 1911, 2 speeds, clutch, footboards, splendid condition; seen week-ends, or by appointment; £19/10.—R. Andrews, 11, Whatman Rd., Forest Hill. [6200]

DOUGLAS, Bosch, 2-speed, F.E., handle starting, footboards, running order; quick sale, bargain, £12, or nearest.—Hiscock, Marlowes, Hemel Hempstead, Herts. [X3357]

DOUGLAS, 4h.p., T.T., Oct., 1915, 3-speed, torpedo sidcar, accessories, little and carefully used; seen before 7 o'clock; £58.—Randall, 88, Church Rd., Barnes. [6192]

1915 2½h.p. Douglas, W, 3-speed, clutch, engine perfect, ridden very little, nearly new, with accessories; £52/10.—Robinson's Garage, Green St., Cambridge. [6389]

2½h.p. 2-speed T.T. Douglas, 1916 model, perfect order throughout, complete with Lucas accessories; £49/10.—2, McDowall Rd., Camberwell Green, London, S.E. [6198]

DOUGLAS, 1915, 2½h.p., 2-speed, T.T., lamps, horn, speedometer, knee-grips, spare belt, spares, etc.; £43/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491]

DOUGLAS, 1915, lamps, speedometer, T.T. model, special machine, little used; £38 for quick sale.—11, Luna Rd., Thornton Heath, S.E. After 7.30, or by appointment. [6373]

1914-15 4h.p. Douglas, 2-speed, clutch, kick start, in perfect condition, tyres as new, lamps, horn, and accessories; £46.—Webber, Railway Hotel, Virginia Water, Surrey. [6359]

DOUGLAS, 2½h.p. T.T., late 1913, 4,000, perfect, very fast, climb anything normal on top; trial; deposit; owner in army 18 months; £33.—Newman, Cowpen Hall, Blyth. [6242]

DOUGLAS, 1913-14, T.T., 2 speeds, perfect beauty, fully equipped, long exhaust, running on substitutes; quick sale accept 30 gns.; evenings after 8, or week-end.—136, Dalmally Rd., Croydon. [6298]

DOUGLAS, 2½h.p., 2-speed, clutch, complete with lamps, etc., in 1915 condition, quite the best second-hand Douglas we have seen lately; offers wanted.—Layton's Garage, Bicester, Oxon. [6452]

PRACTICALLY NEW 2½h.p. Douglas, 3-speed model W, purchased 1916, racing bars, footrests, Stewart (75) speedometer, lamps, tools, done 636, beautiful condition; £55.—19, Mountfield, Prestwich. [X3430]

3½h.p. Late 1914 2-speed Douglas, overhauled by 32 Douglas firm last June at cost of £7, perfect condition, lamps, horn, etc., special large leather box for carrier, long exhaust; £45.—Capt. Flower, Easton, Corsham, Wilts. [X3355]

DOUGLAS Models for Sale.—One 1911 model, £10; one 1911 model, £14; one 1912 model, 2-speed, kick starter, free engine, £30; one 1913 model, 2-speed, £30; one 1915 model, T.T., 2-speed, £38; one lady's model, £38.—T. Barker and Sons, 35, Friar St., Reading. [X3272]

SELDOM Occurs.—T.T. Douglas, 2½h.p., late 1913 (genuine), 2-speed, special racing engine, practically brand new heavy Dunlops, P. and H. lamp set, long exhaust, knee-grips, etc., just had general overhaul, guaranteed in perfect condition; accept £28/10 for immediate sale.—Amber House, Gloucester Rd., Chesterfield. [X3416]

DOUGLAS, 1913, 2-speed, clutch model, all accessories, really fine order, £35/10; also another needing slight repairs, £24/10; similar model, 1914 (date guaranteed), 2½h.p., 2-speed, kick start model, unscratched, £44/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 60, High Rd., Wood Green. Phones: Walthamstow 169, and Hornsey 1956. [6264]

## Eagle.

1916 Eagle, new condition; cost £90, accept £55.—Hayes, 344, Euston Rd. [X3410]

## Enfield.

1913 Enfield Combination, C.B. sidcar; £40.—Ross, 86, High Rd., Lee. [6382]



## MOTOR CYCLES FOR SALE.

## Enfield.

OPEN all Christmas.—1916 Enfield combination, 3 lamps, mileage 450; 70 gns.—Below.

ANOTHER, 1915 combination, fully equipped; 56 gas.—Rider Troward, 78, High St., Hampstead. [6398]

1916 Enfield, 3h.p., all accessories, new condition; 239.—Ross, 86, High Rd., Lea. [6377]

COLMORE Depot, 31, Colmore Row, Birmingham, for immediate delivery of Enfields. [0801]

1916 6h.p. Enfield Combination, perfect, 4 months' use, lamps.—Varcoe Motors, St. Austell. [6187]

ENFIELD 1916 8h.p. Combination, Lucas electric set; 285.—Stour Cycle Depot, Stourbridge. [X3493]

1914 Enfield Combination, complete; owner called up; 248/15.—Stacey, 12, Ecclesall Rd., Sheffield. [6245]

3h.p. Twin Royal Enfield, in perfect condition; 227/10.—Chilton and Co., 199, High St., Watford. [6457]

1916 6h.p. Enfield Combination, done 150 miles, practically brand new; 275.—20, Whitley St., Reading. [6445]

1916 Enfield Combination, new Dunlop rear wheel, fine condition; 265, offers.—35, Bishop St., Shrewsbury. [X3429]

1913 Enfield 6h.p. Combination, all accessories; 245.—Smith, 16, Haverstock Hill, opposite Chalk Farm Tube Station. [6211]

ENFIELD 1916 6h.p. Combination, hood, screen, 3 lamps, speedometer, mirror, original tyres still on; 285.—Lamb's, below.

ENFIELD 1916 6h.p. Combination, lamp, horn, new 2 months ago; 285.—Lamb's, below.

ENFIELD 1916 6h.p. Combination, 3 Lucas lamps, Stewart speedometer, horn, ridden slightly over 1,000 miles; 284.

ENFIELD, 1915, 3h.p., kick start, 2-speed, touring model, exceeding good condition, ridden less than 500 miles; 247/10.—Lamb's, below.

ENFIELD Commercial Chassis, with quite new box on; 12 gns.—Lamb's, below.

ENFIELD, 1917, 8h.p., dynamo lighting outfit, with hood and screen; 2115/15.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6269]

Tels.: Walthamstow 169, and Hornsey 1956.

ROYAL Enfield Lightweight Twin Magneto, runs well; 212/15.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [6316]

ENFIELD Combination, new models in stock, 6h.p., 2-speed, 294/10; cash, exchange, or deferred payment terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492]

ENFIELD, 1912, 2½h.p. twin, Bosch mag., Druid forks, new tyres, splendid condition; quick sale, bargain, 215, or nearest.—Hiscock, Marlowes, Hemel Hempstead, Herts. [X3358]

1916 Enfield 6h.p. Combination, nearly new, run about 1,500 miles, lamps, horn, Palmer tyres; 275 cash.—Apply, Stryling, Southdown Motors, Freshfield Rd., Brighton. [X3033]

ENFIELD Combination, 90 gns.; 3h.p. twin, 2-speed, 2-stroke, 245; delivery from stock.

Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0838]

ENFIELD 1915 8h.p. Combination, dynamo lighting set, Lucas and electric horns, wind screen, spare tyre; 258; call or write; trial any time.—Cranford, 49, Everton Rd., Addiscombe, Croydon. [5881]

1915 Enfield Combination, 6h.p., condition perfect, 3 lamps, horn, speedometer, Binks carburettor, screen; expert examination invited; only run 4,500 miles; 270, no offers.—17, Shaw St., Barnley. [X3420]

ROYAL Enfield 1916 Model Coach Combination, 6h.p. twin, mag. (countershaft gear), Lucas dynamo lighting; sacrifice 78 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [6319]

ROYAL Enfield Combination, 6h.p., late 1914, in beautiful condition, tyres almost new, complete with lamps, horn, all tools and wind screen, been carefully used; bargain, 258.—21, Burrage Rd., Plumstead. [6220]

ENFIELD, 1916, 3h.p., 2-speed, specification as list, used 50 miles only, and as new; cost 55 gns., accept 248, or nearest offer; owner, through wounded leg, finds it impossible to use motor cycle.—Layton's Garage, Bicester, Oxon. [X3087]

ENFIELD 6h.p. Combination, quite new, done 300 miles only; cost 2 months ago, with Jones speedometer, 298; selling because wife too nervous; 285.—Apply, letter only first, to A., c/o Stewart, 44, Altenburg Gardens, Clapham Common, S.W. [6331]

ENFIELD 1913-14 6h.p. Combination, speedometer, Lucas horn, mechanical horn, mirror, watch, 3 lamps, spare tyres as new, spare tube to leather case, new spare chain, several spare links, link extractor, insurance, 48 gns., no offers, rock-bottom.—80, Sydney Rd., Hornsey, London. [6221]

BIRMINGHAM Enfield Agent, P. J. Evans, 87-91, John Bright St.—Immediate delivery all 1917 models, including lighting set combination, special 3h.p. with hood and screen, and standard 6h.p. combination, also 3h.p. standard and sporting models, and 2½h.p. 2-stroke; prices from 42 gns. [X3443]

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lined wool, strap fastening at wrist, 9/3. State  
size.

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Black Sheepskin, short Gauntlets, lined, 5/8.



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## MOTOR CYCLES FOR SALE.

## Enfield.

ENFIELD 8h.p. Colonial Outfit, 296/12; also 1917  
6h.p. standard combination Enfield, hood and  
screen, 2100; 3h.p. solo models, T.T. touring, 257/15;  
two 8h.p. 2-seater combinations, 299/12; not coming in  
but actually here. Good prices offered for second-hand  
up-to-date machines in part exchange; deferred terms  
entertained.—Lamb's, 151, High St., Walthamstow, and  
50, High Rd., Wood Green. 'Phones: Walthamstow 169,  
and Hornsey 1956. [6263]

6h.p. 1916 Royal Enfield Combination, fitted with  
Lucas's dynamo lighting set, comprising head lamp,  
rear lamp, sidecar lamp, superior quality hood, and mica  
screen, powerful Lucas booter, all chain drive machine,  
handle starting, speed gear, beautifully sprung roomy  
coachbuilt sidecar; the combination complete, and as  
good as new, with all tools; 50 gns., guaranteed; any  
severe trial given, and delivered by road free.—Wau-  
chop's, 9, Shoe Lane, London. [6429]

## Excelsior.

EXCELSIOR, 1916, 7h.p., 3-speed, and coach side-  
car, used for demonstration; 269/10, cash bar-  
gain.—Motor Exchange, Horton St., Halifax. [6130]

EXCELSIOR, late 1916, 4½h.p., 3-speed countershaft,  
Lucas lamp and horn, including electric lighting  
set, with new 218 Star sidecar, with hood and screen;  
67 gns., complete.—242, Shirland Lane, Attercliffe, Shef-  
field. [6237]

MOTOR Cycle, 7-9h.p. American Excelsior, De Luxe  
model, electric magneto generator lighting equip-  
ment, etc., Hercules sidecar, not driven 3,000 miles;  
cost over 2100, accept 265 for immediate sale; owner  
called to the colours in January.—Harris, Jeweller, Bi-  
cester, Oxon. [6248]

## F.N.

F.N. 4-cyl. Magneto (dropped frame), running order;  
212/15.—1, Ebner St., Wandsworth. [6317]

F.N., 4-cyl., going order, mag., Amac, good tyres,  
etc.; 210; after 7.—32, Boston Park Rd., Brent-  
ford. [6249]

2½h.p. F.N., Bosch mag., clutch, splendid condition,  
24 210; also 1912 F.N., 4-cyl., clutch.—Smith, 16,  
Haverstock Hill, opposite Chalk Farm Tube Station. [6214]

2½h.p. F.N., low and fast, T.T. bars, R. and B. car-  
24 burrifer, engine overhauled, Halleson Isolation;  
210, or nearest, guaranteed reliable.—Edgar, 158, Stan-  
ley St., K.P., Glasgow. [X3348]

## Harley-Davidson.

1915 Harley-Davidson Combination, all accessories;  
264.—22, Gilmore Rd., Lea. [6375]

1915 Harley-Davidson Combination, fully equipped,  
and in good condition; 50 gns.—Hayes, 344, Ex-  
ton Rd. [X3408]

J. A. STACEY, 12, Ecclesall Rd., Sheffield, for im-  
mediate delivery of Harley-Davidsons. Spares, 24  
hours' service. [6244]

HARLEY-DAVIDSON 1916 Combination, run 600  
miles, indistinguishable from new; 280.—Percy  
and Co., 337, Euston Rd., London. [6469]

HARLEY-DAVIDSON 1916 Models delivered from  
stock on the best terms for cash exchange or  
easy payments. Sidecars in stock to fit.—Below.

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, model  
11J, electric lighting, electric horn, with Harley  
sidecar, model A; 263.—Elce and Co., 15-16, Bishopsgate  
Av., Camomile St., E.C. [0480]

1915 11h.p. Harley-Davidson and sidecar, in excellent  
condition; 268; owner gone to the Front.—  
Axworthy, Oakfield, Wilton Rd., Salisbury. [6226]

COLMORE Depot, Birmingham, Manchester, Liver-  
pool, Leicester, for immediate delivery of all  
models of Harley-Davidsons, and spare parts. [0802]

LATE 1915 Harley-Davidson Combination, fully  
equipped, excellent condition, 280; cash or easy  
terms.—R. E. Jones (Garages), Ltd., Swansea. [0861]

1915 Model 11F Harley-Davidson, 7-9h.p., only done  
3,000 miles, in splendid running order, very fast,  
not a puncture, all accessories, excepting speedometer;  
expert advice with pleasure; 255.—S. O. Salter, Manor  
Rd., Aldershot. [X2111]

HARLEY-DAVIDSON, 1916, model 16F, and Harley  
Canoelet sidecar, wind screen, many valuable acces-  
sories, new 4 months ago, ridden approximately 800  
miles; 289/10; easy payments if desired; also ex-  
changes entertained.—Lamb's, 151, High St., Waltham-  
stow. [6270]

## Hazlewood.

HAZLEWOOD, 1914, 6h.p. J.A.P. engine, 3 speeds,  
coachbuilt sidecar, in real good order; 229.—  
Percy and Co., 337, Euston Rd., London. [6474]

## Henderson.

HENDERSON, 1914-15, 4-cyl., 2-speed, chain drive;  
246/10, or exchange.—Motor Exchange, Horton  
St., Halifax. [6131]

## Humber.

HUMBER, 3½h.p., 2-speed; 223; exchange.—W. and  
H. Motor Co., Ltd., 287, Deansgate, Manchester. [6168]

1914 3½h.p. 3-speed Humber, lamp, etc.; 236; cash  
or easy terms.—R. E. Jones (Garages), Ltd., Swan-  
sea. [0863]

HUMBER Combination, 3½h.p., 2-speed, free, mag.,  
R. and B. fast, in fine order and condition; 218  
—Head, 31, Hamthorpe Rd., West Norwood. [0870]



## MOTOR CYCLES FOR SALE.

## Humber.

**HUMBER**, 3½ h.p., 2-speed, free engine, in good running order; £15; owner with colours.—Sheldons Cottages, Long Lane, Bexley Heath, Kent. [6259]

**HUMBER**, 1915, 3½ h.p., 3-speed, nearly new; special price, £57/10.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0842]

**1917 3½ h.p. Humber**, twin horizontal engine, semi-T.T. bars, handle-bar controlled clutch, quite new, just delivered, £75; with Mills-Fulford coach sidecar complete, £68; Douglas machines taken in part exchange.—Robinson's Garage, Green St., Cambridge. [6390]

## Indian.

**INDIAN** 1916 Powerplus Combination, run 300 miles; £90.

**INDIAN** 1915 7.9 h.p. T.T., almost new; £45.

**INDIAN** 1915 3½ h.p. Twin, 3 speeds; £40.

**INDIAN** 1915 6 h.p. Combination; £50.—Percy and Co., 337, Euston Rd., London. [6468]

**INDIAN**, 5 h.p., new this year, 3-speed gear; accept £57/10.—Hayes, 344, Euston Rd. [X3409]

**1915 Speed Clutch Model Indian**, complete, excellent condition; £43.—Castle Motor Co., Kidderminster. [5981]

**INDIAN** 1914 7.9 h.p. 2-speed Combination, perfect condition, all accessories; £45.—22, Hyde Park Gardens Mews, W. [6309]

**INDIAN** 1916 7.9 h.p. Combination, fully equipped, and in really desirable condition; accept £60, or near offer.—Layton's Garage, Bicester. [X3093]

**INDIAN**, 7.9 h.p., spring frame combination, new chains and tyres, overhauled; called up; best offer.—O. 1, Kensington Park Rd., London, W. [6356]

**INDIAN** Combination (May, 1916), £24 sidecar, electrically equipped, speedometer, equal to new; must sell; £68.—8, Stockwell Park Walk, Brixton. [6251]

**INDIAN** (1913-1914), 7.9 h.p., not used for a year, good condition; owner serving; first cheque 22 gns. secures.—A.P., Spencer's Garage, Gravesend. [6292]

**INDIAN**, 1915, 7.9 h.p., 3-speed, spring frame, electric lighting, electric horn, speedometer, etc., with 1916 Montgomery sidecar to match; £70.—Below.

**INDIAN**, 1915, 5 h.p., 3-speed, lamps, horn, etc., with Mills-Fulford sidecar, in fine condition, very little used; £60.—Elee and Co., 15-16, Bishopsgate Av., Cannon St., E.C. [0481]

**INDIAN**, model C, in stock for immediate delivery, spring frame, 3 speeds, 2 electric lamps, and horn also speedometer; £78.—P. J. Evans, John Bright St., Birmingham. [X3441]

**1916 5 h.p. Indian**, 3-speed, clutch, kick start, 20 gns. Millford sidecar, new in August, lamps and accessories, perfect condition; £75.—Saunders, 3, Calverley Terrace, Tunbridge Wells. [X3461]

**1915 Indian Combination**, 7 h.p., 3-speed, spring frame, Lucas lighting set, just overhauled by manufacturers; trial run by appointment; price £58 cash.—Tompsett, Moors, Marden, Kent. [5620]

**INDIAN** and Sidecar, 1916, 7.9 h.p. Powerplus model, condition new, 1,500 miles, all fittings; owner accepted commission; price £85, or nearest offer.—Seen at H.D.C. Garage, Hendon, N.W. [6209]

**7.9 h.p. Indian**, Mills-Fulford combination, 2 speeds, clutch model, electrically equipped, everything as new; selling for owner joined up; £48/10, valuable spares.—Choppen, 79, Aldred Rd., Kennington Park, S.E. [6280]

**INDIAN** Powerplus, 7 h.p., 3-speed, T.T., rigid frame model, Dunlop tyres, £75; spring frame touring model, with lamps and horn, £78.—In stock for immediate delivery at P. J. Evans, John Bright St., Birmingham. [X3437]

**INDIAN**, 7.9 h.p., 1915, with luxurious coachbuilt sidecar, with luggage carrier, 3-speed, clutch, kick, electrically equipped (5 lamps and horn), speedometer, spares, tools, as new; £80; seen by appointment.—24, Longside Av., Putney. [6199]

**INDIAN**, second-hand 1915 models: 7 h.p. model C, with de luxe coach sidecar, £60; 5 h.p., 3 speeds, with sporting coach sidecar, £52/10; 5 h.p. solo mount, £50; all overhauled and guaranteed sound.—P. J. Evans, John Bright St., Birmingham. [X3438]

**P. J. EVANS**, Birmingham and Midland Indian Agent.—All models in stock for immediate delivery: 7 h.p. T.T. Powerplus, £75; 7 h.p. 3-speed spring frame, and electric light, £78; sidecars from 11 gns.—87-91, John Bright St., Birmingham. [X3439]

**INDIAN**, 7 h.p., 1915-16, 3-speed, electrically equipped, practically new Dunlop tyres, spare new chain, plugs, etc., with almost new 22 gns. Millford sidecar, hood, screen, etc.; an absolute bargain; inspection and trial arranged, or photo; £68.—Williams, 42, St. Mary Rd., Southampton [X3498]

## J.A.P.

**2½ h.p. J.A.P.**, 1916, with Dixie mag., Amac carburettor, with controls, engine sprocket with chain for countershaft, as new; £10.—2nd Lt. Waterpouse, Broome Lodge, Sunninghill, Berks. [X3465]

## SCOTS SHOULD VISIT

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## For Motor Cyclists

And bargain seekers everywhere should write for our Lists of unbeatable values in the newest productions of famous makers and fully guaranteed low-priced second-hands not to be equalled anywhere.

## SPECIAL SHOW, SCARCE NEW MODELS.

Fully detailed Lists sent free, including:

6 h.p. ENFIELD Combination, 2-seat, Sc.	£102	0
7 h.p. INDIAN, Model G, 3-speed	£75	0
4½ h.p. ZENITH, Model D	£73	18
2½ h.p. LEVIS, 2-stroke, Popular model	£32	0
2½ h.p. NEW IMPERIAL, 2-speed, kick start	£48	8
2½ h.p. NEW IMPERIAL, 2-speed, Model I	£40	18
2½ h.p. CALTHORPE, 2-stroke, 2-speed	£34	13
2½ h.p. CALTHORPE-J.A.P., 2-speed	£39	18
2½ h.p. LEVIS, 2-sp., Model E, chain drive	£47	10
2½ h.p. SPARKBROOK, 2-stroke, 2-speed	£40	0
5 h.p. GLYNCO, Military Model, with Sidecar, spare wheel, and luggage grid	£108	3
6 h.p. ENFIELD Combination, elco. equip.	£110	5
2½ h.p. ENFIELD, 2-stroke, 2-speed	£44	2
7 h.p. INDIAN, Model C, 3-speed	£78	0
3 h.p. ENFIELD, Model 140	£57	15
5 h.p. INDIAN, Model B, 3-speed	£70	0
4½ h.p. B.S.A., Model H	£66	0
4½ h.p. B.S.A., Model K	£64	0
2½ h.p. DIAMOND-J.A.P., Enfield 2-sp gear	£40	19
2½ h.p. O.K. JUNIOR-J.A.P., 2-speed	£38	0
2½ h.p. EXCELSIOR, 2-stroke, 2-speed	£39	5
2½ h.p. EXCELSIOR, 2-stroke, single gear	£30	16
2½ h.p. EXCELSIOR, Lady's Model	£46	10
2½ h.p. SPARKBROOK, 2-stroke, 2-speed	£40	0

## AT OUR GLASGOW HOUSE.

Our matchless Second-hand Bargains include these. Full List Free.

1916 4 h.p. CALTHORPE Com., 2-sp. F.E.	£60	0
1915 6 h.p. GLYNCO Comb., compl. equip.	£65	0
1915 6 h.p. ENFIELD Comb., dyn. lighting	£75	0
4 h.p. PREMIER Twin, 2-sp., and Sidecar	£28	0
1916 7 h.p. INDIAN & S/car., Mod. C, as new	£68	0
1914 6 h.p. MATCHLESS-J.A.P. & S/car.	£44	0
1916 AUTO-WHEEL, with Raleigh 2-speed	£15	0
8 h.p. HUMBERETTE complete, perfect, full equipment, special	£68	0

## AT OUR EDINBURGH HOUSE.

Ask for full List of unusually low-priced Second-hands, including:

2½ h.p. RADCO, 2-str., T.T., special value	£12	0
2½ h.p. TRIUMPH, fixed engine, big snip	£20	0
1914 2 h.p. VICTORIA-PRECISION, 2-sp.	£20	0
1915 2½ h.p. ROYAL RUBY, good run, order	£21	0
1915 2½ h.p. CALTHORPE-J.A.P., 2-speed	£22	10
1913 3½ h.p. ROVER, 3-speed and clutch	£25	0
1916 2½ h.p. ROYAL RUBY, 2-stroke	£26	0
3½ h.p. IVY Twin, very speedy	£26	10
1916 2½ h.p. SPARKBROOK, 2-str., 2-sp., as new	£27	0
1912 3½ h.p. RUOGE, 2-sp., F.E., fine state	£28	10
1913 3½ h.p. B.S.A., belt, 2-sp., kick-start	£30	0
3½ h.p. EDMUND Twin, 2-speed	£33	0

## ALEXANDERS

113-115, LOTHIAN RD., EDINBURGH.  
272-274, GT. WESTERN RD., GLASGOW.

## MOTOR CYCLES FOR SALE.

## James.

**COLMORE** Depot, 261, Deansgate, Manchester, have in stock complete range of James motor cycles.

**JAMES** 3½ h.p. Twin, 3-speed, chain drive, hand clutch, kick start, not run 1,000 miles, perfect condition.—Irvine Smith, Buttershaw, Bradford. [6294]

**JAMES** 1914 4½ h.p. Coach Combination, countershaft gear, and accessories, £44/10; also 1915 model, £66/10.—Motor Exchange, Horton St., Halifax. [6132]

**JAMES**, 1915, Lucas lighting set, coachbuilt combination, 4½ h.p., 3 speeds, clutch and starter, good condition; £66.—P. J. Evans, John Bright St., Birmingham. [X3446]

**1916 3½ h.p. James** Twin, 3-speed countershaft, kick start, h.b.c. clutch, Lucas lamps, and all accessories, as new; £55, no offers.—Laughton, 3, Leopold St., Sheffield. [6223]

## Kerry.

**KERRY**, 3½ h.p., 1912, spring forks, Bosch, B. and B., 2-speed, F.E.; £15.—5, Hillcrest Rd., Acton. [X3555]

**5-h.p. Kerry** Abingdon, 3-speed gear, and clutch, etc., correct, and fully equipped, and complete with a new B.S.A. coachbuilt sidecar; £35.—Smith, 199b, King St., Hammersmith. [6368]

## Levis.

**LEVIS**, latest, brand new, single and 2-speed models in stock.—Moss, Wem. [X3152]

**1915 2½ h.p. 2-speed Levis**, excellent condition; cheap, £23.—27, North St., Ripon. [6193]

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Levis, mileage 2,500, perfect; 20 gns. [6411]

**LEVIS** Popular, late 1915, good condition, all accessories; £18.—Buckley, Gas Works, Farnham. [X3432]

**COLMORE** Depots, Birmingham and Leicester, for delivery of all models of Levis motor cycles from stock. [0804]

**LEVIS** Popular Model, quite new, but very slightly shop-soiled; accept £26/10.—Layton's Garage, Bicester, Oxon. [X3094]

**1916 2½ h.p. Levis**, Enfield 2-speed, chain drive, new 6 weeks ago, guaranteed like new; £38.—Missin, Cottingham, Hull. [X3418]

**1917 New Levis** Model E's, fitted with Enfield 2-speed gear and free engine, £47/10; Popular models, £32; easy terms 2% extra, or exchange.—Wanchope's, 9, Shoe Lane, London. [6430]

**2½ h.p. Levis** Popular 1916 Machine, about 3 months old, complete with lamps, horn, etc., as new, hardly soiled; a bargain, £26/10.—Warrior and Co., Oxford St., Weston-super-Mare. [X3435]

**1916 Levis**, 4.5 h.p., countershaft gear model, fitted with sporting Swan sidecar, clutch, and kick start, complete with all accessories; the combination £65, bargain, guaranteed.—Wanchope's, 9, Shoe Lane, London. [6431]

## Lincoln-Elk.

**RIDER TROWARD**, 78, High St., Hampstead.—1915 Lincoln-Elk, 4½ h.p., 2-speed countershaft gear, clutch, kick start, mileage 4,500, powerful sidecar or solo mount, perfect; 32 gns. [6407]

## Matchless.

**1914 6 h.p. Matchless**, good condition, lamps, etc.; £35.—Parrish, Cavendish St., Keighley. [X3359]

**MATCHLESS** Combination, 1912, 2-speed; £27/10; perfect order.—Stacey, 12, Ecclesall Rd., Sheffield. [6247]

**8E Matchless**, M.A.G. engine, Bosch mag., absolutely as new, electric lamps; £73.—Croes, Jeweller, Rotherham. [X3471]

**MATCHLESS** 6 h.p. 2-speed Coach Combination; £42/10, or exchange.—Motor Exchange, Horton St., Halifax. [6133]

**MATCHLESS**, 1913, 6 h.p. twin J.A.P., free engine, and sidecar; £28.—Percy and Co., 337, Euston Rd., London. [6480]

**MATCHLESS**, 1915, 4 h.p. twin, 3 speeds, perfect order, under 3,000, lamp, speedometer; bargain, £40.—P. Birch, Sutton-at-Hove, Kent. [X3135]

**RIDER TROWARD**, 78, High St., Hampstead.—1913-14 Matchless combination, 8 h.p., 2-speed, clutch, kick start, fast, flexible, perfect, electric lights; 36 gns. [6406]

**MATCHLESS** Combination, 8 h.p., 2-speed, luggage grid, wind screen, all accessories, exceptionally fine sidecar; £45, bargain.—W. Ayers, Garage, Kensington Palace. [6253]

**MATCHLESS** 6 h.p. J.A.P. Combination, 2-speed, kick start, nearly new tyres, horn, P. and H. spares, underslung coachbuilt sidecar, everything just overhauled, forced to sell, owner in Navy; 36 gns.—Carter, Woodside Grange, Lower Addiscombe Rd., Croydon. [6329]

**MATCHLESS** Combination, 8E, late 1914, 3-speed, fitted with disc wheels, Lucas head, side, and tail lamps, 5 gn. Cowey, horn, full tool kit, new 3½ h.p. back tyre, spare petrol tin; the whole outfit as new, run very little mileage; £79.—Pope, 51, Cornwall Rd., Bristol. [X3494]



## MOTOR CYCLES FOR SALE.

## Matchless.

**MATCHLESS**, 1913, 6h.p., J.A.P., kick starter, free engine, back hub clutch, in perfect mechanical condition, with speedometer, lamp, horn, and spares, exceedingly powerful and fast, £25, or with Montgomery large art cane sidecar, with luggage carrier at rear, £29 lot, or separate; after 8 o'clock evenings, or any time week-ends.—64, Mill Lane, Brixton Hill. [X3457]

## Minerva.

**2 1/2 h.p. Mag. Minerva**, running order; £9/10.—O. Farris, Coombe Bissett, Salisbury. [X3427]

## Moto-Reve.

**MOTO-REVE** Twin-cyl. Lightweight, mag., B. and B. horn, and spares; bargain, £9/10.—79, Adelaide Rd., Leyton. [6344]

## Motosacoche.

**1914 Motosacoche**, 2-speed, very fast; £25.—Ross, 86, High Rd., Lee. [6378]

**MOTOSACOCHÉ**, 1914, 2 1/4 h.p., variable gear, free engine, perfect order throughout, lamps, tools, spares, all complete; owner Overseas; £14.—D., 27, Crookerton Rd., Upper Tooting, London. [6355]

**MOTOSACOCHÉ**, 3 1/2 h.p. twin M.A.G., 1915 model, 2-speed, and clutch, lamps, speedometer, tools, Millford coachbuilt sidecar; the internal and external condition of this outfit is excellent, and an exceptional bargain at £46.—Longman, King St., Acton. Phone: 1578 Chiswick. [6394]

## New Hudson.

**NEW Hudson**, 2 1/2 h.p., 2-speed, 2-stroke; £38.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0840]

**NEW Hudson** 1913 3 1/2 h.p. Combination, 3 speeds, clutch, etc., £35; 1912 combination, as above, all accessories, £22.—P. J. Evans, John Bright St., Birmingham. [X3447]

## New Imperial.

**NEW Imperial**, brand new, 1916 model; £38.—Castle Motor Co., Kidderminster. [5982]

**NEW Imperial**, latest 2 1/2 h.p. and 6 h.p. models in stock.—Crow Bros., Guildford. [6367]

**1917 New Imperial** Lightweight, 2 speeds; 39 gns.—Motor Exchange, Horton St., Halifax. [6135]

**1914 New Imperial** Jar, good running order; £16.—Seen Gunter Garage, Gunter Grove, Chelsea. [6312]

**COLMORE** Depots, Manchester and Leicester, for immediate delivery of New Imperial motor cycles. [0805]

**RIDER TROWARD**, 78, High St., Hampstead.—New Imperial, 1916 (July), 2-speed, mileage 450, as new; 29 gns. [6408]

**NEV Imperial** Jar, 6 h.p. twin, 2 speeds, countershaft, in nice condition; £26.—Percy and Co., 337, Euston Rd., London. [6479]

**J. A. STACEY**, 12, Eccleall Rd., Sheffield, for Imperial Jar, the finest lightweight on the market; delivery from stock. [6246]

**NEW Imperial**, latest model, not ridden 200 miles, perfect condition; cost with licence, etc., £40, will take £34.—Alderton, 105, Openside. [6296]

**NEW Imperial** Jar's, 2 1/2 h.p., 2-speed, £38; free engine and kick start models, £48/6; 2-speed models, £40/19; easy terms arrange, or exchange.—Wauchope's, 9, Shoe Lane, London. [6436]

**P. J. EVANS**, Birmingham Agent—Immediate delivery all models New Imperials from stock, including standard light tourist, kick starter, and ladies' models; also one shop-soiled model £35.—87-91, John Bright St., Birmingham. [X3445]

**1916 New Imperial** Jar, 2 1/2 h.p., 2-speed, perfect condition, tyres unpunctured, front and rear lamps, pump, all tools, and spare tyre; must sell before Jan 15th; price £30.—Harris, The Poplars, Dowland, near Bristol. [6323]

## New Ryder.

**NEW Ryder**, 1914, 2 1/2 h.p. Villiers 2-stroke, 2-speed, lamp, horn, engine, gears, tyres perfect, speedy climb anything; bargain at £24, worth £30.—Bentley, Woodbrook, Wilmslow, Cheshire. [6313]

## Norton.

**NORTON** 1917 Brand New Big Four Combination; £90.—Percy and Co., 337, Euston Rd., London. [6465]

**NORTON**, T.T. Philipson, 1916, unspratched, exceptionally fast, tyres excellent, 6in. P. and H. head and rear lights, speedometer, done 600 miles, accessories, all in beautiful condition; £39.—34, Cumberland St., Luton, Beds. [X3369]

## N.S.U.

**N.S.U.**, 3h.p., 2-speed, £14/10; 3 1/2 h.p., 2-speed, £17/10; bargain prices.—Motor Exchange, Horton St., Halifax. [6134]

**N.S.U.**, 1914 3h.p. Twin Magneto, 2 speeds; cheap, £25.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [6319]

**N.S.U.**, 3h.p., Bosch, clutch, re-enamelled, good tyres, fine condition; must sell; £15; seen after 7.—81, Amersham Vale, New Cross. [6461]

**N.S.U.**, 1912-13, 3 1/2 h.p., 2-speed, F.E., adjustable pulley, and sidecar, in good condition; £20, or exchange with cash for higher power.—H.M., 13, May Rd., Gillingham, Kent. [6260]



## ACTUALLY IN STOCK.

**2 1/2 h.p. ALLON**, 2-sp., clutch, £47 5s.; 2-speed, £44 2s.; single-speed, £37 10s.; 11 models in stock.

**4 1/2 h.p. B.S.A.**, 1917, Mod. K, and Canoelet Sidecar and windscreen ..... £80 10

**4 1/2 h.p. B.S.A.**, 1917, chain driven, 8 models in stock ..... £68 0

**4 1/2 h.p. B.S.A.**, belt-cum-chain ..... £64 0

**2 1/2 h.p. ROYAL RUBY**, 1917, 2-speed ..... £40 0

**2 1/2 h.p. ROYAL RUBY**, 1917, single-speed ..... £32 10

**2 1/2 h.p. ENFIELD**, 1917, 2-sp., 2-stroke ..... £44 2

**3 h.p. ENFIELD**, 1917, k/start, T.T. model, £57 15s.; 3 h.p., £57 15s.; 5 models in stock.

**8 h.p. ENFIELD**, 1917, 2-seater Comb., Sidecar, hood, and screen ..... £105 2

**8 h.p. ENFIELD** Colonial Combination ..... £96 12

**8 h.p. ENFIELD** Standard Combination ..... £94 10

**3 h.p. ENFIELD** 2-sp. Lightweight, Canoelet Sidecar ..... £68 3

**8 h.p. ENFIELD**, 1917, dynamo lighting outfit, with hood and screen ..... £115 15

**7-9 h.p. HARLEY-DAVIDSON**, mod. 16F, and Sidecar ..... £102 9

**2 1/2 h.p. NEW HUDSON**, 2-sp., mod. C, 1917 ..... £38 0

**2 1/2 h.p. LEVIS** Popular ..... £32 0

**2 1/2 h.p. LEVIS**, mod. E, 2-sp., Enfield gear, rustless rims ..... £47 10

**3 1/2 h.p. 1917 ARIEL** Solo, 3-sp., kick-start ..... £65 10

## SECOND-HANDS.

**6 h.p. ENFIELD** 1916 Com., 3 lamps, speedometer, mirror, hood, screen ..... £85 0

**ENFIELD** 1916 6 h.p. Comb., with access., scarcely used; used 2 months ago ..... £84 0

**ENFIELD** Commercial Chassis and box, little used ..... £12 12

**ENFIELD** 1913 3 h.p. touring model, beautifully kept, ridden less than 500 miles ..... £47 10

**ENFIELD** 6 h.p., 1916 Comb., Lucas access., speedometer, mileage under 2,000 ..... £84 0

**2 1/2 h.p. DOUGLAS**, 1913, 2-sp., clutch, hood, tyres, all access. .... £35 10

**2 1/2 h.p. DOUGLAS**, 1913, 2-sp., & k/start, accessories, requires slight overhaul ..... £24 10

**2 1/2 h.p. DOUGLAS**, 1914 (date guaranteed), 2-speed, absolutely unspratched ..... £44 10

**2 1/2 h.p. 1916 O.K.-JUNIOR**, 2-speed, lamp and horn, splendid condition ..... £29 10

**2 1/2 h.p. CONNAUGHT**, 1916, only shop-soiled, lamp, horn ..... £29 10

**4 1/2 h.p. RADO**, 1914, single-speed ..... £15 15

**3 1/2 h.p. HUMBER**, 2-sp., Sidecar, many acc. .... £25 10

**5 1/2 h.p. P. & M.**, 2-sp., 1914, Comb, late, good value ..... £55 0

**2 1/2 h.p. NEW HUDSON**, late 1914, 2-speed ..... £23 10

**5 1/2 h.p. ROVER**, 1913, T.T. model, P. & H. lamp, Stewart horn ..... £29 10

## CARS.

**HUMBERETTE**, 1913, air-cooled, 3-sp., reverse, hood, screen, lamps ..... £52 10

**SAXON**, 17 h.p., 1915, 2-seater, Stepney, speedometer, lamps ..... £112 10

**FORD**, 1915, 2 windcreens, 4 shock absorbers, cost £170 12 months ago, used fine weather only ..... £110 0

**BELSEI**, late 1914, 10-12 h.p., Commercial Car, fitted up by them throughout, ridden not more than 6,000 miles ..... £185 0

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## MOTOR CYCLES FOR SALE.

## O.K.

**O.K.'s** in stock, M.A.G. £42/10, J.A.P. £38.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [5931]

**O.K.**, 1916, 4-stroke, 2-speed, countershaft, elaborate accessories, spares, and tools, as new; £25.—Head, 31, Hainthorpe Rd., West Norwood. [0867]

**O.K.**, late 1915, little used, owner absent, tyres, tubes unspratched, excellent going order, 4-stroke, 2-speed, 2h.p. (the engine of Snowdon fame); £23.—G., 1, High St., Tunbridge Wells. [X3401]

**2 1/2 h.p. 1916 O.K. Junior**, 2-speed, lamp and horn, splendid condition; £29/10.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [6272]

## Omega.

**1916 Omega** 2-stroke, 2-speed, not done 200 miles, as new; best cash offer.—Missin, Cottingham, Hull. [X3417]

## P. and M.

**P. and M.**, 3 1/2 h.p., 2 speeds, in good order, speedometer; £17.—Percy and Co., 337, Euston Rd., London. [6470]

**1912 3 1/2 h.p. P. and M.**, 2-speed, torpedo pattern cane sidecar; any trial; £32.—394, Finchley Rd., Child's Hill, N.W. [6320]

**P. and M.**, 1913, 3 1/2 h.p. coachbuilt combination; £40.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [4916]

**P. and M.**, late 1914, 3 1/2 h.p., 2-speed, with P. and M. coach sidecar, splendid order; £55; exchanges, deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6267]

## Peco.

**NEAR OFFER**—1915 (late) 2-speed Peco 2-stroke, 800; £25; approval.

**1915 (Dec.) 2-speed Peco** 2-stroke, 3,000; £23; approval.—Newman, Cowpen Hall, Blyth. [6243]

## Precision.

**PRECISION** 4h.p. 1914 Combination, countershaft 3-speed, clutch, lamps, speedometer, etc.; £28/10.—Lieut. Fleming, R.N., 11, Luna Rd., Thornton Heath, S.E. [6374]

## Premier.

**PREMIER**, late model, 2 1/2 h.p. Lightweight, in almost new condition; £18/18.—Layton's Garage, Bicester, Oxon. [X3096]

**PREMIER**, 1912, 3 1/2 h.p., 2-speed, £23/10; or with sidecar, £27/10.—Motor Exchange, Horton St., Halifax. [6136]

**PREMIER**, 1915, 3 1/2 h.p., 3 speeds, countershaft, kick starter, and coachbuilt sidecar, in first-class condition; £40.

**PREMIER**, 1914, 3 1/2 h.p., 3 speeds, and coachbuilt sidecar, in good order; £30.—Percy and Co., 337, Euston Rd., London. [6487]

**1914 3 1/2 h.p. Premier**, 2 speeds, coachbuilt sidecar; £45; cash or easy terms.—R. E. Jones (Garage), Ltd., Swansea. [0823]

**1914 Premier**, 2 1/2 h.p., 3-speed, clutch, all accessories; £28.—Smith, 16, Haverstock Hill, opposite Chalk Farm Tube Station. [6212]

**PREMIER**, 3 1/2 h.p., 3-speed, F.E., Drnids, Cowey speedometer, perfect mechanical condition, brand new tyres; £25.—5, Hillcrest Rd., Acton. [X3352]

**PREMIER**, 1913, 3 1/2 h.p., 2-speed countershaft, speedometer, coachbuilt sidecar, good condition; £30.—Sandringham, Victoria Av., Swansea. [X3274]

**PREMIER**, 3 1/2 h.p., 1914, countershaft 3-speed, kick starter, Jones trip, coachbuilt sidecar, hood, screen, scarcely used 1916; £45.—37, Church Rd., Brixton. [6301]

**PREMIER** Combination, 1915 (late), 4h.p., 3-speed countershaft gear, chain-cum-belt drive, and magnificent Watsonian cabriolet coachbuilt sidecar, whole combination as new, and unspratched; £54, lowest price; call evenings, or week-ends.—64, Mill Lane, Brixton Hill. [X3459]

## Quadrant.

**QUADRANT**, 3 1/2 h.p., spring forks, mag., good tyres and belt, good order, and fast; £12.—14, Dodbrook Rd., West Norwood. [0872]

**QUADRANT**, 1912, 4h.p., 2-speed, and sidecar, £29/10; 1913 7-9 h.p. countershaft gear, chain drive, coach sidecar, £45/10.—Motor Exchange, Horton St., Halifax. [6138]

## Rex.

**REX**, 3 1/2 h.p., clutch, mag., Miller head lamp, spring forks, fast; £10.—15, Bannister St., Withersea. [6314]

**REX**, 3 1/2 h.p., mag., spring forks, re-enamelled, good tyres, in good order; £10.—Head, 31, Hainthorpe Rd., West Norwood. [0869]

**3 1/2 h.p. Rex**, Bosch, B. and B., etc., very low, and 2 complete with sidecar; £13/10.—Smith, 199b, King St., Hemmersmith. [6369]

**1913 Rex**, 6h.p., 2-speed, free engine, only ridden one season, new tyres, tubes, excellent condition; 29 gns.—Tintern, Norman Rd., Sutton, Surrey. [6256]

**1914 6h.p. Rex** and Coachbuilt Sidecar, recently overhauled; £40, no offers, or part exchange Morgan.—Recruiting Officer, Regent Grove, Leamington. [X3460]



## MOTOR CYCLES FOR SALE.

**Rex.**  
6 h.p. Rex and S.C., 2-speed, Roc clutch, Bosch, B. and B., variable pulley, recently overhauled, ready to ride away; £25.—134, Longborough Park, Brixton. [6347]

**REX** 7 h.p. Twin, handle starting, £23/10; 1913 6 h.p. 2-speed Rex Sidette, £36/10; 3½ h.p. magnet model, £14/10; 5½ h.p. twin, £13/10.—Motor Exchange, Horton St., Halifax. [6139]

**Roc**  
ROCK, 4 h.p., free engine, clutch, perfect order, fast machine; £14.—F.W., 103, King's Rd., Peckham, S.E. [6236]

**Rover.**  
ROVER 1916 4 h.p. T.T. almost new, Philipson pulley, speedometer; £40. [6400]

ROVER 1915 4 h.p. Combination, fully equipped; £46. [6400]

ROVER 1914 4 h.p. Combination; £40. [6400]

ROVER 1913 4 h.p. Combination; £26.—Percy and Co., 337, Euston Rd., London. [6466]

ROVER, new 1917 latest combinations, solo, and T.T. models in stock.—Moss, Wem. [X3151]

1914½ Rover and Sidecar, 3-speed, free engine, new tyres; £35.—98, Osborne Rd., Forest Gate. [6206]

ROVER, 8 h.p., late model, 2-seater, in real good order; £28.—Percy and Co., 337, Euston Rd., London. [6483]

1914 3-speed Rover, mechanically perfect, new Dan-lon, runs well on paraffin; £34.—27, Wilbury Av., Hove. [6354]

OPEN all Christmas.—1915-16 T.T. Rover, Philipson, well equipped; 41 gns.—Troward, 78, High St., Hampstead. [6400]

ROVER, 3½ h.p., 3-speed, clutch, new tyres and belt, new engine bearings; £25.—Highfield, 2, Dulwich Rd., Brixton. [6202]

ROVER, 3½ h.p., clutch model, second, but not smart; £16, bargain; must clear.—Layton's Garage, Bicester, Oxon. [X3097]

ROVER, 3½ h.p., clutch, 3-speed, sidecar, accessories, spares, new condition; offers.—Saxton, 11, Claremont Rd., East Ham. [6346]

1916 Rover, 3½ h.p. (Philipson), semi T.T., fully equipped; first reasonable offer accepted.—Apply, 574, c/o The Motor Cycle. [X3373]

1914 3½ h.p. Rover, free engine, speedometer, and all accessories, excellent condition; £50.—Neil, 397, Gairbraid St., Maryhill, Glasgow. [X3141]

FIRST Choque, £26/10, secures (no offers).—3½ h.p. Rover, good tyre, adjustable pulley, B. and B., less mag.; owner called up.—Goddard, 11, Newland St., Rugby. [X5489]

1914 (new October) Rover Coachbuilt Sidecar Combination, absolutely perfect, lamps, horn, only requires seeing; great bargain, £39, no offers.—190, Divinity Rd., Oxford. [X3425]

ROVER, 3½ h.p., countershaft model, just delivered from works; £66/10; easy purchase terms arranged; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [6228]

1915 T.T. Rover, new tyres and belt, mechanical horn, Lucas lamps and generator, very fast, 68 m.p.h. guaranteed, condition and order as new, tools, spares, etc.; £32/10.—24, Tudor Gardens, Barnes. [6351]

P. J. EVANS, sole Birmingham Rover agent.—Im mediate delivery 1917 T.T., semi-T.T. models, with or without Philipson, also latest countershaft models.—87-91, John Bright St., Birmingham. [X3440]

ROVER.—New models in stock: 1916 3½ h.p. countershaft 3-speed, £66/10; 1917 3½ h.p. countershaft 3-speed, T.T. £69/10; your present machine can be taken as part payment; cash or deferred payment terms arranged.—Below. [6228]

ROVER, 1918, 3½ h.p., T.T., with Philipson pulley, lamps, bulb horn, mechanical horn, guaranteed absolutely as new, done under 100 miles; bargain, £50.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552]

**Royal Ruby.**  
ROYAL Ruby, 2½ h.p., 2-stroke, single-speed, £29/10; 2-speed model, £36/10; easy purchase terms arranged; exchanges considered.—Harrods, Ltd., Motor Cycle Dept., Brompton Rd., London, S.W. [6229]

**Rudge.**  
3½ h.p. Rudge Multi, £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0866]

1912 3½ h.p. Rudge, free engine, good condition; £25.—R. E. Jones (Garages), Ltd., Swansea. [0785]

1912 3½ h.p. Rudge and Coachbuilt Sidecar, 2-speed; bargain, £26.—394, Finchley Rd., Child's Hill, N.W. [6321]

RUDGE Combination, 5-6 h.p., electric lamps, good condition; £40, offers.—Webb, Culverthorpe, Grant-ham. [X3354]

RUDGE, 1913, 3½ h.p., N.S.U. 2-speed, and Lambert coachbuilt sidecar, splendid condition; £35.—Clarke, 39, Moffat Rd., Dumfries. [X3276]

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2½ h.p. LEVIS, 2-stroke. Fine machine ...	£20 0
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F.N., 1914, useful mount, guaranteed ...	£27 10
5-6 h.p. ZENITH-GRADUA and Canoelet Sidecar in Service grey ...	£30 0
3½ h.p. ROVER, 1914, T.T. model ...	£30 0
3½ h.p. BRADBURY, 1913, 2-speed, Mill-ford Sidecar ...	£35 0
3½ h.p. LEA-FRANCIS, twin, 2-speed ...	£35 0
3½ h.p. SERVICE-J.A.P., 3-sp., overhauled ...	£32 0
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6 h.p. ENFIELD Combination, 1913-14, overhauled ...	£45 0
3½ h.p. BLACKBURN, 1915, countershaft 3-speed, and Sidecar ...	£50 0
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7-9 h.p. HARLEY and Sidecar, 1916, done 2,000 miles, speedometer, etc. ...	£85 0
INDIAN, 1916, Powerplus, and Canoelet, done 600 miles ...	£95 0
7-9 h.p. INDIAN, 1914, spring frame, and Sidecar, elec. equipped ...	£50 0
INDIAN, 1916, Powerplus, Model G, perfect ...	£72 0
6 h.p. ENFIELD Combination, 1916, very fully equipped ...	£80 0

LIGHT CARS of well-known makes from £105.

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1915-16 Outfits and Solo  
Mounts from 3½ h.p. for  
SPOT CASH.  
ALSO LIGHT CARS.

## MOTOR CYCLES FOR SALE.

Rudge.

OPEN all Christmas.—1914 Rudge Multi, underslung coach sidecar, 5-6 h.p. model; cost over £85, 3 gns.—Below. [6400]

ANOTHER, 3½ h.p. T.T. Rudge, clutch, 23 gns. another, 3½ h.p. T.T. Rudge, special engine, very fast, 22 gns.—Rider Troward, 78, High St., Hampstead. [6400]

1915 Rudge Multi, 3½ h.p., army model, splendid condition, only done 1,000 miles, lamps, speedometer complete; £35.—Palmer, Ongar, Essex. [6287]

RUDGE Multi 6 h.p. 1914 Combination, in excellent running order, complete with lamp, horn, spares; £40.—Pearce, Fawdry St. Foundry, Smethwick. [X3142]

RUDGE, 1912, 3½ h.p., 2-speed, coach sidecar, £29/10; 1913 3½ h.p. Rudge Multi, new coach sidecar, £37/10.—Motor Exchange, Horton St., Halifax. [6137]

RUDGE, 3½ h.p., 1912, clutch model, in good condition, and well tried, coachbuilt sidecar; accept £27, or without sidecar £23.—Layton's Garage, Bicester, Oxon. [6455]

RUDGE Multi and Coachbuilt Sidecar, late 1914, splendid condition, tyres new, lamps, horn, mirror, accessories; any trial; £39, no offers.—Jones, c/o Miss Broad, Grain, Isle of Grain. [6216]

1915 3½ h.p. Rudge Multi; coach-built sidecar, plating, enamelling, tyres as new, spare tyre, new belt case, speedometer, all accessories.—Martin, Bandon Arms Hotel, South Main St., Bandon, Cork. [6419]

RUDGE (November, 1912) 3½ h.p. T.T. Machine, excellent condition, private owner, £25; absolutely no offers; seen or tried any day Xmas week.—Apply, R. Dabbs, Scrab Hill, Dordy, Lincolnshire. [6257]

Scott.

COLMORE Depots, Birmingham, and Manchester, for Scott motor cycles. [0806]

OPEN all Christmas.—1916 (May) Scott, mileage 400, perfect, unscratched, Lucas accessories; cost £80; 55 gns.—Below. [6400]

ANOTHER, 1914 T.T. combination, sporting underslung sidecar, good order, fast; 36 gns.—Rider Troward, 78, High St., Hampstead. [6339]

GENUINE 1914-15 T.T. Scott, speedometer, lamps, perfect order, overhauled; £35.—White Hart Garage, White Hart Lane, Barnes. [6352]

SCOTT, 1914, 3½ h.p., 2-speed, Cowey, lamps, new tyres, with Canoelet sidecar, as new; 48 gns.; exchange for lightweight and cash.—Ashworth, Dursley, Glos. [X3101]

SCOTT, 1915 (late), T.T., 3½ h.p., 2-speed, 2-stroke, lamps, mechanical and bulb horns, good condition; £47.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0479]

SCOTT Canoelet Combination, 1914, 2 new tyres, hood and full size rain screens, completely fitted for road, recently overhauled, suit lady; £42.—37, Atherton Rd., Forest Gate, London. [6181]

Singer.

SINGER, 1912, 3½ h.p., free engine; £18. [6400]

SINGER, 1912, 3½ h.p.; £14; both in real good order.—Percy and Co., 337, Euston Rd., London. [6472]

SINGER, 1913, 3½ h.p., 3 speeds; coach sidecar; £33/10.—Motor Exchange, Horton St., Halifax. [6140]

SINGER 2½ h.p. Lightweight, max. perfect order; no exchanges; 29, or offer.—Tait, 8, Wardie Rd., Edinburgh. [6208]

1914 Singer, 3½ h.p., Sturmeys 3-speed and clutch, P. and H. lamp, Colledge shield, fine order; £35, or nearest.—Truscott, Liskeard, Cornwall. [X3282]

4 h.p. 1914 Singer and coachbuilt sidecar, fitted with hood and screen, handsome trimout, 2-speed gear and free engine, all accessories complete; £45, guaranteed.—Wanchope's, 9, Shoe Lane, London. [6432]

SINGER Lightweight, about 1913, M.A.G. engine, 2 h.p. mag., belt drive, very light machine, climbs stiff hills, new tyres and belt, in perfect mechanical condition, and a bargain, £12.—64, Mill Lane, Brixton Hill. [X3458]

Sun.

SUN-VILLIERS, 1915, 2-speed, perfect; 25 gns.—Troward, 78, High St., Hampstead. [6409]

COLMORE Depots, Birmingham and Manchester, for delivery from stock of all models of Sun motor cycles. [0807]

Sunbeam.

SUNBEAM, 3½ h.p., 1916, 3-speed; £68.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6061]

ON Sale, 1915 3½ h.p. Sunbeam combination, equal to new, all on; £75.—Apply, J. H. Jennings, Sandbach. [5662]

SUNBEAM 1914 6 h.p. Twin Combination, well equipped, and in perfect order; £80.—The Briars, Gatwick, Horley, Surrey. [X3375]

1916 3½ h.p. Sunbeam, unscratched, only ridden 300 miles, Lucas accessories; cost £84, accept 67 gns., bargain.—30, Talbot St., Burnley. [X3421]

1915 3½ h.p. 3-speed Sunbeam Combination, fully equipped, excellent condition; £80; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0862]



## MOTOR CYCLES FOR SALE.

## Sunbeam.

1915 3½h.p. Sunbeam Combination, lamps, speedometer, etc., perfect condition, done 4,865 miles; £88/10.—Squire, 86a, London Rd., Forest Hill. [6239]

SUNBEAM 1915 3½h.p. Combination, 3-speed, lamps, horn, speedometer, excellent condition, light coachbuilt sidecar; £65, or solo £80.—McIntosh, Southview, Onildford Rd., Ash, Surrey. [X3275]

OPEN all Christmas.—1914-15 Sunbeam, 3½h.p., Burberry sidecar, adjustable wind screen, luggage grid, all Lucas accessories, new tyres throughout; cost £100; mileage 5,000; 65 gns.—Troward, 78, High St., Hampstead. [6403]

1915 3½h.p. Sunbeam, Mills-Fulford coach sidecar, Lucas lamps, Jones speedometer, guinea horn, complete tools, condition genuinely indistinguishable from new; entertain Douglas part exchange.—Robinson's Garage, Green St., Cambridge. [6388]

1916 3½h.p. Sunbeam, 3-speed and free engine model, and kick starter, fitted with Milliford sidecar, Lucas horn, Lucas head lamp and generator, Lucas rear lamp and generator, and Cowey speedometer, condition splendid; no offers, price £85.—Alexander and Co., 272, St. Western Rd., Glasgow. [5882]

## T.D.C.

T.D.C., 4h.p., 3-speed, clutch, coachbuilt sidecar; bargain, £25.—245, Hammersmith Rd., London, W. [6298]

## Torpedo.

TORPEDO-PRECISION 2-speed Lightweight, recently overhauled; £16/10.—Motor Exchange, Horton St., Halifax. [6141]

## Triumph.

1912 Clutch Triumph, very nice order; £24.—Ross, 86, High Rd., Lee. [6380]

3 h.p. Triumph, good condition throughout; £25.—Hayes, 344, Euston Rd. [X3411]

3 h.p. Triumph, clutch model, in fine order; £20, no offers.—14, Duddbrook Rd., W. Norwood. [0874]

1914 1/2 Triumph, 3-speed, splendid machine, accessories; £40.—Varcoe Motors, St. Austell. [6188]

TRIUMPH, 3½h.p., 2-speed, and wicker side chair; a bargain, £20.—E. Brown, Newburn, Northam. [X3133]

1911 Triumph, just overhauled, tyres good, very reliable; £18.—Henly, 7, Woburn Place, W.C. [6322]

TRIUMPH, 1911, clutch model, lamps, etc., new condition; £21.—11, Luna Rd., Thornton Heath, S.E. [6372]

1913 Clutch T.T. Triumph, in perfect condition; £29.—Wellboy Motor Garage, Woodford Rd., Forest Gate. [6284]

1908 Triumph, 3½h.p., good condition, N.S.U. gear, tyres nearly new; £17.—7, Davids Rd., Forest Hill. [6201]

TRIUMPH, 1913, 3½h.p., 3 speeds, speedometer, in good order; £28.—Percy and Co., 337, Euston Rd., London. [6482]

TRIUMPH, 3½h.p. (1909), racing cylinder; £27.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6059]

TRIUMPH, 1911, free engine, perfect condition, lamps; nearest £18/10.—Holder, 413, Wellington St., Grimsby. [X3386]

TRIUMPH, re-enamelled and plated, new tyres; £26.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6062]

TRIUMPH, 1913, 3-speed, 1914 Swan; £36, offers; just overhauled.—Barbrin, 37, Cavendish Rd., Mapham, S.W. [6197]

TRIUMPH, 3½h.p., 1912, plate clutch, good tyres, good order, and fast; £19.—14, Duddbrook Rd., West Norwood. [0873]

1912 T.T. Triumph, N.S.U. 2-speed, splendid condition; £21; with sidecar £24.—Electrician, Studley Royal, Ripon. [X3393]

1913 T.T. Triumph, been little used, 2 lamps and all accessories; 28 gns.—Chilton and Co., 199, High St., Watford. [6456]

TRIUMPH, 1913½, 3½h.p., 3-speed, lamp, horn, mirror, etc., excellent condition; £35.—J. W. Repton, Derby. [X3394]

1909-10 3½h.p. Triumph, with lamps, spares, overalls, perfect running condition; £18, or offers.—63, Murray Rd., Rugby. [X3134]

TRIUMPH, T.T., 3-speed, January, 1915, about 6 months' use, rider on active service; what offers?—Bacon, Wellington, Salop. [6204]

RIDER TROWARD, 78, High St., Hampstead.—1913 3-speed Triumph, re-enamelled, new tyres, overhauled, perfect; 32 gns. [6405]

3 h.p. Triumph, 1912 model, free engine, fast machine, T.T. bare; £22/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [6435]

1912 Triumph, new bearings, new Kempshall non-skid, lamps, complete, running order; £18.—Valler, Hilsdale, Eynesford Rd., Farnham. [X3462]

TRIUMPH, 3h.p., splendid running order, new tyre and inner tube; owner joined up; sacrifice £12.—Apply, Ditchfield, 544, London Rd., Lowestoft. [X3413]

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## Special Clearance Lines.

All goods sent on 7 days' approval against remittance.

A 3/- Outfit presented free of cost to all purchasers of covers and tubes as advertised on orders exceeding £1.

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	Our Price.	List Price.
26 × 2 for Lightweight Machines.		
Continental, standard .....	11/-	19/6
Kempshall heavy anti-skid .....	19/6	28/-
26 × 2½ for 2½ or 2 Rims.		
Continental, standard .....	14/-	22/6
Clincher A Won, rubber studded .....	19/6	32/-
Clincher de Luxe, rubber studded .....	21/-	32/-
Kempshall, heavy anti-skid .....	19/6	32/-
Kempshall, heavy non-skid .....	37/6	42/-
Michelin, heavy Trident .....	21/6	30/-
Pedley, wired-on .....	18/-	32/6
Pedley, 3-ribbed .....	21/-	37/6

24 × 2½ for 2 Rims.		
Clincher de Luxe heavy cover and tube complete .....	19/-	32/-

26 × 2½ Oversize for 2½ Rims		
Clincher de Luxe, heavy .....	21/6	30/6
Clincher de Luxe, extra heavy .....	23/6	33/-
Pirelli, heavy rubber studded .....	23/6	39/-
Kempshall, heavy anti-skid .....	23/6	37/6

26 × 2½ × 2½ Oversize for 2½ Rims.		
Continental basket pattern .....	21/6	28/9
Clincher de Luxe, extra heavy .....	25/-	35/6
Clincher Dreadnought .....	30/-	40/-
Wood-Milne, grip ribbed .....	22/6	32/9

26 × 2½ for 2½ Rims.		
Clincher A Won, rubber studded .....	22/6	30/9
Clincher A Won, ribbed .....	10/-	26/6
Kempshall, heavy non-skid .....	38/-	48/-
Wood-Milne, heavy grip ribbed .....	20/-	31/6
Wood-Milne, ex. heavy grip rib .....	25/-	39/-
Michelin Trident, wired on .....	19/-	32/-

26 × 3 for 2½ Rims.		
Pedley, heavy 3-ribbed .....	44/9	77/-
Clincher, rubber studded .....	21/-	38/-

28 × 2½ × 2½ for Indian Machines.		
Kempshall, heavy racing .....	25/-	48/3

28 × 3 for Indian and other American Machines.		
Clincher de Luxe .....	35/-	48/-
Wood-Milne .....	27/6	44/-
Kempshall heavy anti-skid .....	25/-	42/-

650 × 65		
Pedley, heavy 3-ribbed .....	41/9	50/6
Heavy rubber-studded .....	22/6	50/-

700 × 80 Oversize for 650 × 65 Rims.		
Wood-Milne, heavy square tread .....	30/-	40/6
Clincher, 3-ribbed .....	32/6	48/-

TUBES.—CONTINENTAL, ELITE, etc.		
26 × 2 .....	4/6	6/9
26 × 2½ .....	8/6	7/9
26 × 2½ .....	6/9	8/3
26 × 2½ × 2½ .....	5/9	8/9
26 × 2½ .....	5/6	8/9
26 × 3 .....	7/6	9/6
28 × 2½ .....	7/6	9/3
28 × 3 .....	9/6	11/9
650 × 65 .....	5/6	10/-

Butted, 1/6 extra.		
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BELTS.—CONTINENTAL		
4in. section .....	per ft. 1/-	1/11
8ft. 6in. × 4in. lengths only .....	7/-	13/9

MIDLAND PATENT WIRE COIL		
1½in. section .....	per ft. 1/6	2/9
1in. " .....	" 1/4	2/2
¾in. " .....	" 1/4	2/-
¾in. " .....	" 11d.	1/9
¾in. " .....	" 9d.	1/6

Best English Make (2-piece belts).		
1in. section .....	per ft. 1/3	1/11

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## MOTOR CYCLES FOR SALE.

## Triumph

1916 Triumph, countershaft 4h.p. model, semi T.T. bare, as new, and rare machine; 60 gns.—Lee, Sherwood, Kinnaird Av., Bromley Hill, Kent, S.E. [6277]

1911 3½h.p. Triumph, Millennium 2-speed fitted, large wicker sidecar, engine in excellent condition; £27.—Particulars, Fletcher, Castle Rd., Bedford. [X3144]

TRIUMPH, 1911, overhauled, re-bushed, tank re-enamelled, at Triumph works, tyres, belt, new, perfect; £18/10, quick sale.—51, High St., Chatteris. [6422]

1913 Triumph, 3½h.p., clutch, 2 speeds, in perfect condition, lamps, tools, etc.; must sell; under orders for front; 25 gns.—Box L2, 770, c/o The Motor Cycle. [6449]

1915 Countershaft Triumph, new condition, not done 3,000 miles, lamps, horn, speedometer, fitted Canoelet sidecar; £65.—Wright, Ayot, The Avenue, Coulsdon. [6421]

3½h.p. Triumph, late 1912, clutch model, new Dunlops and belt, excellent condition; seen any time; owner enlisted; £28, or nearest offer.—Booker, Builder, Walberton, Arundel. [6285]

TRIUMPH, 3½h.p., free engine, Philipsen pulley, Jones speedometer, lamps, and accessories; £25; sidecar if desired; seen by appointment.—Barholm, Queen's Rd., Loughton. [6186]

1914½ Triumph, 4h.p., 3 speeds, clutch, kick starter, lamp set, speedometer, and handsome coachbuilt sidecar, splendid condition; bargain, £42.—8, Sturwell Park Walk, Brixton. [6252]

1913 3½h.p. Triumph, late model, JS type 3-speed hub, new Dunlops, 2 lamps, Stewart speedometer, horn, tools, etc., excellent condition; £53.—Robinson's Garage, Green St., Cambridge. [6391]

1916 Triumph Junior, practically new, Dunlops, Lucas lamps, accessories include two new Clinchers spare; must sell immediately; what offers?—Dunlop, Cambeskneth, Stirlingshire. [6195]

TRIUMPH, 1907, £16/10; 1909, £19/19; 1909 2-speed, £22/10; 1910, £21/10; 1911, £22/10; sidecar, £3 extra; close cash offers considered.—Motor Exchange, Horton St., Halifax. [6142]

1914 (late) 4h.p. 3-speed Triumph, Lucas lamps, Cowey speedometer, watch, electric horn, and full kit, used only solo, condition as new; price £50 Apply, Malcolm Simmonds, Mounmouth. [6343]

TRIUMPH, 3½h.p. clutch model, rebushed, new piston, new Miller head lamp and generator, and new lightweight sidecar, underslung, 2 new Dunlop heavies; bargain, £30.—Gatcombe Dairy, 397, High St., Lewis ham. [6278]

## Veloce.

VELOCE, 1915, 2½h.p., free engine, 2-speed, kick start, speedometer, in excellent condition; £32.—W. E. Lomer, 227, High St., Stochley, Birmingham. [6339]

## Vindec.

VINDEC Special 5h.p. Twin, N.S.U. 2 speeds, in real good order; £17.—Percy and Co., 337, Euston Rd., London. [6481]

## Whiting.

OPEN all Christmas.—1917 Whiting, 4.5h.p. twin J.A.P., spring frame, 4-speed, clutch, kick start, electric light; cost £85; mileage 300; illness cause of sale; 61 gns.—Troward, 78, High St., Hampstead. [6402]

## Williamson.

OPEN all Christmas.—1914 water-cooled Williamson, underslung 20 gns. sidecar, wind screen, luggage grid, speedometer, horn, lamps, perfect order; cost £135, 49 gns.—Below.

ANOTHER, 1914, air-cooled, coachbuilt sidecar, hood, screen, lamps, mileage 4,500; 56 gns.—Rider Troward, 78, High St., Hampstead. [6397]

## Wolf.

1916 (Sept.) 2½h.p. Wolf, 2-stroke, 2 speeds, done 600; cost £38; beautiful condition; £27/10; must sell.—Lord, Mountfield, Prestwich. [X3451]

WOLF, late 1915, 2-stroke, 2-speed, clutch, kick starter, excellent order and fast; £20; any trial.—M., 44, Howard Rd., South Norwood. [6333]

1916 Wolf, 2-stroke, 2-speed countershaft, kick starter, hand clutch; price £21; mileage 600; no offers.—7, Cambridge Rd., Thornton Heath, Croydon. [X3279]

## Zenith.

3 h.p. Zenith, very little used, and in good condition; £30.—Hayes, 344, Euston Rd. [X3412]

6 h.p. Zenith, 1914, speedometer, lamp, just overhauled; £29.—Church View, Chard. [6233]

ZENITH, 1913-14, 4h.p., water-cooled, overhead valves; bargain, £28/10.—53, Swaffield Rd., Wandsworth, S.W. [6441]

FOR Sale, Zenith Motor Bicycle, latest pattern, purchased July, 1916, cost £84, and etceteras £8; for sale £65.—Apply, Chausseur, Ramalade, Bracknell. [6240]

ZENITH, 3½h.p., Oradua, for sale, or exchange for lightweight, Levis preferred, recently thoroughly overhauled and replacements by Zenith Co.; communicate or visit.—Sgt. P. Hayman, c/o Park House, Walton-on-Thames. [6217]



## MOTOR CYCLES FOR SALE.

## Zenith.

3 h.p. Zenith-Green Water-cooled 1913 Combination, 34 just overhauled, electric light, spare belts, complete set tools, etc., 13 ga. Canoelet sidecar with petrol carrier.—Putnall, High St., Queenborough. [6355]

3 h.p. Zenith, Gradua gear, 1912, splendid order and 2 condition, Bosch mag., new lin. Dunlop belt, Palmers, lamp, tools, bargain, £18/10; seen, tasted any time; coachbuilt sidecar, £4/10.—Green, 45, Charles St., Exmouth St., Commercial Rd., E. [X3487]

8 h.p. Zenith Motor Cycle, with Gradua gear, clutch model, complete with wicker torpedo sidecar, good tyres, belt, etc., in perfect condition, complete with lamps, spare covers and tubes, tools, etc.; a bargain, £37/10; open for any trial.—Warrilow and Co., Oxford St., Weston-super-Mare. [X3435]

## Ladies' Motor Cycles.

ROYAL Ruby, 2-stroke, 2½ h.p., new, only ridden once; cost £45, accept £32, no offers.—Capt. Phillimore, Willesley Hall, Ashby-de-la-Zouch. [4882]

2 h.p. Ivy 2-stroke Motor Cycle, lady's model, in perfect condition, 1916 machine, Dunlop tyres, complete; a bargain, £23/10.—Warrilow and Co., Oxford St., Weston-super-Mare. [X3434]

## Miscellaneous.

FARRAR'S.—Lady's Douglas, 2-speed model, fine gear, very good tyres; £25.

FARRAR'S.—1915 7-h.p. American Excelsior, countershaft 3 speeds, dynamo lighting, lamps, speedometer, and fms sidecar; £59/10, cash only.

FARRAR'S.—Latest 6-h.p. A.J.S. combination arrived, smarter than ever, one only; £102/18.

FARRAR'S.—1911 3½ h.p. P. and M., 2 speeds, chain drive, and Monigumey sidecar; £28.

FARRAR'S.—1916 5-h.p. big single English Excelsior, countershaft 3 speeds, kick-starter, shop-soiled; sacrifice, £64.

FARRAR'S.—1916 2½ h.p. Omega-Jap, countershaft 2 speeds, shop-soiled; sacrifice, £35.

FARRAR'S.—1914 3 h.p. Omega 2-stroke, £16; 3½ h.p. Minerva, good gear, £8.

FARRAR'S.—3½ h.p. Scott and smart sidecar; £30.—Farrar's Motories, Hopwood Lane, Halifax. [6166]

BOOTH'S Motories, Portland Place, Halifax.—Detailed list of motor cycle bargains free.

HARLEY-DAVIDSON, 7-h.p., fitted with £22/10 coupe fitsu sidecar; £69/10.—Booths Motories.

NEW Imperial-Jap, 2½ h.p., 1915, 2-speed countershaft gear, Binks carburettor; £25/15.—Booths Motories, Halifax.

RUDGE Mult, 3½ h.p., 1913, fitted with cigar-shaped sidecar; £28/15.—Booths Motories.

EXCELSIOR, 2½ h.p., 2-stroke, 1916, only run about 500 miles; £24/15.—Booths Motories.

TRIUMPH, 3½ h.p., 1910, 2-speed, very low riding position; £17/10.—Booths Motories, Halifax.

JAMES, 4½ h.p., 1912, 2-speed, chain drive, coach sidecar; £28/15.—Booths Motories, Halifax.

PREMIER, 3½ h.p., 1913, 2-speed countershaft, chain and belt drive; £26/15.—Booths Motories.

REX, 6-h.p., 2-speed, mag., spring forks, good tyres, B. and B.; £11/15.—Booths Motories.

TRIUMPH, 3½ h.p., 1911, 2-speed, good tyres, lamp, horn, tools; £19/15.—Booths Motories.

LINCOLN-ELK, 3 h.p., 1911, mag., Druid forks, good tyres; £11/15.—Booths Motories.

HUMBER, 3½ h.p., 1913, 2-speed, handle starting, animal splendid condition; £28/15.—Booths Motories.

TWIN Premier, 8 h.p., 1914, 2-speed countershaft; £18/18 coach sidecar; £49/15.—Booths Motories.

TRIUMPH, 1910, free engine, T.T. bars, good tyres; £18/10.—Booths Motories, Halifax.

B.S.A., 1911, 3½ h.p., Grado variable gear, nice condition; £22/10.—Booths Motories, Halifax.

RUDGE, 1912, P. and M. gear, belt and chain drive; £25/15.—Booths Motories, Halifax.

TWIN N.S.U., 6 h.p., 1910, 2-speed, with sidecar; £18/15.—Booths Motories, Halifax.

DOUGLAS, 1913, 2-speed, T.T. bars; £30.—Booths Motories, Portland Place, Halifax. [6383]

£32.—1916 Harley-Davidson motor cycle, model 16J, with 21 ga. sidecar, in perfect order.

£95.—1916 ditto, model 16F, with 20 ga. sidecar, only been used for demonstration purposes.

£60.—1915 ditto, model 11J, not been used for 6 months; owner in the army.

£54.—1916 2½ h.p. 2-speed W.D. Douglas, not done 600 miles.

£65.—1915 5-h.p. Hazlewood combination, J.A.P. engine, in perfect order, with 3-speed countershaft gear.

£43.—1915 3½ h.p. Hazlewood, J.A.P. engine, with 3-speed countershaft gear.—R. Newitt, Easton St., High Wycombe. [X3456]

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REALISING the fact that "a stitch in time saves nine," we are making it more easy for riders to have at hand a set of our special fittings by putting up an assortment in a neat box.



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If other people can't keep promises, we can, and we do not tinker with your machine, but repair and absolutely guarantee it at moderate cost, and we will let you know beforehand the day of delivery. Time means money so send your Magneto at once to

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Stocked by all leading motor agents, or direct from  
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## MOTOR CYCLES FOR SALE.

## Miscellaneous.

EXCELSIOR, shop-soiled model only, £68; also Harley-Davidson.—Thrpine, 22 and 29, Preston Rd., Brighton. [0716]

1916 6-h.p. Combination, in new condition, with all accessories; 75 gns.—Wellboy Garage, Woodford Rd., Forest Gate. [6194]

INDIAN and Sidecar, £55; Rudge 2-speed and sidecar, £55; Rover 1917 T.T. model, new, £50.—Christie Bros., St. Andrews. [6305]

31 h.p. Motor Bicycle, good running order, new tyres; £27/15, bargain.—Apply, Manager, Have Sea-side Villas, Portlaid, Brighton. [6250]

LAST Three Left: Must clear.—Douglas twin, £15; Brown 3-speed, £17/10; Indian twin, £20; no offers.—Seen 9 to 6.—Llandudno, 60, Lansdowne Hill, West Norwood, S.E. (See cars.) [5792]

EXCELLENT Combination, 5-h.p. Blumfield engine, Jardine 4-speed gear, Canoelet sidecar, Seaspray, tyres, etc., practically new, recently overhauled; £45, or near offer.—Batoheloh, Bell Farm, Cliffe, near Rochester. [6448]

FOR Real Bargains apply to Longman Bros., King St., Acton. Phone: 1578 Chiswick. You will reap the benefit of their expert advice, and be purchasing your machine from a firm who have a reputation to consider. [6395]

1915 Morgan, sporting model, excellent order, 80 gns.; 1913 3-speed Triumph, Gloria sidecar, and accessories, £38; 1915 3-speed T.T. Douglas, accessories, £38; exchange 8-h.p. Rover car, accessories, 2 ignitions, for motor cycle, B.S.A. preferred.—Green, Haverford-west. [X3163]

OPEN all Christmas.—Machines under £16 in stock: Excelsior, new carburettor, saddle, Bosch, 8 gns.; Singer, 3 h.p., Bosch, B. and B., 8 gns.; F.N., 1912, 2½ h.p., 2-speed, 10 gns.; Rex, 1911, 6-h.p., T.T. clutch, Bosch, new carburettor, tyre, belt, overhauled, 45 m.p.h., 12 gns.; L.M.C., 1912, 3½ h.p., engine, perfect, 13 gns.; Brown, 1912, 3½ h.p., 15 gns.—Rider Troward, 78, High St., Hampstead. [6413]

## SIDECAR ATTACHMENTS.

G.K. Sidecars.—Cigar sidecars complete, from £7.

G.K. Coachbuilt Underslung Sidecar, complete with Palmer tyre; £7/15.

G.K. Sidecars, 40 models; write for 1917 Net.—Wholesale suppliers, The London Sidecar House, G.K. Sidecar Co., Lorenzo St., Pentonville Rd., W.O. [6386]

BASTONE'S.—New cigar pattern sidecars, complete with Michelin tyre, £7/10.

BASTONE'S.—New coachbuilt latest underslung sidecar, complete with Michelin tyre, £7/15.

BASTONE'S Sidecar Dept., 228, Pentonville Rd., King's Cross, London, N. Close 6.30, Saturdays 1 o'clock. [5542]

WATSONIAN Coachbuilt Sidecar, storm apron, as new; £7.—Ohrch View, Chard. [6234]

MILLFORD Sidecar, wicker body, side door, good tyre, overall apron, fine order; £3/3.—Baldov.

WE have a few new but showroom-soiled Farlow sidecars; Model No. 1, usual price £11, sale price £8; Model No. 2, usual price £10, sale price £7; all carrying our usual guarantee.—Farrar's Motories, Hopwood Lane, Halifax. [5531]

LIGHT Middleton Sidecar, 26 in. wheel; 30/-; fair condition.—Evers, Keilworth Av., Harrogate. [X3281]

CORONET Sidecars.—Illustrated catalogue free upon request.—Booths Motories, Portland Place, Halifax.

CORONET Sidecars from £9/15; special model for Harley-Davidson, enamelled French grey.

CORONET Sidecars from £9/15; special model for Indians, enamelled red, 28 in. tyre.

CORONET Sidecars from £9/15; sporting models, with cigar-shaped bodies, for lightweights.

CORONET Sidecars; special coachbuilt model for lightweights, £9/15; illustrated list free.

CORONET Sidecars are made to suit any machine, and delivered from stock.

CORONET Sidecars.—Send for illustrated catalogue from Booths Motories, Portland Place, Halifax.

BOOTH'S Motories, Halifax.—Light torpedo sidecar, £5/5; £18/18 coach sidecar, hood and screen, £8/15.

BOOTH'S Motories, Halifax.—New sidecar chassis, with wheel, spring, all fittings; £2/15. [6384]

CANOELET Coachbuilt Sidecar, in perfect order and good condition; £5/10.—E. T. Davey, 152, Katharine Rd., East Ham. [6302]

CIGAR Shaped Sidecar, quick-fit joints, etc., £4/10; also semi canoe sidecar, side door, etc., £4.—Smith, 199b, King St., Hammersmith. [6370]

SIDECARS.—Several sporting models in coachbuilt and aluminium to clear cheap, with or without chassis.—Royal Leicester Sidecar Co., Leicester. [0718]

PHENIX Sidecars, new and second-hand, also bodies, hoods and screens. Write second-hand list; sidecars from 50/-.—Phenix, 756, Holloway Rd., N. [X6683]



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 GREASERS - "Duco"  
 GREASE - "Brito"  
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 HOSE CLIPS - "Challenge"  
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 LAMPS - "Autoclipse"  
 LAMP BRACKETS - "Autoclipse"  
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### SOLO MACHINES.

	£	s.	d.
4½ h.p. No. 6 JAMES, 3-speed .....	69	10	0
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3 h.p. ENFIELD, twin 2-speed .....	57	15	0
2½ h.p. ALLON, 2-stroke, 2-speed .....	44	2	0
2½ h.p. ALLON, 2-stroke .....	37	16	0
2½ h.p. CALTHORPE-J.A.P., 2-speed, variable ignition .....	39	18	0
2½ h.p. ROYAL RUBY, two-stroke .....	32	0	0
2½ h.p. ROYAL RUBY, 2-stroke, 2-speed .....	40	0	0
2½ h.p. CALTHORPE, 2-stroke, 2-speed .....	34	13	0
2½ h.p. NEW IMPERIAL, 2-speed, variable ignition .....	40	19	0
2½ h.p. LEVIS, latest model .....	42	0	0
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7-9 h.p. 16F HARLEY-DAVIDSON, special H.D. Sidecar, second-hand, perfect .....	92	10	0
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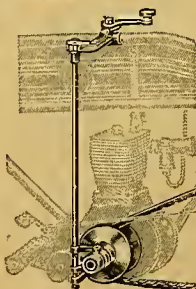
They are designed by clever engineers, and we can recommend them with every confidence to motor cyclists who are out for comfort and reliability.

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which enables you to start like a car. Takes your machine and sidecar up hills impossible without. It gets you safely through the thickest traffic, besides enabling you to travel over the greasiest roads with safety. The price for Triumphs, Bradburys, etc., is £3 3s.; ball thrust models, £4; lightweight models from £2 10s. Recessed pulleys, 10/- extra.

Delivery from Stock.



Pulley fitted to machine.

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which enables you to run on paraffin or inferior substitutes with comfort.

The price complete is

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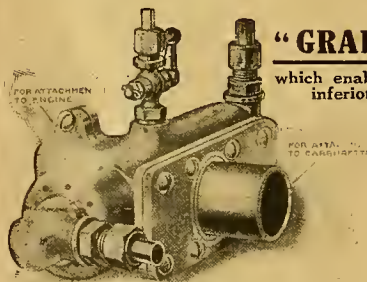
and it will save its cost in a month.

It heats the paraffin before entering the float chamber, and also defuses and thoroughly heats the mixture before entering the cylinder. Nothing more can be desired.

Write for descriptive leaflet.

Write for Catalogue to:

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See that the name 'FOX' is on the metal discs (right and left) attached to every genuine pair of FOX'S New Non-Fray Spiral Puttees, thus—



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combines  
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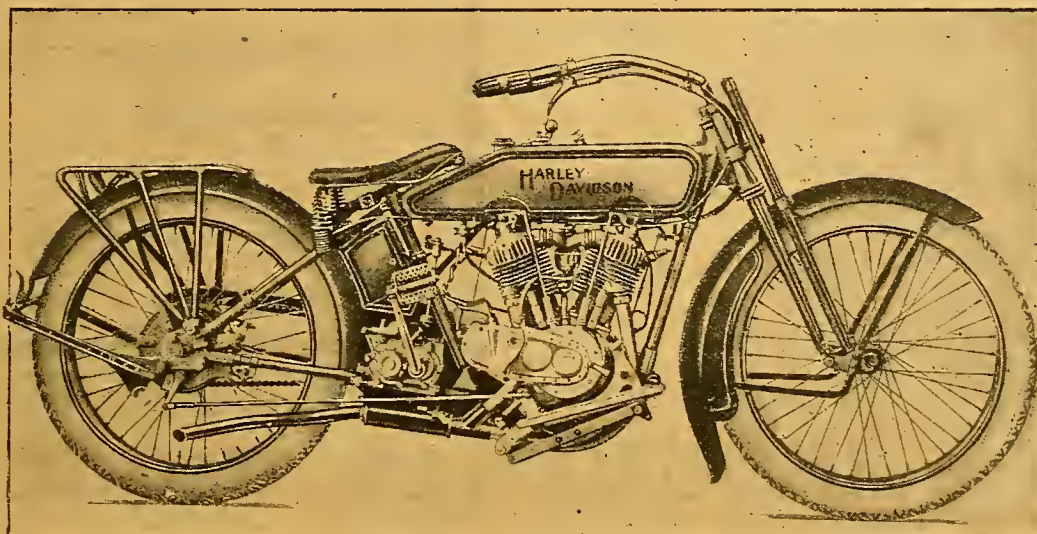
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# 1917



**"THE MOTORCYCLE MAGNIFICENT."**

**The 1917 7-9 h.p. twin-cylinder engine is the most wonderful power unit ever built into a motorcycle. With the same capacity as heretofore, it now develops over 16 actual horse-power.**

**ORDERS NOW BEING BOOKED for early delivery.**

**INSPECTION AT OUR SHOWROOMS cordially invited.  
74, Newman Street, Oxford Street, London, W.**



*In answering this advertisement it is desirable to mention "The Motor Cycle."*



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"A little later" may prove "too late." There is already a scarcity of new Motor Cycles, and prices are advancing. Be advised to order yours now!

- ☞ HARRODS have a splendid selection of new Motor Cycles from the 2½ h.p. Popular Levis to the 8 h.p. heavy combinations.
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HAVE YOU OBTAINED A COPY OF OUR LATEST BOOKLETS ?

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WE SHALL BE HAPPY TO SEND YOU EITHER OR BOTH POST FREE ON APPLICATION.

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## The INSURANCE POLICY

*that Covers*

**Pillion Riding (with Sidecar attached) and the use of the machine for occasional personal business journeys.**

***Without Extra Premium.***

**Risks Covered:** Unlimited Third Party Claims and all Law Costs — Accidents to the Machine — Fire — Theft — and Transit Risks.

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6 h.p., £4-0-0, 8 h.p., £4-5-0.

**Including a Free Subscription to "The Motor Cycle" for Twelve Months**

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(To be sent to address below).

Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Fill in this form and send to "THE MOTOR CYCLE" INSURANCE DEPT., HERTFORD STREET, COVENTRY

Will machine be driven solely by owner? .....

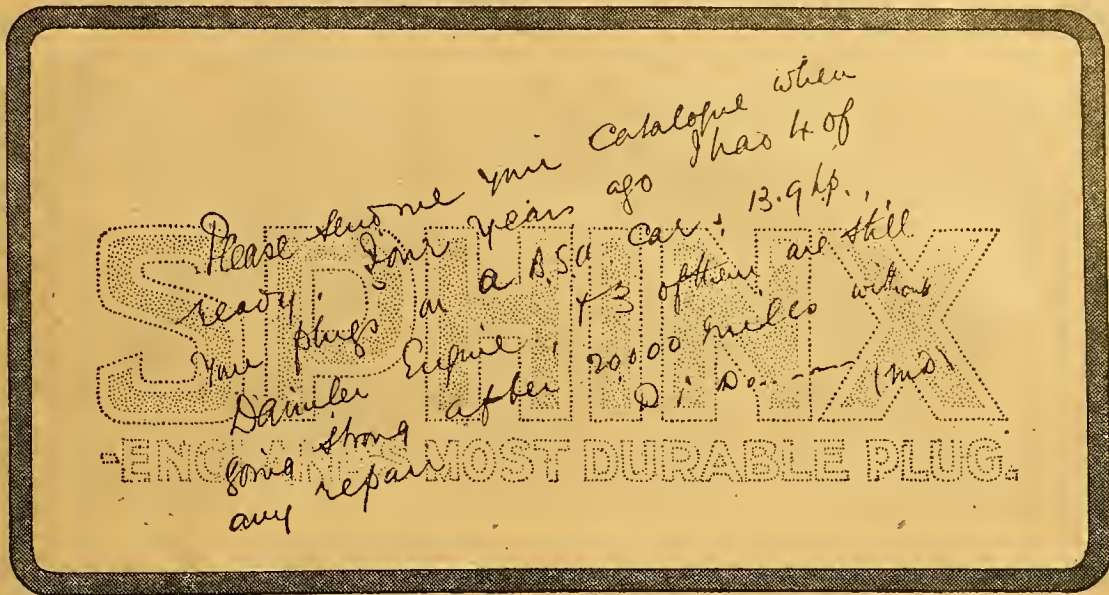
Will passenger be carried on luggage carrier or pillion of motor cycle? .....

If so, will sidecar attachment be used? .....

Name .....

Address .....





THE SPHINX MFG. CO., BIRMINGHAM. LONDON OFFICE, 107, Bishopsgate, E.C.

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An unequalled BRITISH Lightweight Engineering Experience—assisted in manufacture by the Best BRITISH Brains, using Best BRITISH Materials, in a highly-organised BRITISH Factory—has produced the universally-approved Standard in Lightweights—The "IXION" Two-stroke. Further, the "IXION" features a quartette of models, furnishing equally pre-eminent satisfaction, whatever the riding class or sphere. Let your mount for 1917 be the "IXION"—send for our fully-descriptive booklet NOW.

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CO., Ladywood, BIRMINGHAM.

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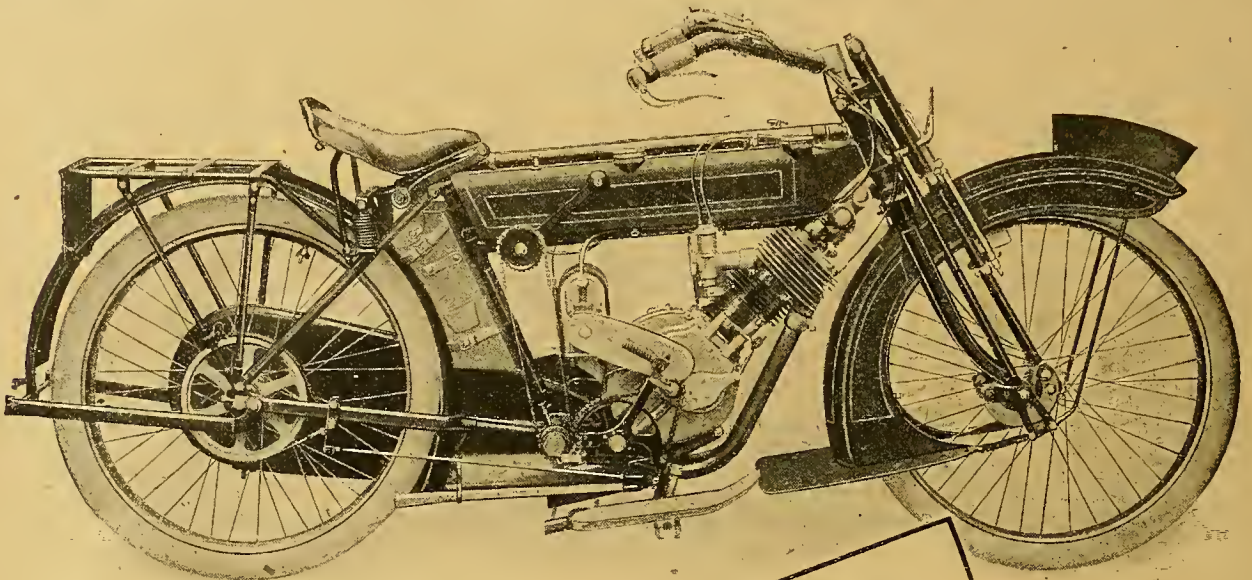
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We are busily engaged in munitions, but, as soon as things in Europe are put right, we hope to fulfil our obligations to our numerous clients. Meanwhile, write and have your name booked for earliest possible delivery.





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Fitter than ever to-day.

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**CHATER-LEA** Sidecar, wicker, luggage carrier, apron, Dunlop, good condition; £22/10, near offer; other accessories, list.—Wall, 104, Lansdowne Rd., Dalston, N.E. [6261]

**WATSONIAN** and Juno Sidecars, 9 models, immediate delivery; cash, prices from £6/13/6; gradual payments from 12/3 monthly.—Juno Works, 248, Bishopsgate, London. [3614]

**SPECIAL** Sidecars to suit American Excelsior and Harley-Davidson; Cape hoods 30/-, wind screens 17/6; splendid value in lightweight model at £8.—Melville Sidecars, Halifax. [X1034]

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**TRADESMAN'S** Box Sidecar, brand new, Kerry-Ahmedon; cost £14/14, accept £8.—Percy and Co., 337, Euston Rd., London. [6485]

**FOR** Sale, 26hp. Isotta-Fraschini motor lorry, and 10-12hp. Humber lorry, owner giving business up. Wanted, cane torpedo sidecar, complete, fittings suit 1910 fixed Triumph; also small revolver.—Particulars, Horsfield, Motor Engineer, Church Gresley, Burton-on-Trent. [X3405]

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**CAMBER** Hoods 37/6, wind screens 19/6.—Bright and Hayles, 73, Church St., Camberwell. [6262]

**WIND** Screens, 6 patterns, for sidecars, 19/6, 27/6, 30/-. 32/6, sidecar hoods, 33/6.—Juno Showrooms, 248, Bishopsgate, London. [3612]

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**BASTONE'S**—New coachbuilt bodies from £2/15.

**BASTONE'S** Sidecar Dept., 228; Pentonville Rd., King's Cross, London, N. [5541]

**ROVER** Coach Body, condition as new; £3/15—73, Church St., Camberwell. [6363]

**COACH** Bodies, latest; great sacrifice, 25/-, brand new.—Venus Sidecar Co., 746, Seven Sisters Rd., Tottenham. [3723]

**ZEPP** Cigar Torpedo Sports Coach Bodies, upholstered and finished; 50/-.—Venus Car Co., Seven Sisters Rd., Tottenham. [6291]

**PHENIX**—Actual manufacturers of bodies, hoods, and screens; second-hand sidecars from 50/-, bodies 50/-, screens 19/-, write pattern list.—Phoenix Sidecars, 736, Holloway Rd., London. [X8582]

**SIDECAR** Bodies.—Coloured sketches of original designs and working drawings supplied; first-class work guaranteed.—Cooper's Vehicle Journal, Ltd., 19, Garrick St., Long Acre, London, W.C. Tel.: Gerrard 2425. [0818]

**G.K.** Sidecars, manufacturers of thousands of sidecar bodies, the originators of popular models, the only actual manufacturers in London of complete bodies, hoods, and screens of every description; write for 1917 catalogue.—G.K. Sidecars, Lorenzo St., Pentonville Rd., London, W.C. [6387]

## RUNABOUTS AND CYCLE CARS.

**MORGAN** Runabouts.—Largest dealers in the West of England.

**MORGAN** Runabout, latest 1917 De Luxe model, Grand Prix, complete with hood, screen, lamps, large tyres, flush type speedometer, actually in stock.—Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0839]

**MORGAN**, 8hp., fully equipped; £96.—W. and H. Motor Co., Ltd., 287, Deanagat, Manchester. [6063]

**MORGANS**—For 1917 models apply to Potter, Contracting Agent, Leicester Grove, Blackman Lane, Leeds. [X9410]

**CARDEN** Monocar, 6hp. J.A.P., overhauled and repainted; £45.—Percy and Co., 337, Euston Rd., London. [6475]

**MORGAN**, 1914 sporting model, hood, screen, lamps, speedometer, very smart; £69/10.—Farrars. [6475]

**MORGAN**, latest Grand Prix model, water-cooled M.A.G. engine, all on; £135.—Farrars. [6475]

**FARRARS**—11hp. Trumbull light car, spare wheel and tyre, speedometer, full equipment, shop-soiled only; sacrifice, £120.—Farrars's Motorcycles, Hopwood Lane, Halifax. [5529]

**HUMBERETTE**, 1913, overhauled and repainted brown, in real nice condition; £55.—Percy and Co., 337, Euston Rd., London. [6489]

**MORGANS**—New Grand Prix model, w.c. M.A.G. engine, just delivered; also sporting model, J.A.P. engine. Write for full particulars.—Below. [6489]

**MORGAN**, 1914 Grand Prix, w.c. J.A.P. engine, hood, screen, lamps, horn, large tyres, etc.; £90.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. Phone: Avenue 5548. [0598]

**PREMIER** 7.9hp. Light Car, hood, screen, lamps, good order, fast and reliable; £60, or part exchange motor cycle.—77, Tower Ramparts, Ipswich. [X3496]

# Best for all Bikes

Above, we pointedly express the universal verdict of experienced riders on the **SPRING FORK** which—outstandingly to-day—ensures, by its presence on their machines, "wheel-steadiness," unequalled and permanent—the

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Because the **DRUID** alone perfectly fulfils its shock-absorbing functions—being the **ONLY Fork** which totally absorbs within itself **VERTICAL** and **HORIZONTAL** Shocks.

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Leopold Street, B'HAM.



## RUNABOUTS AND CYCLE CARS.

**2-SEATER** Cycle Car, 8hp. J.A.P., Bosch, Dunlop, electric lamps, needs adjustment; cheap; view any time.—Pulham House, Putney Bridge. [X3414]

**CYCLE** Car, minis body and radiator, 6hp. twin Palfin, complete unit, 2-speed, chain drive, called up; £14, offer.—35, Colwell Rd., E. Dulwich, S.E. [6255]

**MORGAN** 1914-15 De Luxe, disc wheels, hood, screen, electric lights, speedometer, clock, etc., very smart; 87 gns.; motor cycle part.—245, Hackersmith Rd., London, W. [6267]

**BOOK** Morgans, Grand Prix models, for early delivery, with Wauchop's, 9, Shoe Lane, London, who specialise in easy terms of payment or exchange.—Wauchop's, 9, Shoe Lane, London. [6453]

**MORGAN**, 1915, De Luxe model, disc wheels, hood, screen, lamps, horn, fully equipped, roomy body, beautifully sprung, any severe trial given; bargain at 90 gns., guaranteed.—Wauchop's, 9, Shoe Lane, London. [6454]

**MORGANS**—We have in stock to-day the largest and most varied selection of new and second-hand Morgans in Great Britain. We have on hand no less than 15 of these unique little runabouts, ranging from a useful second-hand at £60, through varying prices, £80, £90, £100, etc., up to the latest model—a 1917 Grand Prix de Luxe, with every possible fitting, at £135.—Colmore Depot, 49, John Bright St., Birmingham. [6295]

## CARS FOR SALE.

**DARRACQ**, 8-10hp., 2-seater, a real good car; bargain, £50.—Percy and Co., 337, Euston Rd., London. [6486]

**DARRACQ**, 8-10hp., 2-seater, in exceptional nice condition; £35.—Percy and Co., 337, Euston Rd., London. [6488]

**RITZ** 4-cyl. New Light Car, £145; shop-soiled model, £125; 1913-14 Premier 2-seater, £57/10.—Motor Exchange, Horton St., Halifax. [6143]

**SMALL** Car, Sizaire and Naudin, 2-seater, 10-12hp., 4-cyl., overhead valves, condition as new; cost £250, accept £90.—Palmer, Ongar, Essex. [6283]

**CALTHORPE** Light Car.—Early deliveries from the authorised agents, Exeter Motor Cycle Co., Ltd., Bath Rd., Exeter, and Tavistock Rd., Plymouth. [0841]

**DE DION** 2-seater, 6hp., Bosch, Zenith, good going order; £30, or exchange good motor bike or combination, cash adjustment; Midlands.—52, Cox St., Coventry. [X3140]

**DARRACQ**, 4-cyl., 14-16hp., 5-seater, hood, screen, speedometer, gate, mag., excellent order; £50, or exchange motor cycle and little cash.—Calversbert, 77, Tower Ramparts, Ipswich. [X3497]

**TRUMBULL** 11hp. 4-cyl. Light Car, 2-seater, completely equipped, the finest specimen we have yet seen, quite new; exchange entertained.—Full particulars from Layton's Garage, Biester, Oxon. [6455]

**SAXON** 4-cyl. 11hp. 2-seater, complete overhauled, re-painted and re-tyred, a topping light car; accept £120; good motor cycle or combination considered in part payment.—Layton's Garage, Biester, Oxon. [X3091]

**TRUMBULL** 2-seater Light Car, complete with dicky, electric lamps, electric and hand horns, speedometer, hood, screen, and tools, used very little, and in beautiful order; £115; would accept a good motor cycle or combination in part payment.—Layton's Garage, Biester, Oxon. [6454]

**CHELSEA** Light Car, 4-cyl., 10hp., 2-seater, semi-sporting model, complete, quite new, one further sample just received; usual price £175, accept £135; would consider good combination part payment; most unusual opportunity.—Full particulars from Layton's Garage, Biester, Oxon. [X3090]

**XMAS** Bargains: Every one a present.—8hp. Darracq van, £10; 6hp. Rover 2-seater, £25; 10-12hp. Darracq 4-seater, £35; 8-10hp. Jackson sporting 2-seater, £45; 10-15hp. Spyker taxicab chassis, £65; 16hp. Argyl 3-seater, £85; 11hp. Brixia-Zust stream-line 2-seater, £90; 15hp. New Pick torpedo, £100; 1915 Humberette, £110; Baby Peugeot, £115; 12hp. Rover, sporting streamline 2-seater, £125; 12-15hp. 1912 Standard streamline 4-seater, £145; Morris-Oxford 2-seater, exceptional condition, £165; Calthorpe 4-seater, £185; many others to £365; dozen lorries and vans, landaulets, chassis; 50 or view. Call 9 to 5.—Liquidator, 60, Lansdowne Hill, West Norwood, S.E. [6460]

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**EXTENDED** Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618]

**GENERAL** Insurance Co. issue Lloyd's Motor Policies by monthly payments. Lowest premiums for motor cycles. Before insuring elsewhere write for prospectus.—Head Office: 199, Piccadilly, London, W. [0810]

## ENGINES.

**PRECISION**, 4 1/2hp., only done 700 miles, perfect, £13; N.S.U., 75x75 twin, going order, £3; 50° Bosch magnet, £2/15.—Alder, 16, East Park Rd., Harrogate. [6189]

## IGNITION APPLIANCES.

**MAGNETO**, waterproof, brand new; 65/-.—64, Staines Rd., Hounslow. [5719]

**EXPERT** Magneto and Electric Repairs on the premises.—Grandex Motors, 349, Euston Rd., N.W. [3569]



## IGNITION APPLIANCES.

**9/9.**—Columbia new  $4\frac{1}{2}$  volt dry cells, for ignition, lighting, etc., fully guaranteed; post free, write for catalogue.—Palmer's Garage, Tooting. [6275]

**PARKER** and Rice have some good new and second-hand magnetos for sale, which will be guaranteed for 12 months.—75, Park Rd. North, Acton, W. [6311]

**MAGNETO** Repairs and Spare Parts, all makes spare parts suitable for Bosch magnetos a speciality.—Simms Motor Units, Ltd., 191, Wardour St., London, W. T.A.: Simotunit, London. [0746]

**MAGNETOS** Repaired by skilful workmen; expeditious and moderate charges; several 1-2-cyl. magnetos in stock; every magneto guaranteed.—The Magneto Mart and Repairing Co., 142, Wardour St., W. Phone: Gerrard 727. [8814]

## TANKS.

**TANKS** Repaired; tanks re-enamelled, 10/6.—Bright and Hayles, 73, Church St., Camberwell. [6364]

**TANKS**—Tanks any shape to order, repaired, or enamelled; all-metal sidcar bodies; general sheet metal work; lists free.—Attwoods, 86, Rosebery Av., E.C. Tel.: Central 12445. [5352]

## TYRES.

**LEGGATE'S**, Edinburgh, for Tyre Value.

**LEGGATE'S**, Edinburgh.—Years of motor cycle tyre study placed at your service.

**LEGGATE'S**, Edinburgh.—Knowing tyres is our business, and customers profit by our experience.

**LEGGATE'S**, Edinburgh, offer great reductions in brand new 1916 clearance Clinchers, the tyre with the great reputation for quality, resiliency, durability, and non-skidding properties. Make the Clincher your safeguard. See below for approval terms. Prompt despatch guaranteed.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 new pattern Clincher de Luxe, heavy rubber studded, beaded covers,  $26 \times 2$  21/-, list 26/6;  $26 \times 2\frac{1}{2}$  21/-, list 28/6;  $26 \times 2\frac{3}{4}$ , to fit  $2\frac{1}{4}$  rims, 23/6, list 30/6;  $26 \times 2\frac{1}{2}$ , 25/6, list 30/6.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 new pattern, Clincher de Luxe, beaded edge, special heavy, rubber studded covers,  $26 \times 2\frac{1}{2}$ , for  $2\frac{1}{4}$  rims, 27/6, list 31/6.

**LEGGATE'S**, Edinburgh.—Clearance.—1916 new pattern Clincher Dreadnought, 6-ply fabric, extra heavy, rubber studded, beaded covers,  $26 \times 2\frac{1}{2}$  31/-, list 32/6;  $26 \times 2\frac{3}{4}$ , to fit  $2\frac{1}{4}$  rims, 31/6, list 32/6;  $26 \times 2\frac{1}{2}$  32/6, list 32/6.

**LEGGATE'S**, Edinburgh.—Standard 1916 Clincher Dreadnought, 3-ribbed, 6-ply fabric, beaded covers,  $650 \times 35$  33/9,  $700 \times 40$  44/9,  $700 \times 40$  for  $650 \times 35$  rims, 44/9, specially made for powerful passenger outfits and light cars.

**LEGGATE'S**, Edinburgh.—These goods are all brand new, and sent anywhere on 7 days' approval against remittance, cash refunded in full if goods not approved of.

**LEGGATE and Company**, Motor Cycle Specialists, 15-17, Slatford Rd., Edinburgh. Phone: Central 8693. T.A.: Tyres, Edinburgh. [X3114]

SEE Bancroftian Advertisement under Miscellaneous. [0845]

**ECONOMIC** for Cheap Clearance Lines, 7 days' approval; money refunded if not approved.

**ECONOMIC**—Kempshall clearance heavy non-skids,  $26 \times 2\frac{1}{2}$  27/6,  $26 \times 2\frac{3}{4}$  35/-,  $26 \times 2\frac{1}{2}$  38/-,  $26 \times 2\frac{1}{2}$  40/-,  $650 \times 65$  50/-.

**ECONOMIC**—Kempshall clearance heavy anti-skids,  $26 \times 2\frac{1}{2}$  19/6,  $28 \times 2\frac{1}{2}$  23/-,  $28 \times 3$  25/-; Clincher De Luxe non-skid,  $26 \times 2$ , 14/-.

**ECONOMIC**—Continental  $26 \times 2\frac{1}{2}$  wired covers, oversize for  $26 \times 2$ , 10/6, pair 17/6.

**ECONOMIC**—Special clearance of Indian and Harley-Davidson covers; Kempshall heavy anti-skids, 25/-;  $28 \times 3\frac{1}{2}$  steel stud oversize, 57/6; Goodyear  $28 \times 3$  Blue Streak, 56/11; Wood-Milne heavy grooved,  $28 \times 3$ , 27/6; Clincher heavy De Luxe,  $28 \times 3$  35/-.

**ECONOMIC**—Look! Great bargain in Clincher clearance tubes,  $26 \times 2\frac{1}{2}$  4/9,  $26 \times 2$  4/6,  $24 \times 2$  3/-; large number of odd butted tubes from 4/6,  $26 \times 2\frac{1}{2}$  to  $28 \times 3$ .

**ECONOMIC Tyre Co.**, 137, Lewisham High Rd., New Cross. Phone: New Cross 1393. [6423]

**BASTONE'S** Presents Free a 3/- repair outfit to purchasers of Henley, Michelin clearance covers as below to the value of 14/- and over.

**BASTONE'S**—F.N. covers, Michelin heavy trident, wired edge,  $26 \times 2\frac{1}{2}$  19/-,  $26 \times 2\frac{1}{2}$  18/-.

**BASTONE'S**—Michelin covers, ordinary  $26 \times 2$  B.E. 9/6, wired edge  $26 \times 2$  9/-,  $26 \times 2\frac{1}{2}$  9/6,  $26 \times 2\frac{1}{2}$  11/-.

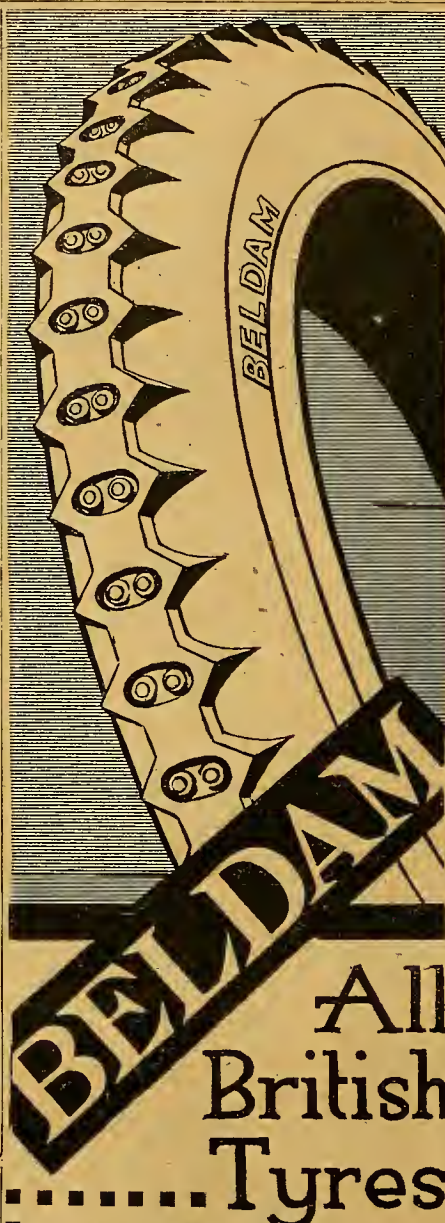
**BASTONE'S**—Michelin heavy trident, B.E.,  $26 \times 2$  19/-,  $26 \times 2\frac{1}{2}$  21/-,  $26 \times 2\frac{1}{2}$  23/-.

**BASTONE'S**—Michelin heavy trident,  $28 \times 2\frac{1}{2}$  B.E., fit  $28 \times 3$  rims, 20/-; Kempshall heavy B.E. covers,  $26 \times 2\frac{1}{2}$ , 19/6.

**BASTONE'S**—Henley rubber-studded covers,  $26 \times 2$  14/-,  $26 \times 2\frac{1}{2}$  16/-,  $26 \times 2\frac{1}{2}$  18/-.

**BASTONE'S**—Guaranteed red  $26 \times 2$  4/6,  $26 \times 2\frac{1}{2}$  4/9,  $26 \times 2\frac{1}{2}$  6/-,  $26 \times 3$  7/6,  $26 \times 2$  butted 5/6.

**BASTONE'S**, 228, Pentonville Rd., King's Cross, London, N. Tel.: 2481 North. [5540]



Write for Prices.

**The Beldam Tyre Co., Ltd.,**  
Brentford, Middlesex.

New Zealand: J. E. Fitzgerald, 139, Lambton Quay, Wellington. Cape Colony: The Tyre and Motor Co., Rodney Street, Port Elizabeth. India: Wilkinson & Co., 12, Dalhousie Square E., Calcutta. Ireland: P. Drebhan & Sons, Carrick-on-Suir.

## Beldam Retreads

EVERY time you have a Beldam Retread you save nearly the cost of a new tyre. A Beldam Retread costs from 11/6. You know what a Cover costs.

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**CLEARANCE** Clincher Heavy De Luxe, all sizes; 24/- each.—Farrar's Motories, Ilfracombe. [5209]

**BRAND** New Midland Covers,  $650 \times 65$ , heavy 3-ribbed; listed 38/6, our price 21/-.—Percy and Co., 337, Euston Rd., London. [6484]

**7/6** Allowance Guaranteed for old tyre towards nearly all new motor cycle covers.—Particulars to Taylors', Tyre Stockists, Store St., London, W.C. [0626]

**26**  $18/6$ ;  $26 \times 2\frac{1}{2}$  ditto, 15/-; ditto, heavier, 20/-; approval against remittance.—Palmer's Garage, Tooting. [6276]

**28**  $\times 3$  Tyres, absolute bargains, fit Indian, Harley-Davidson, Excelsior, etc., guaranteed brand new, Dominion, United States, Englebert, Firestone, covers 25/-, tubes 9/-.—Holmes, Long Park, Chesham Bois. [X2989]

## VAPORISERS.

**MORE** Petrol for You.—Gordon's improved Auto-Vac petrol economiser positively saves 30 to 40%. For B. and B., Triumph, and P. and M. carburettors; easy to fit; price 1/9 each, postage 2d. A super economiser that saves its cost on the first tin of petrol or substitute. Makes your engine start up exceptionally easy; used by naval and military motor cyclists. Send for one now.—Gordon's Motor Works, Royston, Herts. [6443]

## SITUATIONS VACANT.

**WANTED**, good all-round cycle mechanic, ineligible or rejected; state wages and experience.—Wells and Son, Central Garage, Dovercourt, Harwich. [X3374]

## PATENT AGENTS.

**CONSULT** Patent Agency, 255, Gray's Inn Rd., London.—Free advice. Inclusive charges. [9220]

**INVENTORS'** Advice and Handbook Free.—King's Patent Agency, Ltd., 16, Queen Victoria St., London. [5818]

**HENRY SKERRETT**, Chartered Patent Agent, 24, Temple Row, Birmingham.—Patents, trade marks, and designs. Motor patents a speciality. [0636]

## INSURANCE.

**FOR** Insurance of all kinds (specially motor), apply Ernest J. Bass, Insurance Broker, Bishops Stortford. [0693]

**GENERAL** Insurance Co. issue Lloyd's Motor Policies by monthly payments. Lowest premiums for motor cycles. Before insuring elsewhere write for prospectus.—Head Office: 199, Piccadilly, London, W. [7734]

## TUITION.

**WARREN'S**, 386, Euston Rd. (Museum 3081), for car and cycle tuition. [0860]

## WANTED.

**A** ANY Number modern second-hand motor cycles, sound condition, Douglas, B.S.A., Triumph, A.J.S., Enfield, Sunbeam preferred; spot cash on examination and proof of ownership.—Maudes' Motor Mart, 100, St. Portland St., London, W. Tel.: 552 Mayfair. [5186]

**A** UTO-WHEEL, must be cheap.—Box L2,627, c/o The Motor Cycle. [5272]

**SIDECAR**, sporting, must be cheap.—Box L2,628, c/o The Motor Cycle. [5273]

**WANTED**, A.J.S.  $2\frac{1}{2}$  h.p. 3-speed new motor.—Cross, Agent, Rotherham. [X3474]

**3-SPEED** Gear, Armstrong or Sturmer preferred.—64, Staines Rd., Hounslow. [5622]

**N.S.U.** Gear, for Bradbury; state lowest price.—Broom, 77, Marylebone Lane, W. [6361]

**WANTED**, crankshaft, for Douglas, 1914.—Box L2,775, c/o The Motor Cycle. [6490]

**INDIAN** Sidecar, well sprung, sporting, 5h.p.; cash.—Benson, 17, Prior St., Lincoln. (D) [X3337]

**COUNTERSHAFT** Gear, chain-cum-belt, suit  $3\frac{1}{2}$  h.p.—R. Ball, High St., Tuthury, Staffs. [6203]

**BADCOCK'S** By-pass Jet, with or without pipes.—21, Durnsford Av., Wimbledon Park. [6338]

**WANTED**, very old motor cycle, cheapest possible.—Chaufeur, Bramhope, Leeds, Yorks. [6279]

**100** Motor Cycles Wanted; spot cash paid.—Bring or send, Palmer's Garage, Tooting. [6273]

**WANTED**, Saxon, Trumblor, or similar light car for cash.—Tollady, Hemingford, Bicester. [X3092]

**£15-£20** waiting for best lightweight offered; letters first.—Simmons, 11, Grant Rd., Croydon. [6300]

**WANTED**, Druid forks, for 1913 Douglas, perfect condition.—34, Ashvale Rd., Tooting, S.W. [6337]

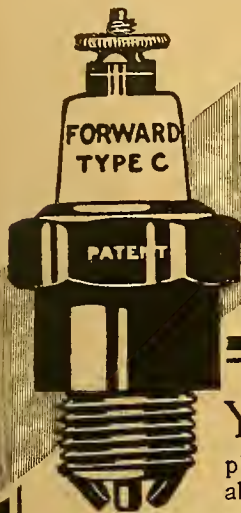
**CHAIN** Belt, countershaft gear, for 6hp. Matchless-Jap.—Clark, 90, Bexley Rd., Erith, Kent. [6196]

**WANTED**, B.S.A. sidcar, good condition; state lowest cash.—Richardson, Middle St., Driffield. [X3387]

**DRUMMOND** Bench Lath, cheap for cash, condition good.—Hassall, 7, Christie St., Widnes. [X3336]

**WANTED**,  $3\frac{1}{2}$  h.p. Antoine cylinder, X-Pall spring forks, good; cheap cash.—Jupp, Horsmonden. [6308]





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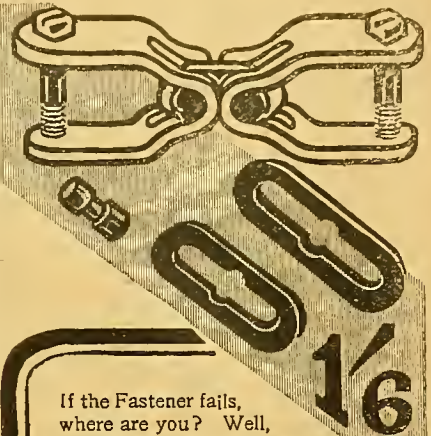
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IRVINE SMITH,  
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- WANTED**, magneto, single or twin; also Bowden handle-bar control.—Norris, Pixhall, Hawkhurst. [6340]
- BOSCH** Magneto, ZF4, anti-clockwise, wanted, perfect order.—Box L2,721, c/o *The Motor Cycle*. [5895]
- NEW** Imperial-Jap, latest model, clutch, starter, etc.; cheap for cash.—G., 1, High St., Tuxbridge Wells. [X3400]
- WANTED**, good make underslung sidecar or chassis, suit 8h.p.—Weldon, Devonshire Rd., Nottingham. [X3463]
- WANTED**, main driving shaft for Douglas, 2-speed, 1915 motor cycle.—Overed, Church End, Finchley. [6233]
- WANTED**, 3-speed gear, must be late type, hub or countershaft.—Ward, 29, Webster St., Coventry. [X3426]
- WANTED**, screwcutting lathe, 3ft. to 6ft. power or treadle.—D., 5, Lavengro Rd., West Dulwich, S.E. [5795]
- HALF** Crankcase, pulley side, for M.M.O. 3h.p. engine.—The South Essex Motor Co., High Rd., Ilford. [X3456]
- 3-SPEED** Countershaft Gear, for 6h.p. J.A.P. Sturtevant-Archer preferred.—Knight, Maypole House, Bexley. [X3391]
- WANTED**, your old machine for new model.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6064]
- WANTED**, motor cycles; cash waiting.—Wandsworth Motor Exchange, Eimer St., Wandsworth Town Station. [2966]
- DOUGLAS**, New Imperial, or other good lightweight. Full particulars and lowest for cash.—15, Summerhill Rd., Dartford. [6293]
- MOTORISTS** requiring exchanges to send for our bargain list: liberal allowances.—Motor Exchange, Horton St., Halifax. [6144]
- WANTED**, 3½h.p. 1915 T.T. Triumph, also spare cylinder, must be in new condition.—Argyle, Somercotes, Alfreton. [X3372]
- WANTED**, P. and M. chain wheel, for solo, must be unworn; state number of teeth.—Shepherd, Sitwell Vale, Rotherham. [X3371]
- WANTED**, back cylinder, with piston and middle connecting rod, for 5-6h.p. Peugeot.—A.B., 207, Bentley Lane, Walsall. [X3389]
- WANTED**, a cylinder, new or second-hand, for 3½ h.p. 1912 Triumph motor cycle.—Castle Motor Co., Ltd., Kidderminster. [5980]
- WANTED**, 2-stroke Triumph cycle, second-hand.—Apply with particulars to Robinson's Garage, Belford, Northumberland. [X3136]
- WANTED**, back spindle and nut of 1912 2-speed 3½h.p. B.S.A.—Address, Sub-Lieut. Metcalfe, H.M.S. Vulcan, c/o G.P.O. [6225]
- SECOND-HAND** Motor Cycles, purchased for cash. —Send particulars and lowest prices.—Service Co., 292, High Holborn, W.C. [6079]
- WANTED**, powerful combination; £10 cash, new concert gramophone, typewriter, 3-speed cycle.—Charles Stores, Southborough. [X3468]
- WANTED**, lady's Douglas, 1914-15, 2½h.p., 2-speed, kick start; give full particulars, lowest price cash.—Yates, Coodpoeth, Wrexham. [X3419]
- UP-TO-DATE** Motor Cycles and light cars wanted cash lent on same with option of purchase.—Motor Exchange, Horton St., Halifax. [6146]
- WANTED**, any number of good motor cycles and combinations; cash paid on sight.—Percy and Co., 337, Euston Rd., London. [6476]
- WANTED**, first-class motor cycle, with or without sidecar.—Graham Lawson, Lynn Road Nurseries, Terrington St. Clement, King's Lynn. [X3145]
- WANTED**, good second-hand known make motor cycle and sidecar, must be reasonable price; no dealers.—Write, Box L2,626, c/o *The Motor Cycle*. [5270]
- SIDECARS** wanted. We buy on sight, all types; send particulars.—Geo. Smith, 268, Lavender Hill, Clapham Junction. Phone: Battersea 1271. [5271]
- WANTED**, front cylinder for 1915 American Excelsior, 7-8h.p., new or second-hand; good price for sound cylinder.—46, Holmscroft St., Greenock. [X3370]
- DOUGLAS**, 1913 model E, chain wheel, front cylinder, half crankcase, flywheel side, 2 pistons and connecting rods; state price.—Gibb, Douglas Depot, Gloucester. [X3490]
- WANTED**, good second-hand lamps, horns, speedometers, and other modern accessories.—Particulars and lowest price for cash, Service Co., 292, High Holborn, W.C. [60745]
- WANTED**, good second-hand accessories, lamps, horns, speedometers, etc.; stock can be brought or sent for approval; cash paid on sight.—Geo. Smith, Motor Cycle Depot, Clapham Junction. [5269]
- DOUGLAS**, 2½h.p., 1914, 1915, 1916 machines wanted; good cash prices offered. We are legitimate buyers and really want machines.—Douglas Specialists, Robinson's Garage, Green St., Cambridge. [6593]



If the Fastener fails,  
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usually miles from a repair  
shop, that's according to the  
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Where are you?—Well, "stuck up"  
with that which may be the speediest  
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the unreliability of this single fitment!

And you feel your position keenly—  
feel the weight of the bike, too, as you  
push it to the nearest repair shop,  
or, alternatively, the indignity of the  
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Exceptional Terms  
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Send particulars of Machine  
THE MOTOR INSURANCE BUREAU,  
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## WANTED.

WANTED, chain driven combination, fully equipped, latest type, 4h.p. A.J.S., with interchangeable wheels, must be in good condition and reasonable.—P'owell, 112, Rodenhurst Rd., Clapham Park, S.W. [X3280]

WANTED to purchase for cash, motor cycles or combinations of any of the following makes: Douglas, Norton, Sanbeam, Brough, Triumph, Matchless, Indian, etc., not earlier than 1914.—Elice and Co., 15-16, Bishopsgate Av., Camomile St., E.O. [0599]

SMART Up-to-date Motor Cycle Combinations; good prices paid for right sort. Call with them, if possible, to ensure prompt attention, at Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. Tels.: Walthamstow 169, and Hornsey 1956. [6271]

WANTED, air-cooled 2-cyl. 8-10h.p. engine, suitable for cycle car, complete with carburetter, magneto, etc., recent make, perfect condition; send sketch, dimensions, makers' number, weight, and full particulars.—Advertiser, 30, Baxter Av., Southend-on-Sea. [6258]

ALL Types of Machines and Combinations required immediately, including light cars; exchanges entertained; spot cash and good prices paid. Before disposing of elsewhere write, 'phone, or call; prompt attention, straight dealing, and courtesy.—Lougman Bros., King St., Acton. 'Phone: 1578 Chiswick. [6396]

SEND Your Motor Cycle to Palmer's Garage, Tooting, Wimbledon Station, L. and S.W. Railway, per goods or Tooting Junction Passenger Train. Cash offer will be telegraphed immediately on receipt of machine. Machine can be included in fortnightly auction without charge if offer not accepted; reserve price may be fixed.—Sole address, Palmer's Garage and Motor Cycle Auction Rooms, 185, 185, 187, 189, High St., Tooting. [6274]

## EXCHANGE.

3h.p. Gas Engine; exchange for M.C.—Charles, Forbes St., Landore, S.W. [X3340]

THE Halifax Motor Exchange quote the keenest exchanges.—68, Horton St., Halifax. [6145]

EXCHANGE your present mount for another.—W. and H. Motor Co., Ltd., 287, Deansgate, Manchester. [6065]

1913 4h.p. Bradbury, 2-speed, chain drive, sidecar, complete, £28; cycle part.—143, Evington Rd., Leicester. [X3466]

DOUGLAS, 4h.p., 1914-15, electric lighting, 2-speed, cheaper machine and cash.—245, Hammersmith Rd., London, W. [6286]

EXCHANGE.—Any make of motor cycle taken in part exchange for light cars.—Service Co., Featherstone Buildings, W.C. [0664]

4-CYL. F.N., mag. ignition, engine good condition, also tyres, needs new carburetter; £12; exchange.—Nixon, Braughton, Cumberland. [X3470]

WANTED, magneto motor cycle, in exchange for 100 2/1. fully-paid shares Kibweya Rubber Estates, Ltd.—Box L2,766, c/o The Motor Cycle. [6241]

T.T. Indian, 7.9h.p., 1913, clutch model, beautiful condition; £35; exchange lower power, cash adjustment.—35, Mowbray Rd., Brondesbury. [6336]

1915 2B Matchless Combination, complete with accessories and spares, for 2-seater car, cash adjustment; sell £75.—H. Rodwell, Brewery, Tring. [6334]

EXCHANGE 1913 Scott, 2-speed, F.E., perfect order, for Zenith, Ridge Multi, or Triumph; sell £25.—Rolls, 5, Thornton Place, York St., Baker St., W. [6357]

12h.p. Sizaire, fine sporting streamline 2-seater; exchange really first-class solo, or combination, or sell £70.—Stanhope, 130, Beulah Hill, Upper Norwood. [0871]

1912 3 1/2h.p., o.h.v. single, top-feed B. and B. Badcock's bypass, good tyres, excellent condition, for light weight, or sell £15.—Ginns, Carleton, Carlisle. [6327]

WANTED, Combinations, Motor Cycles; exchange cars. Bring them along any day, 9 to 6.—Liquidator, 6c, Lansdowne Hill, West Norwood. (See cars). [5793]

1913 7h.p. Indian, 2 speeds, and sidecar, good condition, value £45; exchange for modern 4h.p. combination, cash adjustment.—30, Talbot St., Burnley. [X3422]

1914 T.T. Douglas, 2-speed, 2 1/2h.p., perfect; exchange 1914 T.T. Triumph, speed gear, cash either way; appointment.—Petersen, Percival Parade, Worcester Park. [6255]

FLANDERS 1912 15-20h.p. Chassis, gate change, mag., 3 speeds and reverse; £45, or exchange good combination.—Calversbert, 77, Tower Ramparts, Ipswich. [X3455]

WARREN'S, 386, Euston Rd. ('Phone: 3081 Museum), will take your present machine and allow you top price in part payment, or will purchase outright. [0859]

8h.p. Pump, water-cooled M.M.C. Car Engine, water pump, radiator, coil, wants overhaul; £7, or exchange for good hammerless gun.—Wm. Gossip, Knowsley, Liverpool. [X3404]

1915 6h.p. Sun-Tap and special Sun sidecar, 3-speed and clutch, Sturmeys-Archer gear box as new, and cash, for 1914 w.c. Morgan, or Humberette.—D. Milten, Lt., Oliver's Hydro, Buxton. [X2349]

FORD Touring Car, 1914 model, in perfect condition, complete with 5 lamps, spare cover, etc., tyres all as new; a bargain, £85, or would exchange for 1916 touring model.—Warrior and Co., Oxford St., Weston-super-Mare. [X2436]

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My wheel received and is now running all right. Please accept my sincere apology for giving you unnecessary trouble, which might have been saved had I sent my wheel whole.

I am very much indebted to you for your consideration. Please accept my best thanks.  
Yours sincerely,  
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A.J.S. Repairs my speciality.—Youngs, 2 and 3, The Parade, High Rd., Kilburn. [4259]

WHITTALL Machinists' Co., War Office Contractors, for all engine repairs.

WHITTALL.—Expert welders. Specialists in Aluminium welding. Crank cases, cylinder flanges, valve seats, pistons, etc., promptly welded and machined, frames repaired.—Whittall Machinists' Co., Whittall St., Birmingham. [0136]

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BRADBURY Spares and Repairs.—Agents, Bright and Hayles, 73, Church St., Camberwell. [6365]

ARMSTRONG Gears Repaired promptly, or parts supplied.—The Rotary Joining Co., Regent St., Warrington. [4829]

A.J.S. Official Repairers and spare part stockists.—Sole London agents, Taylors, Ltd., Store St., W.C. Tel.: Museum 1240. [0779]

ARMSTRONG and Sturmeys Gears overhauled, broken parts replaced; Triumph engines a speciality.—Dalby, Baker St., Sparkhill, Birmingham. [5681]

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FRAME Repairs and Alterations.—Special frames and tanks built, any designs; enamelling and plating.—A. Pilkington and Co., 390, Lichfield Rd., Birmingham. [X3114]

PISTONS, fitted with top and bottom step-cut rings, hardened steel ground pin, and your cylinder re-bored and ground, 30/—C. R. Foster, Kirkstall Rd., Leeds. [0310]

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SWIFT Cycle Co., Ltd., undertake the thorough repair and overhaul of any make of motor cycle, at their large and well equipped repair works, 132-134, Long Acre, W.C. Enquiries invited. [5863]

FOR First-class Guaranteed Repairs to all makes of motor cycles, and for choice of large stock of parts for all makes of machines, call on Walter Matthews, Motor Cycle Repair Expert, 117, Suffolk St., Birmingham. [0820]

FIRST-CLASS Repairs to motor cycles, cylinders re-ground, valves re-seated, plating and enamelling, countershaft and hub gears repaired; all makes of engines overhauled; repairs promptly executed.—George Pilkington and Son, 123, Allesley Old Rd., Coventry. [5201]

ARMSTRONG and Sturmeys-Archer Hub and Counter-shaft Gears; all parts for all types in stock; no waiting; 10 hour repairs by experts; recommended by Messrs. Sturmeys-Archer and other leading manufacturers.—Cromwell Engineering Co., Putney Bridge Rd., S.W. [2622]

TUBE Repairs.—Discard troublesome patches, and use Mustikon Rubber Repair Studs. Impossible to move, and never give trouble. Sample box of assorted studs, with pliers and scissors, will be sent post free for 1/6 by Mustikon, Ltd., 23, New St., Cardiff. These sample boxes are only to be obtained from the makers. Write to-day, offer only holds good for a short period. [0832]

CYLINDERS Re-ground, fitted with pistons, rings, and hardened gudgeons; prompt delivery and moderate quotations; guarantee 3 months. Simplex steel pistons supplied to order. Valves, sprockets, timing gears, bushes, shafts, or crank-pins machined from patterns or sketched. Forged crankshafts or connecting rods supplied for Douglas or similar engines.—Norman and Bliss, Motor and General Engineers, London Rd., Hounslow. 'Phone: 227. [8270]

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BINKS Carburetters.—We specialise in these for any machine.—Booth's Motories, Halifax.

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DOUGLAS Carburetter, h.b.c., 1915, 12/6; Triumph pulley, 4/6.—Booth's Motories, Halifax.

BRAND New 26 Weatherproof Magneto, single-cyl., anti-clockwise; £3/17/6.—Booth's Motories, Halifax. [6385]

ORTO Wind Screens, Atkinson's patent, three types; single 30/-, sliding 36/-, triple 50/-.—Below. [3313]

HOODS, aprons, highest quality, lowest prices, guaranteed waterproof; catalogues gratis.—Atkinson's, 24, Armingher Ed., Shepherd's Bush, W. [3313]

1916 Senspray, 25/-, suit 6h.p. J.A.P.—H. Kenyon, 14, Home Park, Devonport. [X3360]



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**TYRES**, beaded, the largest stock in London; don't buy any until you see us. We can save you money. For example, Kempshall heavy non-slipping tread 26x2½, 21/9; Henley 650x65, guaranteed ½ in. thick, 32/6; Clincher clearance 650x65 light car, 21/6; 700x75 or 80, 25/1; 26x2½, 16/6, 26x3, 17/6; wired 26x2½ and 2½, 17/6; Midland studded 26x2½, 16/6.

**TUBES**.—Hutchinson clearance, perfect, 26x2 3/6, 26x2½ 4/3, 26x2½ 5/8, 26x2½ 4/6, 26x3 7/6; other makes equally cheap; every make in stock. We make liberal allowance for old tyres.

**BELTING**.—Rubber, best make, cannot advertise name, ¾ in. 9/4d., ¾ in. 10/4d., ¾ in. 1/1, 1 in. 1/3 foot; limited quantity only.

**WATERPROOF Clothing**.—Double-breasted heavy texture suit, complete, 22/6, as sold at £2/2; very best on the market, as sold at £3/10, our price 39/6; seamless trousers, heavy waterproof texture, 13/6; leggings from 4/6; everything for motor cyclists at cut prices; no lists.

**PENIER Leather Bags**, special line, 8/9 pair.

**LUMINOUS Paint**, best quality, 8½d., 1/2½, 2/8½ bottle.—Bancroftian Co., 64, Bishopsgate, London, E.C. T.A.: Chaikel, London. Tel. No. 9897 London Wall. [2989]

**ACCESSORIES**.—Selling out. Send for list.—Wall, 104, Lansdowne Rd., Dalston, London. [6330]

**COWEY Speedometer**, 25/-; Brooks B104 padded saddle, 10/-;—Dicker, Monks Rd., Exeter. [X3146]

**72 Screws, Nuts, Bolts, washers, motor cycle repairs**; 2/-;—Meadows, Bankfield Lane, Southampton. [3980]

**1911 Triumph Cylinder and Piston**, also pedalling gear, less sprocket, 25/-;—G. Merryfield, Eythorne, Dover. [6289]

**MUD STOPPERS**.—Pivotal flaps, shields, non-drip edges, keeps you clean; lists.—Necessities, Vine St., Birmingham. [4982]

**BINKS Carburettor** for sale, almost brand new, suit 3½ h.p. engine; what offers?—Kitto, Calamansack, Falmouth. [X3271]

**BINKS Carburettor**, almost new, only used fortnight, suit 6 h.p. twin; 35/-;—The Briars, Gatwick, Horley, Surrey. [X3376]

**B. and B. Carburettor**, Bosch mag., head lamp and generator, trench waders.—Beardshaw, Auctioneer, Wood Green. [6353]

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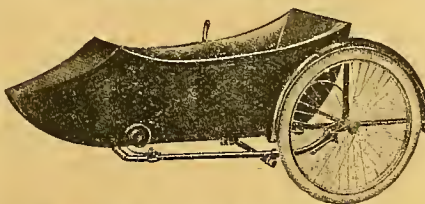
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Maintains  
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as a  
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# THE MOTOR CYCLE

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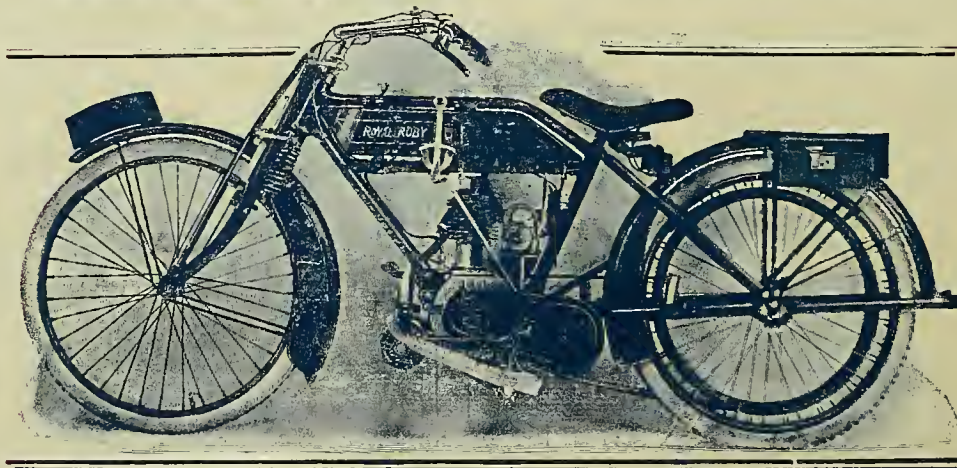
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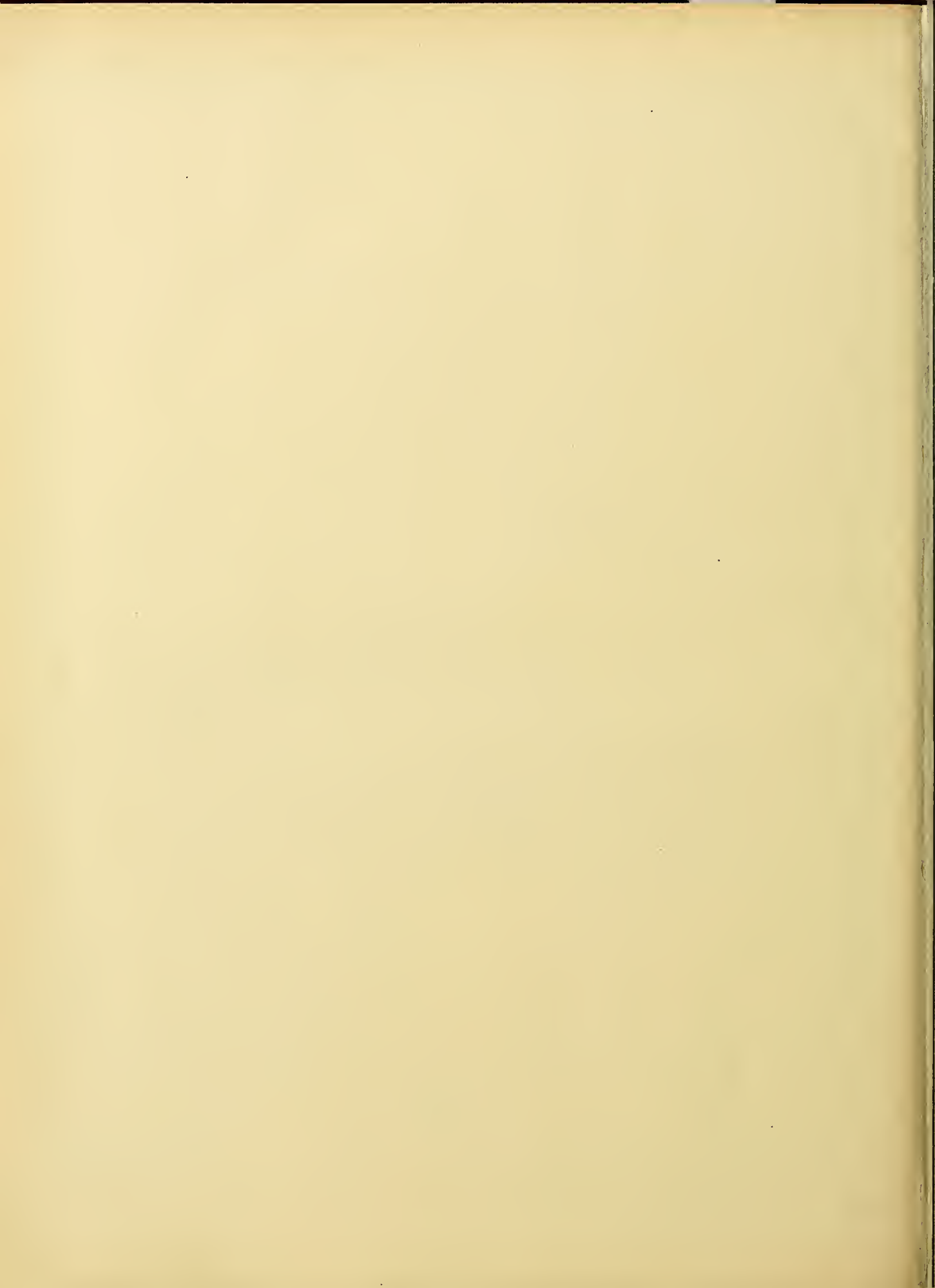
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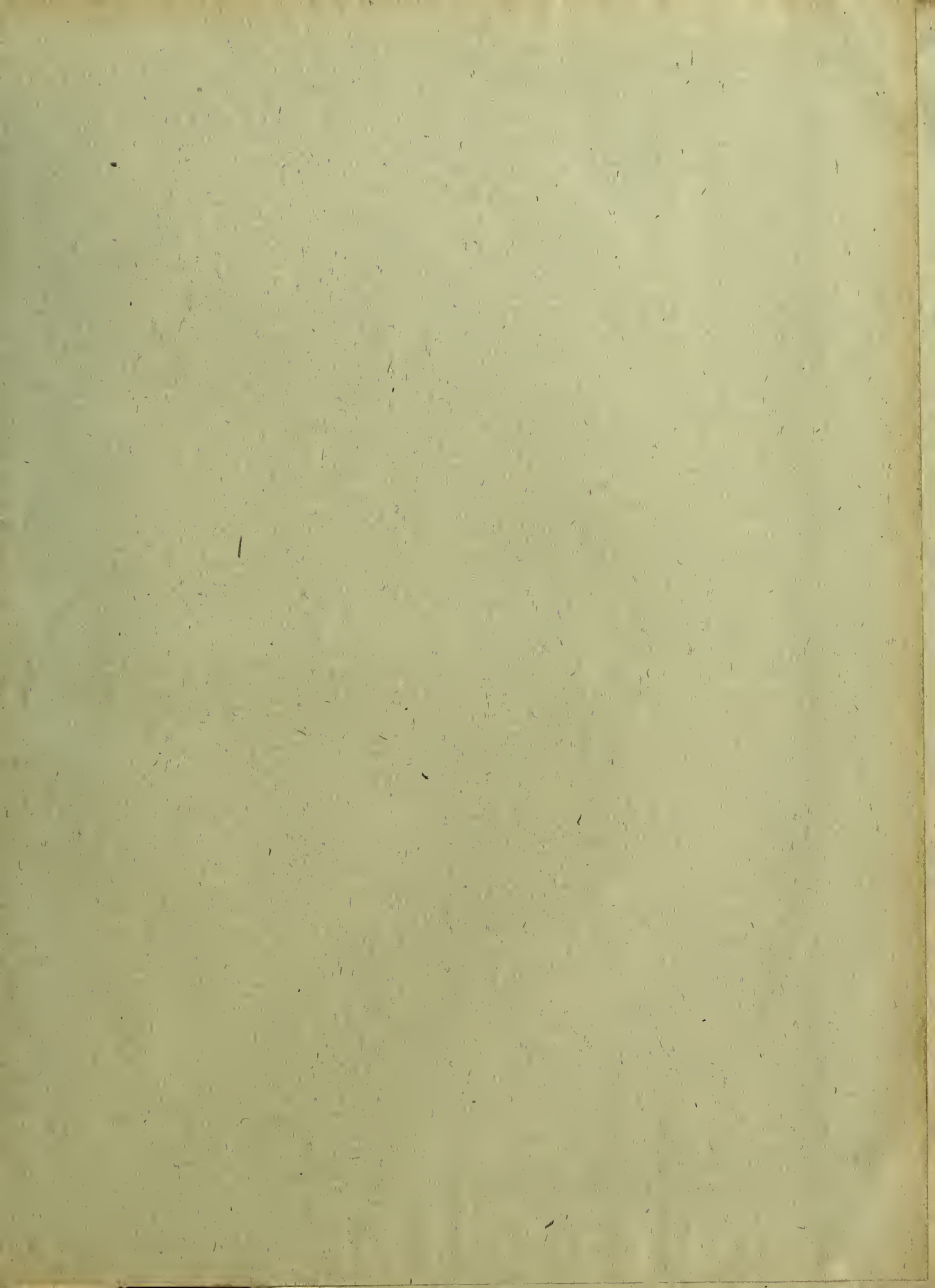


















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